WSU Tech

2026-2027 Catalog

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Mission, Vision, Values, and Guiding Principles

Mission

The Mission of WSU Tech is to provide quality higher education and leadership in workforce training that supports economic development for a global economy.

Vision

To be one of the nation’s most innovative and impactful two-year colleges.

Values: Values Based Culture

The WSU Tech team operates in a valued based culture and strive towards the following behaviors in everything they do.

SAME TEAM. One Role, One Goal: Unite and include many diverse perspectives to achieve our mission.
I Collaborate for Maximum Impact.
I give and accept constructive feedback through open communication.
I foster a fun and healthy environment that encourages relationship building.
I recognize and celebrate achievements of co-workers and students.
I advocate for an inclusive and diverse environment that allows all employees and students to thrive.

PEOPLE FIRST. Treat everyone consistently with compassion, respect, and kindness.
I listen first to understand.
I approach all interactions with empathy and respect.
I serve others with helping hands and a positive attitude.
I remain receptive to new ideas and approach situations with an open mind.
I assume good intentions and respond rather than react.

INTEGRITY. Uphold the highest standards in all our actions.
I exhibit ethical behavior by doing the right thing, even when no one is watching.
I build open and honest relationships.
I make my intentions clear.
I strive to earn trust, loyalty, and respect every day.
I utilize human, financial, and physical resources wisely.

VISIONARY. Future focused. Redefining education by inspiring innovative ideas, bold explorations, and continuous curiosity.
I take educated risks to remain relevant, nimble and responsive to ever-evolving needs of our communities.
I am resilient when faced with rapid change and challenges.
I support innovation and remain open minded to bold, new ideas.
I demonstrate commitment to life-long learning and personal development.

LEADERSHIP. Leadership is an activity, not a position. Anyone can lead, anytime, anywhere.
I take initiative and do what needs to be done.
I am generous in sharing my knowledge.
I empower others to resolve problems at the first opportunity.
I am responsible for communicating and cascading needed information throughout the college.
I demonstrate good judgment in decision making.

SERVICE TO ALL. Provide exceptional experiences to all that we serve.
I anticipate the needs of each individual and take a solutions-oriented approach.
I model excellence through accountability to myself and others.
I aspire to exceed expectations.
I am committed to providing exceptional experiences.
I act with an attitude of selflessness in all interactions.

Guiding Principles

Provide our students an opportunity to a better life through education and training.
Provide a highly educated and trained workforce for our community to be globally competitive.
Ask ourselves as we make decisions, is it in the best interest of our students, employees and community.

Strategic Plan

2024-2027 Strategic Plan

Governance and Structure

Kansas Board of Regents

The Kansas Board of Regents (KBOR) is comprised of nine members who are appointed by the governor of Kansas and confirmed by the Kansas Senate. KBOR governs six state universities and supervises and coordinates 19 community colleges, six technical colleges and a municipal university. KBOR primarily deals with educational policies, programs, services,providers and other systems in an effort to improve and maintain the high quality of education in Kansas. KBOR also coordinates vital programs, such as adult literacy, qualified admissions, concurrent enrollment for high school students, financial assistance for education and many others. KBOR, in conjunction with the Kansas Post secondary Technical Education Authority, approves technical programs offered by WSU Tech.

WSU Tech Industry Advisory Board
The WSU Tech Industry Advisory Board consists of 11 appointed, voting members who establish and publish policies, regulations and procedures pertaining to WSU Tech.

Industry Advocate Teams
Program advisory committees, representatives from business and industry, provide a very important link between WSU Tech and the community. These teams validate learning outcomes deemed essential by business and industry for successful entry or advancement in specific occupations. These teams also monitor the curriculum, recommend instructional equipment and help keep the programs current with emerging technologies.

Accreditation

The Higher Learning Commission – North Central Association
The Higher Learning Commission (HLC) is part of the North Central Association (NCA) of Colleges and Schools. NCA is one of six regional institutional accreditors in the United States. Through its Commissions, it accredits and thereby grants membership to educational institutions in the North Central region.

WSU Tech is fully accredited by The Higher Learning Commission and a member of the North Central Association as of October 2008.

The Higher Learning Commission
230 South LaSalle Street, Suite 7-500 Chicago, IL 60604-1411
Phone: 800.621.7440 / 312.263.0456
Fax: 312.263.7462

National Council for State Authorization Reciprocity Agreements (NC-SARA)

Out-of-State Online Students

Students enrolled in distance education courses or programs offered by the college who do not reside in Kansas should first follow the identified process outlined above to resolve any complaint arising from the student's participation in distance education courses or programs. Unresolved student concerns regarding programs authorized through State Authorization Reciprocity Agreements (SARA) may be directed to the state portal agency using the SARA complaint form. Completed forms and associated documents must then be submitted to **complaints@ksbor.org**.

Click **here** for the state portal agency SARA complaint form.

Nondiscrimination

WSU Tech does not discriminate with regard to race, color, ethnic or national origin, sex, military status, veteran status, handicap/disability, sexual orientation, religion, age or other non-merit reasons, in admissions, educational programs, activities, or employment.

WSU Tech intends to comply with all applicable federal, state and local laws and regulations, including but not limited to: the Civil Rights Act of 1964, as amended; Title IX, which protects all people regardless of their gender or gender identity from sex discrimination, which includes sexual harassment and sexual violence; the Americans With Disabilities Act of 1990; the Age Discrimination in Employment Act of 1967; the DrugFree Schools and Campuses Act; the Campus Security Act (Jeanne Cleary Act), as amended; the Family Educational Rights and Privacy Act of 1974, as amended; Section 504 of the Rehabilitation Act of 1973; and the Nondiscrimination on the Basis of Sex in Education Programs or Activities Receiving Federal Financial Assistance rules.

The following people have been designated to handle inquiries regarding the non-discrimination policies:

Justin Pfeifer
Vice President of Student Services, Title IX coordinator
3821 E. Harry, Wichita, KS 67218
316-677-1020 | jpfeifer@wsutech.edu

Amber Neises
Vice President, People & Culture
4004 N. Webb Rd, Wichita, KS 67226
316.677.9561 | aneises1@wsutech.edu

Jennifer Stanyer
Assistant Director, Student Accessibility and Support Services
4004 N. Webb Rd, Wichita, KS 67226
316-677-1065 | jstanyer@wsutech.edu

Education Philosophy

WSU Tech is committed to transforming education into opportunity. Students learn through **immersive experiences** that go beyond traditional classrooms—engaging in industry partnerships, authentic workplace simulations, and applied learning opportunities both inside and outside the classroom. Each course is crafted to build essential skills such as problem-solving, effective communication, information analysis, and **workplace readiness**, equipping students to thrive in an ever-evolving professional landscape.

Educational Programs

Students have many educational opportunities at WSU Tech and are encouraged to select the program or course of study that best meets their needs. These opportunities include general education courses and associate of applied science (AAS) degrees, technical certificates, and certificates of completion. Students may also opt to select courses that focus on particular technical skills instead of registering in a complete program.

Associate of Applied Science Degrees

AAS degree programs are designed to provide students with the knowledge and skills needed to enter the workforce, advance within their chosen careers or further their education. To be awarded the AAS degree, students must successfully complete a minimum of 60 credit hours — a combination of technical and general education hours. Although AAS degrees are designed to prepare students for employment, technical credits may transfer to other colleges or universities. The appropriate Vice President may approve alternative general education courses and acceptance of transfer credits or work experience.

Technical Certificates

Technical certificate programs provide the knowledge and skills needed to enter the workforce. Students who wish to pursue an AAS degree may transfer most of these courses and credits to an AAS degree program at WSU Tech.

Certificates of Completion

Certificate of Completion programs provide the knowledge and skills required in today's competitive and changing workforce. Programs vary in length from a few days to several months.

General Education

WSU Tech provides general education courses required for its degree programs. These courses are taught with curricula that meet or exceed state core curriculum standards approved by KBOR and are taught by instructors with the appropriate credentials. WSU Tech's general education courses that lead to the AAS degree are interspersed throughout the program with various instructional delivery methods that allow flexibility for student schedules.

Every degree program incorporates general education courses designed to prepare students with a foundation in computers, written and verbal communication, mathematics, humanities, natural sciences and social sciences. These are also integrated through the core curriculum in WSU Tech's Technical certificate programs.

Locations & Contact Information

GENERAL CONTACT INFORMATION		
General Information	316.677.9400	
Website	wsutech.edu	
Emergency Closing Hotline	316.677.9596	
Security	316.677.1911	

MAIN CAMPUS
National Center for Aviation Training, (NCAT) 4004 N. Webb Road | Wichita, KS 67226 | 316.677.9400

ADDITIONAL LOCATIONS
City Center 301 S. Grove | Wichita, KS 67211 | 316.677.9400
National Institute for Culinary and Hospitality Education (NICHE) 124 S. Broadway | Wichita, KS | 67202 | 316.973.6120
WSU Tech South 3821 E. Harry | Wichita, KS | 67218 | 316.677.9400
FutureReady Center 1435 N. Waco | Wichita, KS | 67203 | 316.973.6120
Southeast Kansas Career & Technical Education Center (CTEC) 1301 E. 27th Terrace | Pittsburg, KS | 66762
Textron Aviation Career & Learning Center 293 S. Greenwich Rd, Suite 400 | Wichita, KS| 67206

ADDITIONAL INSTRUCTIONAL SITE
WSU West 3801 N. Walker Avenue | Maize, KS | 67101 | 316.677.9400

Academic Student Concerns

Academic Student Concerns

Any student who wishes to pursue an instructional concern must exhaust the following options in sequence prior to petitioning the appropriate Academic Vice President (Examples of instructional or course concern are instructor behavior, class policies, and unfair expectations or demands.) Efforts are made by the college to resolve concerns at the lowest possible level.

1. The student must meet with the instructor and attempt to resolve the problem. If no resolution:
2. The student must state the concern in writing and meet with the Dean or Associate Dean. Departments may require specific documentation that the student will be responsible to obtain. As a result of the meeting with the Dean or Associate Dean, action may or may not be taken.
3. The appropriate Dean or Associate Dean will inform the student in writing of the final decision within ten (10) calendar days following the meeting.

If the student contests the Dean or Associate Dean's action/decision, he/she must submit the request in writing to the appropriate Academic Vice President) within ten (10) calendar days of the notice of the Dean or Associate Dean's decision. The request should include documentation of everything that the student wants considered in the decision. The Dean or Associate Dean may also submit written documentation and recommendations. The Academic Vice President will notify the student in writing of a decision within ten (10) calendar days.

If no resolution, a student may file a complaint with the President. The complaint must be filed in writing within ten (10) calendar days of the notice of the Academic Vice President's decision. The written complaint must contain specific details regarding the incident, employee or school regulation, which is being protested. The President will respond to a complaint which has been appropriately filed and provide a timeline for official response. The official response will be given to the student in writing.

If a student does not accept the President's official response, the student has the option of proceeding to the WSU Tech Industry Advisory Board. The complaint must be filed in writing to the Clerk of the Board within 10 days after the official response from the President is first received. The Clerk of the Board will respond to a complaint, which has been appropriately filed, within 10 days of receiving the written complaint. The Clerk of the Board will provide a timeline for official response from the Board of Trustees. Board members may choose to invite the student to an executive session in order to gain further information. The official response of the Board of Trustees will be given to the student in writing. The Board's decision shall be final.

Students may also submit a complaint to the Higher Learning Commission of the North Central

Association in accordance with the accrediting agency's complaint process which is

described here:

https://www.hlcommission.org/Student-Resources/complaints.html

Non Instructional Concerns

A student who feels that he or she has been treated unfairly by any employee with regard to a non-instructional process such as a student services, bookstore, or business office process must exhaust the following options in sequence prior to petitioning the appropriate Vice President or Executive Director. Efforts are made by the college to resolve concerns at the lowest possible level.

Students wishing to pursue an instructional concern (Examples of instructional or course concern are instructor behavior, class policies, and unfair expectations or demands) should follow the Student Concerns process outlined in the Academic Code of Conduct, Policy 5-01.

1. The student must meet with the staff member and attempt to resolve the problem. If no resolution:
2. The student must state the concern in writing and meet with the appropriate Dean/Director. Departments may require specific documentation that the student will be responsible to obtain. As a result of the meeting with the Dean/Director action may or may not be taken.
3. The appropriate Dean/Director will inform the student in writing of the final decision within ten (10) calendar days following the meeting. If the student contests the Dean/Director's action/decision, he/she must submit the request in writing to the appropriate Vice President or Executive Director within ten (10) days of the notice of the Dean/Director decision. The request should include documentation of everything that the student wants considered in the decision. The Dean/Director may also submit written documentation and recommendations. The Vice President or Executive Director will notify the student in writing of a final decision within ten (10) days. This decision will be final.

If no resolution, a student may file a complaint with the President. The complaint must be filed in writing within ten (10) calendar days of the notice of the Vice President or Executive Director's decision. The written complaint must contain specific details regarding the incident, employee or school regulation, which is being protested. The President will respond to a complaint which has been appropriately filed and provide a timeline for official response. The official response will be given to the student in writing.

If a student does not accept the President's official response, the student has the option of proceeding to the WSU Tech Industry Advisory Board. The complaint must be filed in writing to the Clerk of the Board within 10 days after the official response from the President is first received. The Clerk of the Board will respond to a complaint, which has been appropriately filed, within 10 days of receiving the written complaint. The Clerk of the Board will provide a timeline for official response from the Board of Trustees. Board members may choose to invite the student to an executive session in order to gain further information. The official response of the Board of Trustees will be given to the student in writing. The Board's decision shall be final.

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Click here for the state portal agency SARA complaint form.

Apprenticeships

Apprenticeship Programs

WSU Tech offers Registered Apprenticeship programs that combine paid, hands-on training with related classroom instruction. Apprentices gain real-world experience while earning wages and building skills for high-demand careers.

Associate of Applied Science (AAS): Typically a 2-Year Program
Technical Certificate (TC): Typically a 1-Year Program
Certificate of Completion (COC): Usually completed in less than 1 semester
Kansas Promise Eligible: If marked YES, this program qualifies for a full-ride scholarship of up to $20,000. See **WSUTECH.edu/KansasPromise** for details.

PROGRAM	AAS	TC	COC	KANSAS PROMISE ELIGIBLE
Construction Technology Cabinet Maker Apprenticeship	AAS			
Construction Technology Floor Layer Apprenticeship	AAS			
Iron Worker Apprenticeship	AAS			
Plumbers & Pipefitters Apprenticeship	AAS			
Sheetmetal Technology Apprenticeship	AAS			

Automotive

Automotive Degree and Certificate Programs

WSU Tech offers programs in automotive technology including: Automotive Technology and Alternative Fuel Vehicle Maintenance & Advanced Electronics in many degree and certificate options.

Associate of Applied Science (AAS): Typically a 2-Year Program
Technical Certificate (TC): Typically a 1-Year Program
Certificate of Completion (COC): Usually completed in less than 1 semester
Kansas Promise Eligible: If marked YES, this program qualifies for a full-ride scholarship of up to $20,000. See **WSUTECH.edu/KansasPromise** for details.

PROGRAM	AAS	TC	COC	KANSAS PROMISE ELIGIBLE
Automotive Technology	AAS	TC		Yes
Alternative Fuel Vehicle Maintenance & Advanced Electronics	AAS	TC		Yes
Mobile Equipment Technology	AAS	TC		Yes

Aviation

Aviation Degree and Certificate Programs

Choose from a variety of Aviation degree and certificate programs to begin your path towards becoming a skilled professional in an aviation-related field. Train at our state-of-the-art campus, the **National Center for Aviation Training** (NCAT), to receive quality experience and skills that will prepare you for your career in Aerostructures, Avionics, Composites or even as an FAA approved Aviation Maintenance Technician.

Associate of Applied Science (AAS): Typically, a 2-Year Program
Technical Certificate (TC): Typically, a 1-Year Program
Certificate of Completion (COC): Usually completed in less than 1 semester
Kansas Promise Eligible: If marked YES, this program qualifies for a full-ride scholarship of up to $20,000. See **WSUTECH.edu/KansasPromise** for details.

PROGRAM	AAS	TC	COC	KANSAS PROMISE ELIGIBLE
Aerospace Coating & Paint Technology	AAS	TC		Yes
Process Mechanic Painter		TC		Yes
Aerospace Manufacturing Technology	AAS	TC		Yes
Aviation Sheetmetal Assembly		TC		Yes
Aviation Sheetmetal Assembly (CBE)		TC		Yes
Aviation Maintenance Technology	AAS			Yes
Aviation Maintenance Technology - Airframe		TC		Yes
Accelerated Aviation Maintenance Technology -Airframe			COC	
Aviation Maintenance Technology - Powerplant		TC		Yes
Accelerated Aviation maintenance Technology - Powerplant			COC	
Aviation Maintenance Technology - General		TC		Yes
Avionics Technology	AAS	TC		Yes
Composite Technology	AAS			Yes
Composite Technology - Repair		TC		Yes
Composite Technology - Fabrication		TC		Yes
Composite Technology - Fabrication (CBE)		TC		Yes
Nondestructive Testing (NDT)	AAS	TC		Yes
Eddy Current Technician			COC	
Magnetic Particle Technician			COC	
Penetrant Technician			COC	
Radiography Technician			COC	
Ultrasonic Technician			COC	
Professional Pilot	AAS			Yes
Unmanned Aircraft Systems	AAS	TC		

Business

Business Degree and Certificate Programs

WSU Tech offers programs in business including: Administrative Office Technology, Information Technology Systems and more in many degree and certificate options.

Associate of Applied Science (AAS): Typically a 2-Year Program
Technical Certificate (TC): Typically a 1-Year Program
Certificate of Completion (COC): Usually completed in less than 1 semester
Kansas Promise Eligible: If marked YES, this program qualifies for a full-ride scholarship of up to $20,000. See **WSUTECH.edu/KansasPromise** for details.

PROGRAM	AAS	TC	COC	KANSAS PROMISE ELIGIBLE
Business Administration	**AAS**			
Operations Management & Supervision	**AAS**	**TC**		
Accounting	**AAS**	**TC**		
Digital Marketing	**AAS**	TC		

Construction Trades

Construction Trades Degree and Certificate Programs

WSU Tech offers programs in construction, including: Construction Technology, Climate & Energy Control, and Electrical Technology in many degree and certificate options.

Associate of Applied Science (AAS): Typically a 2-Year Program
Technical Certificate (TC): Typically a 1-Year Program
Certificate of Completion (COC): Usually completed in less than 1 semester
Kansas Promise Eligible: If marked YES, this program qualifies for a full-ride scholarship of up to $20,000. See WSUTECH.edu/KansasPromise for details.

PROGRAM	AAS	TC	COC	KANSAS PROMISE ELIGIBLE
Construction Technology	**AAS**			Yes
Construction Technology Level 1		**TC**		Yes
Construction Technology Level 3		**TC**		Yes
Climate & Energy Control (HVAC)	**AAS**			Yes
Climate & Energy Control (HVAC) (Cert B)		**TC**		
Climate & Energy Control (HVAC) (Cert C)		**TC**		
Electric Power Distribution (Coming Soon)				
Electrical Technology	**AAS**	**TC**		Yes
Heavy Equipment Operation	**AAS**	**TC**		
Masonry Construction	**AAS**	**TC**		

Culinary Arts & Hospitality

Culinary & Hospitality Degree and Certificate Programs

WSU Tech offers programs in Culinary Arts and Hospitality in degree and certificate options.

Associate of Applied Science (AAS): Typically a 2-Year Program
Technical Certificate (TC): Typically a 1-Year Program
Certificate of Completion (COC): Usually completed in less than 1 semester
Kansas Promise Eligible: If marked YES, this program qualifies for a full-ride scholarship of up to $20,000. See **WSUTECH.edu/KansasPromise** for details.

PROGRAM	AAS	TC	COC	KANSAS PROMISE ELIGIBLE
Culinary Arts	**AAS**	**TC**		
Food Business Management	**AAS**	**TC**		

Design

Design Degree and Certificate Programs

WSU Tech offers Design programs including: Interior Design, Architectural Design and more in many degree and certificate options.

Associate of Applied Science (AAS): Typically a 2-Year Program
Technical Certificate (TC): Typically a 1-Year Program
Certificate of Completion (COC): Usually completed in less than 1 semester
Kansas Promise Eligible: If marked YES, this program qualifies for a full-ride scholarship of up to $20,000. See **WSUTECH.edu/KansasPromise** for details.

PROGRAM	AAS	TC	COC	KANSAS PROMISE ELIGIBLE
Architectural Design Technology	AAS	TC		Yes
Engineering Design Technology	AAS	TC		Yes
Interior Design	AAS			Yes

Education

Education Degree and Certificate Programs

WSU Tech offers programs in education including: Para Educator and more in many degree and certificate options.

Associate of Applied Science (AAS): Typically a 2-Year Program
Technical Certificate (TC): Typically a 1-Year Program
Certificate of Completion (COC): Usually completed in less than 1 semester
Kansas Promise Eligible: If marked YES, this program qualifies for a full-ride scholarship of up to $20,000. See **WSUTECH.edu/KansasPromise** for details.

PROGRAM	AAS	TC	COC	KANSAS PROMISE ELIGIBLE
Para Educator	AAS			Yes

Healthcare

Healthcare Degree and Certificate Programs

Choose from various Healthcare degree and certificate programs, which include CNA/CMA/HHA, Medical Assisting, Surgical Technology, and more.

Associate of Applied Science (AAS): Typically, a 2-Year Program
Technical Certificate (TC): Typically, a 1-Year Program
Certificate of Completion (COC): Usually completed in less than 1 semester
Kansas Promise Eligible: If marked YES, this program qualifies for a full-ride scholarship of up to $20,000. See **WSUTECH.edu/KansasPromise** for details.

PROGRAM	AAS	TC	COC	KANSAS PROMISE ELIGIBLE
Associate Degree Nurse (A.D.N.)	AAS			Yes
Certified Medication Aide			COC	Yes
Certified Nurse Aide			COC	Yes
Home Health Aide			COC	Yes
Healthcare Administration and Management	AAS			Yes
Practical Nursing		TC		Yes
Emergency Medical Services		TC		Yes
Emergency Medical Technician			COC	Yes
Mental Health Technician	AAS	TC		Yes
Patient Care Technician		TC		Yes
Surgical Technology	AAS			Yes
Veterinary Nursing (Vet Tech)	AAS			
Veterinary Assistant			COC	

Information Technology

Information Technology Systems Degree and Certificate Programs

WSU Tech offers programs in Information Technology Systems including: Administrative Office Technology, Information Technology Systems, Criminal Justice and more in many degree and certificate options.

Associate of Applied Science (AAS): Typically a 2-Year Program
Technical Certificate (TC): Typically a 1-Year Program
Certificate of Completion (COC): Usually completed in less than 1 semester
Kansas Promise Eligible: If marked YES, this program qualifies for a full-ride scholarship of up to $20,000. See **WSUTECH.edu/KansasPromise** for details.

PROGRAM	AAS	TC	COC	KANSAS PROMISE ELIGIBLE
Information Technology Systems				Yes
Cloud Computing/Cloud Application Development	AAS			Yes
Cloud Computing/Cloud Application Development (Cert C)		TC		
Cloud Programming/Cloud Application Development		TC		Yes
Computer Support Specialist	AAS			Yes
Computer Support Specialist (Cert A)		TC		
Computer Support Specialist (Cert B)		TC		

Law Enforcement

Law Enforcement Degree and Certificate Programs

WSU Tech offers programs in Law Enforcement including: Criminal Justice and more in many degree and certificate options.

Associate of Applied Science (AAS): Typically a 2-Year Program
Technical Certificate (TC): Typically a 1-Year Program
Certificate of Completion (COC): Usually completed in less than 1 semester
Kansas Promise Eligible: If marked YES, this program qualifies for a full-ride scholarship of up to $20,000. See **WSUTECH.edu/KansasPromise** for details.

PROGRAM	AAS	TC	COC	KANSAS PROMISE ELIGIBLE
Criminal Justice	AAS	TC		
Private Security Officer Training				

Manufacturing

Manufacturing Degree and Certificate Programs

WSU Tech offers programs in manufacturing including: Welding, Machining, Robotics, Automotive and more in many degree and certificate options.

Associate of Applied Science (AAS): Typically a 2-Year Program
Technical Certificate (TC): Typically a 1-Year Program
Certificate of Completion (COC): Usually completed in less than 1 semester
Kansas Promise Eligible: If marked YES, this program qualifies for a full-ride scholarship of up to $20,000. See **WSUTECH.edu/KansasPromise** for details.

PROGRAM	AAS	TC	COC	KANAS PROMISE ELIGIBLE
Automation Engineer Technology	AAS	TC		
Industrial Machine/Maintenance Technology	AAS			Yes
Industrial Machine/Maintenance Technology (Cert A)		TC		Yes
Industrial Machine/Maintenance Technology (Cert B)		TC		Yes
Industrial Machine/Maintenance Technology (Cert C)		TC		Yes
Logistics and Supply Chain Management	AAS	TC		Yes
Machining Technology (Machining & Manufacturing Technology)	AAS	TC		Yes
Multi Axis Machining (Machining & Manufacturing Technology)		TC		Yes
CNC Operator (Machining & Manufacturing Technology)		TC		Yes
Manufacturing Technology	AAS	TC		Yes
Manufacturing Assembly Basics		TC		Yes
Manufacturing Assembly		TC		Yes
Quality Assurance Inspection	AAS	TC		Yes
Robotics	AAS	TC		Yes
Welding Technology	AAS			Yes
Welding Technology Level 1		TC		Yes
Welding Technology Level 2		TC		Yes

Other Majors

No matter what you are wanting to study, whether it's Business, Psychology, Education, Engineering, Communications, Information Technology or something else, WSU Tech has the classes you need to get the degree and career you want, even if that degree is from another college or university.

Many of our courses are transferable and are guaranteed by the Kansas Board of Regents to transfer to other public colleges and universities in Kansas such as Wichita State University, University of Kansas, Kansas State University, Fort Hays State University and many others.

Learn more about majors at WSU Tech.

Degree Maps

A degree map is a suggested schedule of courses based on degree and certificate requirements. The sample schedule serves as a general guideline to help build a full schedule each term. Milestones, courses, and special requirements necessary for timely progress to complete a major are designated to keep you on track to graduate in in the time associated with your degree or certificate type. Missing milestones could delay your program completion.

This map is not a substitute for academic advisement. Contact your advisor if you have any questions about scheduling or about program requirements.

A

Accounting

- **Accounting, AAS**
- **Accounting, TC**

Aerospace Coatings & Paint Technology

- Aerospace Coatings & Paint Technology, AAS
- Aerospace Coatings & Paint Technology, TC

Aerospace Manufacturing Technology

- Aerospace Manufacturing Technology, AAS
- Aerospace Manufacturing Technology, TC
- Aviation Sheetmetal Assembly, TC
- Aviation Sheetmetal Assembly, CBE
- Process Mechanic Painter, TC

Alternative Fuel Vehicle Maintenance & Advanced Electronics

- Alternative Fuel Vehicle Maintenance & Advanced Electronics, AAS
- Alternative Fuel Vehicle Maintenance & Advanced Electronics, TC

Architectural Design Technology

- Architectural Design Technology, AAS
- Architectural Design Technology, TC

Associate Degree Nurse (A.D.N)

Automation Engineer Technology

- Automation Engineer Technology, AAS
- Automation Engineer Technology, Cert C

Automotive Technology

- Automotive Technology, AAS
- Automotive Technology, TC

Aviation Maintenance Technology

- Accelerated Aviation Maintenance Technology - Airframe, COC
- Accelerated Aviation Maintenance Technology - Powerplant, COC
- Aviation Maintenance Technology, AAS
- Aviation Maintenance Powerplant, TC
- Aviation Maintenance General, TC

Avionics Technology

- Avionics Technology, AAS
- Avionics Technology, TC

B

Business Administration, AAS

C

Climate & Energy Control

- Climate & Energy Control (HVAC), AAS
- Climate & Energy Control (HVAC), Cert B
- Climate & Energy Control (HVAC), Cert C

Cloud Computing/Cloud Application Development

- Cloud Computing/Cloud Application Development, AAS
- Cloud Computing/Cloud Application Development, TC
- Cloud Programming/Cloud Application Development, TC

CMA Certified Medication Aide

CNA Certified Nurse Aide

Composite Technology

- Composite Technology, AAS
- Composite Fabrication, TC
- Composite Repair, TC

Construction Technology

- Construction Technology, AAS
- Construction Technology Level 1, TC
- Construction Technology Level 3, TC

Criminal Justice

- Criminal Justice, AAS
- Criminal Justice, TC

Culinary Arts

- Culinary Arts, AAS
- Culinary Arts, TC

D

Digital Marketing

- Digital Marketing, AAS
- Digital Marketing, TC

E

Electrical Technology

- Electrical Technology, AAS
- Electrical Technology, TC

Emergency Medical Services

- Emergency Medical Services, TC
- Emergency Medical Technician, COC

Engineering Design Technology

- Engineering Design Technology, AAS
- Engineering Design Technology, TC

F

Food Business Management

- Food Business Management, AAS
- Food Business Management, TC

H

Healthcare Administration and Management

- Healthcare Administration and Management, AAS
- Practical Nursing, TC

Heavy Equipment Operation

- Heavy Equipment Operation, AAS
- Heavy Equipment Operation, TC

HHA Home Health Aide, COC

I

Industrial Machine/Maintenance Technology

- Industrial Machine/Maintenance Technology, AAS
- Industrial Machine/Maintenance Technology, Cert A
- Industrial Machine/Maintenance Technology, Cert B
- Industrial Machine/Maintenance Technology, Cert C

Information Technology Systems Computer Support Specialist

- Computer Support Specialist, AAS
- Computer Support Specialist, Cert A
- Computer Support Specialist, Cert B

Information Technology Systems Computer Support Specialist with Emphasis in Cyber Security

- Computer Support Specialist with Emphasis in Cyber Security, AAS
- Computer Support Specialist with Emphasis in Cyber Security, TC

Interior Design, AAS

L

Logistics and Supply Chain Management

- Logistics and Supply Chain Management, AAS
- Logistics and Supply Chain Management, TC

M

Machining Technology (Machining & Manufacturing Technology)

- Machining Technology (Machining & Manufacturing Technology), AAS
- CNC Operator (Machining & Manufacturing Technology), TC
- Machining Technology (Machining & Manufacturing Technology), TC
- Multi Axis Machining (Machining & Manufacturing Technology), TC

Manufacturing Technology

- Manufacturing Technology, AAS
- Manufacturing Assembly, TC
- Manufacturing Assembly Basics, TC
- Manufacturing Technology, TC

Masonry Construction

- Masonry Construction, AAS
- Masonry Construction, TC

Mental Health Technician

- Mental Health Technician, AAS
- Mental Health Technician, TC

Mobile Equipment Technology

- Mobile Equipment Technology, AAS
- Mobile Equipment Technology, TC

N

Nondestructive Testing

- Nondestructive Testing, AAS
- Nondestructive Testing, TC
- Eddy Current Technician, COC
- Magnetic Particle Technician, COC
- Penetrant Technician, COC
- Radiography Technician, COC
- Ultrasonic Technician, COC

O

Operations Management and Supervision

- Operations Management and Supervision, AAS
- Operations Management and Supervision, TC

P

Para Educator, AAS

Patient Care Technician, TC

Practical Nursing, TC

Professional Pilot Training

- Professional Pilot, AAS

Q

Quality Assurance Inspection

- Quality Assurance Inspection, AAS
- Quality Assurance Inspection, TC

R

Robotics

- Robotics, AAS
- Robotics, TC

S

Surgical Technology, AAS

T

Technical Studies/Criminal Justice/Business Administration, AAS

Technical Studies/Criminal Justice/EMS, AAS

Tooling and Fixture Fabrication

- **Tooling and Fixture Fabrication, AAS**
- **Tooling and Fixture Fabrication, TC**

U

Unmanned Aircraft Systems

- **Unmanned Aircraft Systems, AAS**
- **Unmanned Aircraft Systems, Cert A**

V

Veterinary Nursing, AAS

- **Veterinary Assistant, COC**

W

Welding Technology

- **Welding Technology, AAS**
- **Welding Technology Level 1, TC**
- **Welding Technology Level 2, TC**

Archived Catalogs

25/26 Catalog

24/25 Catalog

23/24 Catalog

22/23 Catalog

21/22 Catalog

20/21 Catalog

19/20 Catalog

18/19 Catalog

17/18 Catalog

16/17 Catalog

All Programs

AAS-ACCT_ING - Accounting, AAS

Overview

Department(s)
Professional Studies

Degree Designation
Associate of Applied Science

Catalog Full Description
The Associate in Applied Science in Accounting program is designed to provide students with a comprehensive foundation in accounting principles and related business skills, including data analysis. This two-year program combines theoretical knowledge with practical applications to prepare students for entry-level positions in accounting.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Apply fundamental accounting principles to analyze and record financial transactions accurately.

Name
Demonstrate understanding of financial statements by Generally Accepted Accounting Principles (GAAP).

Name
Utilize accounting software, including QuickBooks, for efficient financial management.

Name
Analyze financial data to support decision-making processes within an organizational context.

Name
Apply managerial accounting concepts for cost analysis, budgeting, and internal decision-making.

Name
Demonstrate a comprehensive understanding of fundamental business concepts.

Name
Apply business principles in analyzing organizational operations' economic, legal, and ethical aspects.

Name
Utilize data science tools for fundamental analysis and visualization in accounting contexts

Name
Demonstrate an understanding of tax principles and regulations.

Name
Prepare tax documents and provide essential tax planning advice.

Name
Apply principles of personal finance to manage individual financial affairs.

Name
Provide essential financial planning advice to individuals.

Name
Apply introductory data science concepts for analysis and interpretation of data.

Name
Create visual representations of data to enhance decision-making processes.

Name
Apply data analytics tools and techniques to analyze complex datasets effectively

Program Costs
Accounting, AAS - $10,180.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Accounting, AAS

Type
Completion Requirement

Accounting Requirements

Complete ALL of the following Courses:

- ACC130 - Managerial Accounting - 3 Credits
- ACC137 - QuickBooks - 3 Credits
- ACC152 - Payroll Accounting - 3 Credits
- ACC160 - Principles of Accounting I - 3 Credits
- ACC170 - Principles of Accounting II - 3 Credits
- ACC230 - Tax Accounting - 3 Credits
- AAD110 - Data Exploration and Interpret - 3 Credits
- AAD120 - Data Visualization - 3 Credits
- BUS104 - Introduction to Business - 3 Credits
- BUS130 - Personal Finance - 3 Credits
- BUS200 - Principles of Management - 3 Credits
- CED115 - Computer Applications - 3 Credits
- ECO105 - Principles of Macroeconomics - 3 Credits
- ECO110 - Principles of Microeconomics - 3 Credits
- ENG101 - Composition I - 3 Credits
- MTH108 - Contemporary Math - 3 Credits
- PHL110 - Ethics - 3 Credits
- SPH101 - Public Speaking - 3 Credits

General Education Requirement

Earn at least 3 credits from the following:

- Humanities Elective

General Education Requirment

Earn at least 3 credits from the following:

- Social Sciences Elective

Degree Maps

Degree Map Name
Accounting, AAS
Total Degree Map Credits
60
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	9	0

Requirement Select

- ACC160 - Principles of Accounting I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- BUS130 - Personal Finance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- CED115 - Computer Applications

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	15	0

Requirement Select

- ACC137 - QuickBooks

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ACC170 - Principles of Accounting II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- BUS104 - Introduction to Business

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- MTH108 - Contemporary Math

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ACC152 - Payroll Accounting

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	6	0

Requirement Select
- SPH101 - Public Speaking

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	12	0

Requirement Select
- ACC130 - Managerial Accounting

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ACC230 - Tax Accounting

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- BUS200 - Principles of Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	12	0

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PHL110 - Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- AAD110 - Data Exploration and Interpretation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ECO105 - Principles of Macroeconomics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Summer	6	0

Requirement Select
- AAD120 - Data Visualization

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ECO110 - Principles of Microeconomics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-AER_COAT - Aerospace Coatings & Paint Technology, AAS

Overview

Department(s)
Aviation

Degree Designation
Associate of Applied Science

Catalog Full Description
Aerospace Coatings & Paint Technology associate degree program is a sequence of courses designed to produce an aerospace technician with multiple skill sets, a well rounded understanding of the aerospace industry and the depth and breadth of knowledge which comes from general education courses. This program provides a broad based understanding of coating and paint processes within the aerospace industry. The curriculum includes comprehensive learning experiences in all aspects of the coating and paint industry including formulation, application and specialized areas. Students will round off their educational experience by completing 15 credits of general education courses in five areas of study including mathematics, social sciences, English, humanities, and communications.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Student will demonstrate academic, technical, and professional knowledge and skills required for job acquisition in the Aerospace Coatings & Paint Technology program

Name
Student will demonstrate surface preparation from various coating and painting applications on all interior and exterior aircraft components

Name
Student will demonstrate special application techniques

Name
Student will demonstrate various skills and techniques of advanced paint and coating which meet industry specifications

Program Costs
Aerospace Coatings & Paint Technology, AAS - $17,200.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Aerospace Coatings & Paint Technology, AAS

Type
Completion Requirement

Aerospace Coatings & Paint Technology Course Requirements

Complete ALL of the following Courses:

- ACP100 - Intro to Coatings & Paint Tech - 3 Credits
- ACP101 - Surface Preparation & Coatings - 4 Credits
- ACP102 - Perf & Durability of Coatings - 3 Credits
- ACP103 - Color Technology - 3 Credits
- ACP104 - Specialized Coatings Processes - 3 Credits
- ACP105 - Specialized Detailing - 3 Credits
- ACP106 - Aerospace Coatings & Materials - 3 Credits
- ACP111 - Technical Co-Operative Project - 4 Credits
- ACP121 - Surface Prep & Coatings II - 3 Credits
- ACP124 - Specialized Coatings Proc II - 4 Credits
- ACP145 - Environmental Health & Safety - 2 Credits
- AVC104 - Quality Control Concepts - 1 Credits
- AVC105 - Aircraft Familiarization - 1 Credits
- AVC107 - Fundamentals for Aerospace Mfg - 1 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- AVC112 - Blueprint Reading - 2 Credits
- AVC120 - Introduction to Sealing - 1 Credits
- AVC140 - Electrical Bonding & Grounding - 1 Credits
- MCD106 - Precision Measuring - 2 Credits
- ENG101 - Composition I - 3 Credits

General Education Requirement

Earn at least 3 credits from the following:

- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:

- Humanities Elective

General Education Requirement

Earn at least 3 credits from the following:

- Math Elective

General Education Requirement

Earn at least 3 credits from the following:

- Social Sciences Elective

Entry Requirements

- Be 16 years of age or older
- Complete college admissions application

Degree Maps

Degree Map Name
Aerospace Coatings & Paint Technology
Total Degree Map Credits
60
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	15	0

Requirement Select
- ACP100 - Introduction to Coatings & Paint Technology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ACP145 - Environmental Health and Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- AVC104 - Quality Control Concepts

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC105 - Aircraft Familiarization

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC107 - Fundamentals for Aerospace Manufacturing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC112 - Blueprint Reading

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- AVC120 - Introduction to Sealing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC140 - Electrical Bonding & Grounding

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MCD106 - Precision Measuring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	13	0

Requirement Select
- ACP101 - Surface Preparation & Coatings

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- ACP121 - Surface Preparation & Coatings II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	6	0

Requirement Select
- ACP104 - Specialized Coatings Processes

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	13	0

Requirement Select
- ACP102 - Performance & Durability of Coatings

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ACP106 - Aerospace Coatings & Materials

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ACP124 - Specialized Coatings Processes II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	13	0

Requirement Select
- ACP103 - Color Technology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- ACP105 - Specialized Detailing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- ACP111 - Technical Co-Operative Project

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	180
Clinical	-
Criticality	No

Requirement Select

- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-ALT_FUEL - Alternative Fuel Vehicle Maintenance & Advanced Electronics, AAS

Overview

Department(s)
Applied Technologies

Degree Designation
Associate of Applied Science

Catalog Full Description
The Alternative Fuel Maintenance & Advanced Electronics program will prepare students to apply technical knowledge and skills to the maintenance of alternative fuel vehicles. Instruction will include, electrical vehicles, liquefied petroleum gas (LPG) vehicles, compressed natural gas (CNG) vehicles, hybrid fuel technology, electrical and electronic systems, engine performance, diagnosis and repair, and conversion/installation. The Alternative Fuel Maintenance & Advanced Electronics program also allows students to gain skills and knowledge to accurately diagnose, repair, and service various automotive vehicles. The program includes classroom and lab instruction in safety, electrical and electronic systems, suspension and steering, engine performance, manual drive train and axles, heating and air conditioning, engine repair, and brakes. Third-Party Credentialing has become an excellent way to display the knowledge and skills acquired in a program. Students have the opportunity to earn credentials while learning to operate wheel service, wheel alignment, brake service and diagnostic equipment from several different manufacturers. Additionally, students have the opportunity to earn student ASE certifications as a part of the program.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Utilize equipment in accordance with all regulations and manufacturer requirements

Name
Demonstrate knowledge and apply practice of Government regulations and Industry safety

Name
Demonstrate proficiency in the use of industry approved diagnostic equipment to analyze and diagnose alternative fuel vehicle systems

Name
Demonstrate the ability to service and repair integrated electronic systems and components

Name
Diagnose and repair brake system components

Name
Diagnose and repair general drive train concerns

Name
Perform general transmission and transaxle diagnosis

Name
Service and repair heating and air conditioning systems associated with alternative fuel vehicles in accordance with federal, state and local guidelines

Name
Interpret and diagnose battery concerns in alternative fuel vehicles

Program Costs
Alternative Fuel Vehicle Maintenance & Advanced Electronics, AAS - $14,628.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211

Requirements

Simple Requirements

Program Requirements

Alternative Fuel Vehicle Maintenance & Advanced Electronics, AAS

Type
Completion Requirement

Alternative Fuel Vehicle Maintenance & Advanced Electronics Requirements

Complete ALL of the following Courses:
- AFV110 - Electrical I - 3 Credits
- AFV120 - Electrical II - 3 Credits
- AFV130 - Suspension and Steering I - 3 Credits
- AFV135 - Intro to Alternative Fuels - 3 Credits
- AFV140 - Engine Repair - 4 Credits
- AFV145 - Hybrid Systems & Maintenance - 3 Credits
- AFV150 - Electric/Fuel Cell Technology - 1 Credits
- AFV155 - High Volt Battery Tech & Mgmt - 3 Credits
- AFV160 - Brakes I - 3 Credits
- AFV165 - Introduction to CNG and LPG - 1 Credits
- AFV170 - Computer Systems for Alt Fuels - 3 Credits
- AFV175 - Automatic Transmission Repair - 4 Credits
- AFV180 - Heating & Air Conditioning - 4 Credits
- AFV206 - PowerTrain Systems - 4 Credits
- AFV225 - Electrical III - 2 Credits
- TAS160 - Transportation Industry Safety - 2 Credits
- ENG101 - Composition I - 3 Credits

General Education Requirement

Earn at least 3 credits from the following:
- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:
- Humanities Elective

General Education Requirement

Earn at least 3 credits from the following:
- Math Elective

General Education Requirement

Earn at least 3 credits from the following:
- Social Sciences Elective

Entry Requirements
- 16 years of age or older
- Meet entrance exam requirements for general education requirements
- Complete college admissions documentation

Degree Maps

Degree Map Name
Alternative Fuel Maintenance & Advanced Electronics, AAS
Total Degree Map Credits
61
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	23	0

Requirement Select
- AFV110 - Electrical I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AFV135 - Introduction to Alternative Fuels

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AFV140 - Engine Repair

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AFV160 - Brakes I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AFV180 - Heating & Air Conditioning

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AFV206 - PowerTrain Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- TAS160 - Transportation Industry Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	25	0

Requirement Select
- AFV120 - Electrical II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AFV130 - Suspension and Steering I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AFV145 - Hybrid Systems & Maintenance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AFV155 - High Voltage Battery Technology & Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AFV170 - Computer Systems for Alternative Fuels

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AFV175 - Automatic Transmission Repair

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	13	0

Requirement Select
- AFV150 - Electric/Fuel Cell Technology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- AFV165 - Introduction to CNG and LPG Conversion, Installation & Maintenance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AFV225 - Electrical III

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-APP_TECH - Applied Technologies, AAS

Overview

Department(s)
Professional Studies

Degree Designation
Associate of Applied Science

Catalog Full Description
The Applied Technologies Associate of Applied Science (AAS) degree serves as WSU Tech's flexible, institution-approved option for awarding a technical associate degree when a student's coursework spans multiple disciplines. To complete this degree, students must earn a minimum of 45 technical credit hours drawn from at least two distinct technical fields, with at least 15 credit hours in each discipline, and a minimum of 15 credit hours of general education for a total not to exceed 68 credit hours.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Possess an ethical foundation for policing modern society.

Name
Comprehend contemporary theories of policing.

Name
Understand the historical development of the police.

Name
Develop technical skills in investigating and documenting crimes.

Name
Articulate the relationship between the police and the community they serve.

Program Costs
Technical Studies: Criminal Justice/Business Administration, AAS - $10,398.00

Technical Studies: Criminal Justice/EMS, AAS - $12,983.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Technical Studies: Criminal Justice/Business Administration, AAS

Type
Completion Requirement

Technical Studies: Criminal Justice/Business Administration Requirements

Complete ALL of the following Courses:

- CRJ101 - Intro to Criminal Justice - 3 Credits
- CRJ105 - Criminal Investigation - 3 Credits
- CRJ110 - Criminal Law - 3 Credits
- CRJ115 - Agency Administration - 3 Credits
- CRJ120 - Juvenile Delinquency & Justice - 3 Credits
- CRJ125 - Law Enforcement Ops & Proc - 3 Credits
- CRJ130 - Criminal Procedures - 3 Credits
- CRJ135 - Criminal Just Interview & Rpt - 3 Credits
- CRJ140 - Prof Responsibility Crim Just - 3 Credits
- CRJ145 - Corrections - 3 Credits
- CRJ155 - Policing Diverse Cultures - 3 Credits
- CRJ160 - Internship in Criminal Justice - 3 Credits
- CPR001 - CPR For Healthcare Providers - 1 Credits
- BUS104 - Introduction to Business - 3 Credits
- BUS121 - Business Communications - 3 Credits
- BUS125 - Business Law - 3 Credits
- BUS130 - Personal Finance - 3 Credits
- BUS200 - Principles of Management - 3 Credits
- ENG101 - Composition I - 3 Credits

General Education Requirement

Earn at least 3 credits from the following:

- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:

- Humanities Elective

General Education Requirement

Earn at least 3 credits from the following:

- Math Elective

General Education Requirement

Earn at least 3 credits from the following:

- Social Sciences Elective

Technical Studies: Criminal Justice/EMS, AAS

Type
Completion Requirement

Technical Studies: Criminal Justice/EMS Requirements

Complete ALL of the following Courses:

- CRJ101 - Intro to Criminal Justice - 3 Credits
- CRJ105 - Criminal Investigation - 3 Credits
- CRJ110 - Criminal Law - 3 Credits
- CRJ115 - Agency Administration - 3 Credits
- CRJ120 - Juvenile Delinquency & Justice - 3 Credits
- CRJ125 - Law Enforcement Ops & Proc - 3 Credits
- CRJ130 - Criminal Procedures - 3 Credits
- CRJ135 - Criminal Just Interview & Rpt - 3 Credits
- CRJ140 - Prof Responsibility Crim Just - 3 Credits
- CRJ145 - Corrections - 3 Credits
- CRJ155 - Policing Diverse Cultures - 3 Credits
- CRJ160 - Internship in Criminal Justice - 3 Credits
- CPR001 - CPR For Healthcare Providers - 1 Credits
- EMS105 - Emergency Medical Technician - 12 Credits
- EMS115 - Tactical Medicine - 3 Credits
- ENG101 - Composition I - 3 Credits

General Education Requirement

Earn at least 3 credits from the following:

- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:

- Humanities Elective

General Education Requirement

Earn at least 3 credits from the following:

- Math Elective

General Education Requirement

Earn at least 3 credits from the following:

- Social Sciences Elective

Entry Requirements

Be 17 years of age or older
Complete the Accuplacer entry exams with minimum scores of 60 in Reading, 56 in Sentence Skills and 35 in Math

Degree Maps

Degree Map Name
Technical Studies: Criminal Justice/Emergency Medical Services, AAS
Total Degree Map Credits
67
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	15	0

Requirement Select

- CRJ101 - Introduction to Criminal Justice

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ110 - Criminal Law

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ105 - Criminal Investigation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ140 - Professional Responsibility in Criminal Justice

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ145 - Corrections

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- CPR001 - CPR For Healthcare Providers

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	13	0

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	12	0

Requirement Select
- EMS105 - Emergency Medical Technician

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	12
Progress Credits	-
Contact Hours	225
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	12	0

Requirement Select
- CRJ115 - Agency Administration

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ120 - Juvenile Delinquency and Justice

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ125 - Law Enforcement Operations and Procedures

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- EMS115 - Tactical Medicine

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	15	0

Requirement Select
- CRJ130 - Criminal Procedures

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ135 - Criminal Justice Interview and Report Writing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ155 - Policing Diverse Cultures

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ160 - Internship in Criminal Justice

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

Degree Map Name
Technical Studies: Criminal Justice/Business Administration, AAS
Total Degree Map Credits
67
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	15	0

Requirement Select
- CRJ101 - Introduction to Criminal Justice

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ110 - Criminal Law

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ140 - Professional Responsibility in Criminal Justice

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- BUS104 - Introduction to Business

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	16	0

Requirement Select
- CRJ105 - Criminal Investigation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ130 - Criminal Procedures

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ145 - Corrections

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- BUS121 - Business Communications

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CPR001 - CPR For Healthcare Providers

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	3	0

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	15	0

Requirement Select
- CRJ115 - Agency Administration

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ120 - Juvenile Delinquency and Justice

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ125 - Law Enforcement Operations and Procedures

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- BUS125 - Business Law

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- BUS130 - Personal Finance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	18	0

Requirement Select
- CRJ135 - Criminal Justice Interview and Report Writing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ155 - Policing Diverse Cultures

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ160 - Internship in Criminal Justice

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- BUS200 - Principles of Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-AUTO_ENG - Automation Engineer Technology, AAS

Overview

Department(s)
Manufacturing

Degree Designation
Associate of Applied Science

Catalog Full Description
The Automation Engineer Technology program at WSU Tech prepares students for careers in designing, maintaining, and improving automated systems used in manufacturing and industrial environments. Students gain hands-on experience in areas such as electrical control systems, programmable logic controllers (PLCs), robotics, motor control, fluid power, and process control. The program emphasises practical skills that allow graduates to install, troubleshoot, and optimise automation equipment across a wide range of industries. Students will round off their educational experience by completing general education courses in five areas of study including mathematics, humanities, social sciences, English, and communications. The WSU Tech Automation Engineer Technology program is aligned with the National Center for Education Statistics CIP Code 15.0406: A program that prepares individuals to apply basic engineering principles and technical skills in support of engineers and other professionals engaged in developing, installing, calibrating, modifying and maintaining automated systems. Includes instruction in computer systems; electronics and instrumentation; programmable logic controllers (PLCs); electric, hydraulic and pneumatic control systems; actuator and sensor systems; process control; robotics; applications to specific industrial tasks; and report preparation.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Apply principles of electronics, fluid power, and controls to the design, operation, and maintenance of automated systems.

Name
Apply problem solving and critical thinking skills to troubleshoot automation and controls systems.

Name
Demonstrate proper techniques and practices in the assembly, repair, installation and maintenance of automation and controls systems.

Name
Demonstrate proficiency in programming, configuring, and integrating programmable logic controllers (PLCs), robotics, and motion control systems.

Name
Analyze automated system performance data to identify inefficiencies, diagnose root causes, and recommend improvements for reliability, safety, and productivity.

Name
Apply safe and approved practices in the workplace.

Program Costs
Automation Engineer Technology, AAS - $16,443.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211

Requirements

Simple Requirements

Program Requirements

Automation Engineer Technology, AAS

Type
Completion Requirement

Automation Engineer Technology Requirements

Complete ALL of the following Courses:
- AEN105 - Industrial Robotics - 3 Credits
- AEN109 - Programmable Logic Ctrlr (PLC) - 3 Credits
- AEN111 - Foundations of Manufacturing - 2 Credits
- AEN115 - Industrial Safety - 1 Credits
- AEN116 - Fundamentals of Motor Controls - 3 Credits
- AEN117 - Variable Speed Motor Control - 3 Credits
- AEN122 - AC/DC Circuits - 4 Credits
- AEN131 - Ind Prog Logic Controls (PLC) - 3 Credits
- AEN132 - Industrial Process Control - 3 Credits
- AEN137 - Industrial Schematics - 2 Credits
- AEN143 - Electrical System Troubleshoot - 3 Credits
- AEN145 - Actuators & Sensors - 3 Credits
- AEN147 - Industrial Fluid Power - 3 Credits
- AEN150 - Manufacturing Equipment & Tool - 2 Credits
- AEN152 - Predictive Maintenance - 2 Credits
- AEN157 - Preventative Maintenance - 2 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- ENG101 - Composition I - 3 Credits
- SPH111 - Interpersonal Communication - 3 Credits

Automation Engineer Technology Elective

Earn at least 3 credits from the following:
- AEN146 - Motion Control - 3 Credits
- ROB120 - IoT: Internet of Things - 3 Credits

General Education Requirement

Complete ANY of the following Course Sets:
- Humanities Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Math Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Social Sciences Elective

Entry Requirements
Be 16 years of age

Complete all the college admissions documents

Degree Maps

Degree Map Name
Automation Engineer Technology, AAS
Total Degree Map Credits
61
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	16	0

Requirement Select
- AEN111 - Foundations of Manufacturing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- AEN115 - Industrial Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AEN117 - Variable Speed Motor Control

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AEN122 - AC/DC Circuits

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- AEN150 - Manufacturing Equipment and Tools

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	17	0

Requirement Select
- AEN109 - Programmable Logic Controllers (PLC)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AEN116 - Fundamentals of Motor Controls

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AEN131 - Industrial Programmable Logic Controls (PLC)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- AEN137 - Industrial Schematics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- AEN143 - Electrical System Troubleshooting

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	12	0

Requirement Select
- AEN105 - Industrial Robotics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AEN147 - Industrial Fluid Power

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	16	0

Requirement Select
- AEN132 - Industrial Process Control

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- AEN145 - Actuators & Sensors

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- AEN152 - Predictive Maintenance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- AEN157 - Preventative Maintenance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- AEN146 - Motion Control: Servos & Drives

  OR
- ROB120 - IoT Fundamentals: Introduction to the Internet of Things

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45 - 75
Clinical	-
Criticality	No

Requirement Select

- SPH111 - Interpersonal Communication

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-AUT_TECH - Automotive Technology, AAS

Overview

Department(s)
Applied Technologies

Degree Designation
Associate of Applied Science

Catalog Full Description
This program allows students to gain skills and knowledge to accurately diagnose, repair and service various automotive vehicles. Program includes classroom and lab instruction in safety, electrical and electronic systems, suspension and steering, engine performance, manual drive train and axles, heating and air conditioning, engine repair and brakes. The program has Automotive Service Excellence Foundation accreditation. Students will round off their educational experience by completing 15 credits of general education courses in five areas of study including mathematics, humanities, and social sciences, English and communications. The WSU tech Automotive Technology program is aligned with the National Center for education statistics CIP code 47.0604: Automobile/Automotive Mechanics Technology/Technician program that prepares individuals to apply technical knowledge and skills to repair, service, and maintain all types of automobiles. Includes instruction in brake systems, electrical systems, engine performance, engine repair, suspension and steering, automatic and manual transmissions and drive trains, and heating and air condition systems.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Demonstrate the ability to service and repair integrated electronic systems and components

Name
Perform diagnosis and repair on brake system components

Name
Diagnose and repair suspension and steering systems

Name
Diagnose and repair general drive train concerns

Name
Perform general transmission and transaxle diagnosis

Name
Service and repair heating and air conditioning systems according to state, local and federal guidelines

Name
Interpret and diagnose engine concerns

Name
Verify and repair engine concerns

Name
Diagnose and repair fuel-injection and emissions system

Name
Perform preventative maintenance inspections and document vehicle conditions using industry-standard tools and procedures

Name
Demonstrate safe work practices, proper tool/equipment usage, and compliance with environmental and workplace safety regulations.

Program Costs
Automotive Technology, AAS - $14,628.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211

Requirements

Simple Requirements

Program Requirements

Automotive Technology, AAS

Type
Completion Requirement

Automotive Technology Requirements

Complete ALL of the following Courses:

- TAS121 - Engine Repair - 4 Credits
- TAS124 - Electrical I - 3 Credits
- TAS125 - Electrical II - 3 Credits
- TAS127 - Automatic Transmission Repair - 4 Credits
- TAS128 - Heating & Air Conditioning - 4 Credits
- TAS131 - Engine Performance I - 3 Credits
- TAS132 - Engine Performance II - 3 Credits

- TAS133 - Brakes I - 3 Credits
- TAS134 - Brakes II for Automotive - 1 Credits
- TAS135 - Computer Systems for Auto - 3 Credits
- TAS136 - Suspension and Steering I - 3 Credits
- TAS137 - Suspension and Steering II - 2 Credits
- TAS150 - Specialized Training - 2 Credits
- TAS160 - Transportation Industry Safety - 2 Credits
- TAS206 - PowerTrain Systems - 4 Credits
- TAS225 - Electrical III - 2 Credits
- ENG101 - Composition I - 3 Credits

General Education Requirement

Earn at least 3 credits from the following:

- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:

- Humanities Elective

General Education Requirement

Earn at least 3 credits from the following:

- Math Elective

General Education Requirement

Earn at least 3 credits from the following:

- Social Sciences Elective

Entry Requirements

- Be 16 years of age or older
- Meet entrance exam requirements for general education requirements
- Complete college admissions documentation

Degree Maps

Degree Map Name
Automotive Technology, AAS
Total Degree Map Credits
61
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	24	0

Requirement Select

- TAS121 - Engine Repair

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- TAS127 - Automatic Transmission Repair

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- TAS128 - Heating & Air Conditioning

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- TAS133 - Brakes I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- TAS136 - Suspension and Steering I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- TAS160 - Transportation Industry Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- TAS206 - PowerTrain Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	23	0

Requirement Select
- TAS124 - Electrical I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- TAS125 - Electrical II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- TAS131 - Engine Performance I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- TAS132 - Engine Performance II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- TAS135 - Computer Systems for Automotive

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- TAS137 - Suspension and Steering II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	14	0

Requirement Select
- TAS134 - Brakes II for Automotive

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- TAS150 - Specialized Training

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- TAS225 - Electrical III

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-AVIA_MFG - Aerospace Manufacturing Technology, AAS

Overview

Department(s)
Aviation

Degree Designation
Associate of Applied Science

Catalog Full Description
Aerospace Manufacturing Technology associate degree program is a sequence of courses designed to produce an assembly mechanic with a well-rounded understanding of the aerospace industry and the depth and breadth of knowledge which comes from general education courses. In this program students will complete a core set of foundational aviation courses and then move on to master the high demand skillset associated with an Aerospace Assembly Mechanic. The coursework will prepare students to complete the certification for Aerospace Core and Aerospace Assembly Mechanic endorsed by the National Association of Manufacturers (NAM).

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Measure aircraft components using appropriate precision instrumentation

Name
Install aircraft fasteners in a variety of aviation materials including sheet metal

Name
Demonstrate the appropriate safety procedures and process used in building aircraft components

Name
Utilize engineering drawings to assemble aircraft component

Name
Assemble sheetmetal aircraft components

Name
Identify the basic procedures and processes associated with aviation manufacturing

Name
Demonstrate an understanding of the role of quality assurance systems in aviation manufacturing

Name
Students will demonstrate inspection techniques utilized in aircraft systems and assemblies

Name
Demonstrate electrical bonding techniques utilized in aircraft systems and assemblies

Name
Apply knowledge of fractions, decimals, and percentages to solve real-world problems

Name
Execute proactive employability strategies to develop and manage a professional career

Program Costs
Aerospace Manufacturing Technology, AAS - $14,880.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Aerospace Manufacturing Technology, AAS

Type
Completion Requirement

Aerospace Manufacturing Technology Requirement

Earn at least 45 credits from the following:
- Aerospace Manufacturing Technology Elective

General Education Requirement

Complete ALL of the following Courses:
- ENG101 - Composition I - 3 Credits

General Education Requirement

Earn at least 3 credits from the following:

- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:

- Humanities Elective

General Education Requirement

Earn at least 3 credits from the following:

- Math Elective

General Education Requirement

Earn at least 3 credits from the following:

- Social Sciences Elective

Entry Requirements

- Be 16 years of age or older
- Complete all admissions documents

Degree Maps

Degree Map Name
Aerospace Manufacturing Technology, AAS
Total Degree Map Credits
60
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	18	0

Requirement Select

- Aerospace Manufacturing Technology Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	15
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select

- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	18	0

Requirement Select

- Aerospace Manufacturing Technology Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	15
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select

- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	6	0

Requirement Select

- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	18	0

Requirement Select

- Aerospace Manufacturing Technology Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	15
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select

- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-AVIONICS - Avionics Technology, AAS

Overview

Department(s)
Aviation

Degree Designation
Associate of Applied Science

Catalog Full Description
The Avionics Technology associate degree program prepares students to work in the field of avionics technology. Learning opportunities develop academic, technical and professional knowledge and skills required for job acquisition. The program emphasizes a combination of aircraft and avionics theory and practical application necessary for successful employment. Program graduates receive an Avionics Technology technical certificate that qualifies them as avionics technicians. Students will round off their educational experience by completing 15 credits of general education courses in five areas of study including mathematics, humanities, social sciences, English and communications.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Apply FAA rules and regulations to avionics tasks

Name
Apply safety regulations to all avionics tasks

Name
Demonstrate line testing methodologies on avionics components

Name
Fabricate and repair wiring harness in accordance to FAA guidelines

Name
Analyze the operation of avionics systems

Name
Find and repair malfunctions in various avionics systems

Program Costs
Avionics Technology, AAS - $14,615.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location

WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Avionics Technology, AAS

Type
Completion Requirement

Avionics Technology Requirements

Complete ALL of the following Courses:

- AVT118 - Fundamentals of Flight - 3 Credits
- AVT128 - Electricity & Electronics I - 4 Credits
- AVT138 - Electricity and Electronics II - 4 Credits
- AVT146 - Avionics - 3 Credits
- AVT156 - Wiring & Cannon Plug Lab - 2 Credits
- AVT166 - Advanced Wiring - 3 Credits
- AVT175 - Troubleshooting Essentials - 3 Credits
- AVT185 - UAS Operations - 3 Credits
- AVT195 - Soldering - 2 Credits
- AVT210 - Comm, Nav & Surveillance Sys I - 5 Credits
- AVT220 - Comm, Nav & Surveillance II - 4 Credits
- AVT230 - Avionics Sys & Troubleshooting - 5 Credits
- AVT240 - Aircraft & Elec for NCATT Apps - 4 Credits
- ENG101 - Composition I - 3 Credits

General Education Requirement

Earn at least 3 credits from the following:

- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:

- Humanities Elective

General Education Requirement

Earn at least 3 credits from the following:

- Math Elective

General Education Requirement

Earn at least 3 credits from the following:

- Social Sciences Elective

Entry Requirements

- 16 Years of age
- Meet the required placement score for college algebra (ALEKS 75)
- Complete College admissions documents

Degree Maps

Degree Map Name
Avionics Technology, AAS
Total Degree Map Credits
60
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	14	0

Requirement Select

- AVT118 - Fundamentals of Flight

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- AVT128 - Electricity & Electronics I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select

- AVT138 - Electricity and Electronics II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select

- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	14	0

Requirement Select
- AVT146 - Avionics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- AVT156 - Wiring & Cannon Plug Lab

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AVT166 - Advanced Wiring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AVT175 - Troubleshooting Essentials

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	8	0

Requirement Select
- AVT185 - UAS Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- AVT195 - Soldering

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	12	0

Requirement Select

- AVT210 - Communication, Navigation & Surveillance Systems I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select

- AVT220 - Communication, Navigation & Surveillance Systems II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select

- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	12	0

Requirement Select

- AVT230 - Avionics Systems & Troubleshooting

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select

- AVT240 - Aircraft and Electronics for NCATT Applications

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-BUS_ADMI - Business Administration, AAS

Overview

Department(s)
Professional Studies

Degree Designation
Associate of Applied Science

Catalog Full Description
The Business Administration program is designed to provide students with the skills necessary for entry-level employment or advancement within a variety of career fields within the public and private sectors. The two-year program will prepare students for career opportunities as department and division managers, product managers, production line supervisors, assistant store managers, and entry-level banking and sales representatives. Students will receive training in the areas of accounting, marketing, management, economics, and finance. Students will round off their educational experience by completing general education courses in mathematics, social sciences, English, communications, and humanities.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Students will demonstrate academic, technical, and professional knowledge and skills required for job acquisition in Business Administration

Name
Students will demonstrate the ability to use critical thinking skills in solving business related problems

Name
Students will demonstrate a knowledge of current United States business trends

Name
Students will demonstrate the ability to compile and interpret basic financial statements

Name
Students will demonstrate the ability to lead teams

Name
Students will demonstrate a basic knowledge of legal issues effecting United States businesses

Name
Students will demonstrate a knowledge of global economic trends and their effects on United States businesses

Program Costs
Business Administration, AAS - $9,200.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Business Administration, AAS

Type
Completion Requirement

Business Adminstration Requirements

Complete ALL of the following Courses:

- BUS104 - Introduction to Business - 3 Credits
- BUS121 - Business Communications - 3 Credits
- BUS130 - Personal Finance - 3 Credits
- BUS140 - Principles of Marketing - 3 Credits
- BUS200 - Principles of Management - 3 Credits
- ACC130 - Managerial Accounting - 3 Credits
- ACC160 - Principles of Accounting I - 3 Credits
- ACC170 - Principles of Accounting II - 3 Credits
- ECO105 - Principles of Macroeconomics - 3 Credits
- ECO110 - Principles of Microeconomics - 3 Credits
- ENG101 - Composition I - 3 Credits
- ENG120 - Composition II - 3 Credits
- ENT110 - Intro to Entrepreneurship - 3 Credits
- MTH112 - College Algebra - 3 Credits
- MTH120 - Elementary Statistics - 3 Credits
- PHL115 - Logic - 3 Credits
- PSY101 - General Psychology - 3 Credits
- SPH101 - Public Speaking - 3 Credits

General Education Requirement

Earn at least 3 credits from the following:

- Humanities Elective

Business Administration Requirement

Earn at least 3 credits from the following:

- Business Administration Elective

Entry Requirements
Be 16 years of age or older, Show documentation of high school graduation or satisfaction of high school equivalency prior to graduation from the program, Meet entrance exam requirements for the required English and Math courses.

Degree Maps

Degree Map Name
Business Administration, AAS
Total Degree Map Credits
60
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	15	0

Requirement Select
- BUS130 - Personal Finance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- BUS104 - Introduction to Business

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PHL115 - Logic

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	15	0

Requirement Select
- ACC160 - Principles of Accounting I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- BUS121 - Business Communications

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ENG120 - Composition II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- MTH112 - College Algebra

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PSY101 - General Psychology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	15	0

Requirement Select
- ACC170 - Principles of Accounting II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- BUS140 - Principles of Marketing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ECO105 - Principles of Macroeconomics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ENT110 - Introduction to Entrepreneurship

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- MTH120 - Elementary Statistics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	15	0

Requirement Select
- ACC130 - Managerial Accounting

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- BUS200 - Principles of Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ECO110 - Principles of Microeconomics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Business Administration Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- SPH101 - Public Speaking

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-BUS_OPMG - Operations Management and Supervision, AAS

Overview

Department(s)
Professional Studies

Degree Designation
Associate of Applied Science

Catalog Full Description
The Business Administration program is designed to provide students with the skills necessary for entry-level employment or advancement within a variety of career fields within the public and private sectors. The two-year program will prepare students for career opportunities as department and division managers, product managers, production line supervisors, assistant store managers, and entry-level banking and sales representatives. Students will receive training in the areas of accounting, marketing, management, economics, and finance. Students will round off their educational experience by completing general education courses including mathematics, social sciences, English, communications, and humanities.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Students will demonstrate academic, technical, and professional knowledge and skills required for job acquisition in Business Administration

Name
Students will demonstrate the ability to use critical thinking skills in solving business related problems

Name
Students will demonstrate a knowledge of current United States business trends

Name
Students will demonstrate the ability to compile and interpret basic financial statements

Name
Students will demonstrate the ability to lead teams

Name
Students will demonstrate a basic knowledge of legal issues effecting United States businesses

Name
Students will demonstrate a knowledge of global economic trends and their effects on United States businesses

Program Costs
Operations Management and Supervision, AAS- $9,662.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Operations Management and Supervision, AAS

Type
Completion Requirement

Operations Management and Supervision Requirements

Complete ALL of the following Courses:

- OPM105 - Op Mgmt for Org Success - 3 Credits
- OPM115 - Introduction to Project Mgmt - 3 Credits
- ACC160 - Principles of Accounting I - 3 Credits
- ACC170 - Principles of Accounting II - 3 Credits
- BUS104 - Introduction to Business - 3 Credits
- BUS125 - Business Law - 3 Credits
- BUS140 - Principles of Marketing - 3 Credits
- BUS200 - Principles of Management - 3 Credits
- BUS210 - Principles of Leadership - 3 Credits
- ENG101 - Composition I - 3 Credits
- ECO105 - Principles of Macroeconomics - 3 Credits
- ECO110 - Principles of Microeconomics - 3 Credits
- HIS120 - United States since 1865 - 3 Credits
- LEN100 - Lean for Operations - 3 Credits
- LGM101 - Principles Logistics & Supply - 3 Credits
- MTH112 - College Algebra - 3 Credits
- PSY101 - General Psychology - 3 Credits
- SPH101 - Public Speaking - 3 Credits

General Education Requirement

Earn at least 3 credits from the following:

- Humanities Elective

General Education Requirement

Earn at least 5 credits from the following:

- Science Elective

Entry Requirements

- 16 years of age
- Meet entrance requirements for English and Math courses
- Complete college admissions documentation

Degree Maps

Degree Map Name
Operations Management and Supervision, AAS
Total Degree Map Credits
62
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	15	0

Requirement Select
- BUS104 - Introduction to Business

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- HIS120 - United States History since 1865

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- LGM101 - Principles of Logistics and Supply Chain Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	15	0

Requirement Select
- OPM105 - Operations Management for Organizational Success

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ACC160 - Principles of Accounting I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- BUS125 - Business Law

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- MTH112 - College Algebra

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PSY101 - General Psychology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	5	0

Requirement Select
- Science Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	12	0

Requirement Select
- ACC170 - Principles of Accounting II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- BUS140 - Principles of Marketing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ECO105 - Principles of Macroeconomics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- SPH101 - Public Speaking

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	15	0

Requirement Select

- OPM115 - Introduction to Project Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- BUS200 - Principles of Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- ECO110 - Principles of Microeconomics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- LEN100 - Lean for Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- BUS210 - Principles of Leadership

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-CARP_ENT - Construction Technology

Overview

Department(s)
Applied Technologies

Degree Designation
Associate of Applied Science

Catalog Full Description
The Construction Technology program prepares students in the basic skills necessary for all occupations in construction. Students begin their studies in nine modules, which include; safety, math materials, hand and power tools, construction drawings, basic rigging, communication and employability skills. Student then advance to courses with provide hands- on application of technical knowledge and skills. In these courses students apply all aspects of carpentry and will receive instruction in technical mathematics, framing construction materials and selection; job estimating; blueprint reading, foundations and roughing -in, finish carpentry techniques and applicable codes and standards. The WSU Tech Construction Technology program is aligned with the National Center for Education Statistics CIP code 46.0201: Carpentry/Carpenter prepares individuals to apply technical knowledge and skills to lay out, cut, fabricate, erect, install, and repair wooden structures and fixtures, using hand and power tools. Includes instruction in technical mathematics, framing, construction materials and selection, job estimating, blueprint reading, foundations and roughing-in, finish carpentry techniques, and applicable codes and standards.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Identify various types of building materials and describe their uses.

Name
List safety precautions associated with building materials.

Name
Describe the proper method of handling and storing building materials.

Name
Explain how to calculate the quantities of lumber, panel, and concrete products using industry-standard methods.

Name
Describe the fasteners, anchors, and adhesives used in construction and explain their uses.

Name
Identify the career and entrepreneurial opportunities within the carpentry trade.

Name
Identify the skills, responsibilities, and characteristics needed to be a successful carpenter.

Name
Summarize how to be connected to the industry through an organization like SkillsUSA.

Name
Explain the importance of safety in the construction industry, and describe the obligations of the contractor, subcontractors, and you to ensure a safe work environment.

Name
Read and interpret specifications and drawings to determine floor system requirements.

Name
Identify the different types of framing systems.

Name
Identify floor system components.

Name
Estimate the amount of material needed for a floor assembly.

Name
Identify the components of a wall system.

Name
Describe the procedure for laying out a wood frame wall, including plates, corner posts, door and window openings, partition Ts, bracing, and fire-stops.

Name
Describe the correct procedure to estimate the materials required to frame walls.

Name
Identify alternative wall systems.

Program Costs
Construction Technology, AAS $14,411.00

Cost does not include online fees, books or tools. Financial assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211, CTEC + WSU Tech – 1301 E. 27th Terrace, Pittsburg, KS 66762

Requirements

Simple Requirements

Program Requirements

Construction Technology, AAS

Type
Completion Requirement

Construction Technology Requirements

Complete ALL of the following Courses:
- CCP100 - Introductory Craft Skills - 3 Credits
- CCP108 - Construction Basics - 2 Credits
- CCP112 - Carpentry I - 3 Credits
- CCP122 - Carpentry II - 4 Credits
- CCP124 - Exterior Envelope - 3 Credits
- CCP128 - Interior Systems - 3 Credits
- CCP134 - Intro to Concrete Construction - 3 Credits
- CCP138 - Advanced Framing - 4 Credits
- CCP144 - Advanced Finish and Trim - 4 Credits
- CCP155 - FEMA Doors & Hardware - 2 Credits
- CCP172 - Fundamentals Crew Leadership - 2 Credits
- CCP180 - Cabinet Installation - 2 Credits
- SAF101 - Safety Orientation/OSHA 10 - 1 Credits
- ENG101 - Composition I - 3 Credits

Construction Technology Requirement

Earn at least 9 credits from the following:
- Construction Technology Elective

General Education Requirement

Earn at least 3 credits from the following:
- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:
- Humanities Elective

General Education Requirement

Earn at least 3 credits from the following:
- Math Elective

General Education Requirement

Earn at least 3 credits from the following:
- Social Sciences Elective

Entry Requirements
- Be 16 years of age or older
- Meet entrance exam requirements for general education requirements
- Complete college admissions documentation

Degree Maps

Degree Map Name
Construction Technology, AAS
Total Degree Map Credits
60
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	19	0

Requirement Select
- CCP100 - Introductory Craft Skills

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CCP108 - Construction Basics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- CCP112 - Carpentry I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- CCP122 - Carpentry II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- CCP124 - Exterior Envelope

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- SAF101 - Safety Orientation/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	19	0

Requirement Select
- CCP128 - Interior Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- CCP134 - Introduction to Concrete Construction

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CCP138 - Advanced Framing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CCP144 - Advanced Finish and Trim

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CCP155 - FEMA Doors & Hardware

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	10	0

Requirement Select
- CCP172 - Fundamentals of Crew Leadership

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- CCP180 - Cabinet Installation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Construction Technology Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Construction Technology Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	12	0

Requirement Select
- Construction Technology Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-CCMA_APP - Construction Technology Cabinet Maker Apprenticeship, AAS

Overview

Department(s)
Apprenticeship & Appl Learning

Degree Designation
Associate of Applied Science

Catalog Full Description
The Construction Technology Cabinet Maker Apprenticeship Apprenticeship Associate of Applied Science (AAS) degree is designed for individuals who have completed a registered apprenticeship program through an approved Plumber or Pipefitter training facility. Students receive 45 credits for prior learning based on their journeyman card and complete an additional 15 credit hours of general education to earn the degree. This program combines advanced technical training with foundational college coursework to support career growth and leadership opportunities in the skilled trades.

Program Level
Undergraduate

Effective Start Term
Fall 2025

Learning Outcomes

Name
Demonstrate advanced cabinet maker skills, safety practices, and problem-solving abilities consistent with the standards of a licensed journeyman as verified through completion of an approved apprenticeship program.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211

Requirements

Simple Requirements

Program Requirements

Construction Technology Cabinet Maker Apprenticeship, AAS

Type
Completion Requirement

Construction Technology Cabinet Maker Apprenticeship Requirements

Complete ALL of the following Courses:
- CCM225 - Con Tech Cabinet Maker App - 45 Credits
- ENG101 - Composition I - 3 Credits

General Education Requirement

Earn at least 15 credits from the following:
- Communication Elective
- Humanities Elective
- Math Elective
- Social Sciences Elective

- Science Elective

Entry Requirements

- Complete all admissions documentation
- Provide Cabinet Maker journeyman card
- Cabinet Maker transcript from approved training facility

Degree Maps

AAS-CFLA_APP - Construction Technology Floor Layer Apprenticeship, AAS

Overview

Department(s)
Apprenticeship & Appl Learning

Degree Designation
Associate of Applied Science

Catalog Full Description
The Construction Technology Floor Layer Apprenticeship Apprenticeship Associate of Applied Science (AAS) degree is designed for individuals who have completed a registered apprenticeship program through an approved Floor Layer training facility. Students receive 45 credits for prior learning based on their journeyman card and complete an additional 15 credit hours of general education to earn the degree. This program combines advanced technical training with foundational college coursework to support career growth and leadership opportunities in the skilled trades.

Program Level
Undergraduate

Effective Start Term
Fall 2025

Learning Outcomes

Name
Demonstrate advanced floor layer skills, safety practices, and problem-solving abilities consistent with the standards of a licensed journeyman as verified through completion of an approved apprenticeship program.

Program Costs
Construction Technology Floor Layer Apprenticeship - $2,025.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211

Requirements

Simple Requirements

Program Requirements

Construction Technology Floor Layer Apprenticeship, AAS

Type
Completion Requirement

Construction Technology Floor Layer Apprenticeship Requirement

Complete ALL of the following Courses:

- CFL225 - Con Tech Floor Layer App - 45 Credits
- ENG101 - Composition I - 3 Credits

General Education Requirement

Earn at least 15 credits from the following:

- Communication Elective
- Humanities Elective
- Math Elective
- Social Sciences Elective
- Science Elective

Entry Requirements

- Complete all admissions documentation
- Provide Floor Layer journeyman card
- Floor Layer transcript from approved training facility

Degree Maps

AAS-CLD_COMP - Cloud Computing/Cloud Application Development, AAS

Overview

Department(s)
Information Technology

Degree Designation
Associate of Applied Science

Catalog Full Description
Cloud based operations provide industries with enhanced up time and security as well as the ability to manage maintenance costs and scalability. In short, it is far more competitive to run applications on the cloud. In this hands-on learning path, students will start with the basic fundamental concepts of object-oriented programming, continuous integration continuous delivery, test-driven development, HTML/CSS/Web-Application development, cloud fundamentals, and multi-cloud development services. With these essential skills in place students will learn how to build a full-stack React web-application on Amazon Web Services (AWS); React is supported and maintained by Facebook for Facebook. With step-by-step guidance through the frontend and the backend students will cover all the different aspects of building their first full-stack React app on the cloud that will be accessible from any internet-facing device - including mobile devices. At the end of this learning path, students will convert their Reach application into a fully automated full-stack serverless cloud application that will be highly available, globally scalable, and on par with Facebook, Netflix, YouTube, or any other performant cloud application to date.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Demonstrate a proficiency in the fundamental concepts of computer programming.

Name
Demonstrate an understanding of the Software Development Life Cycle (SDLC).

Name
Exhibit an ability to develop a web application.

Name
Display an ability to design and develop cloud applications

Program Costs
Cloud Computing/Cloud Application Development, AAS - $14,515.00

Cost does not include online fees, books, or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Cloud Computing/Cloud Application Development, AAS

Type
Completion Requirement

Cloud Computer/Cloud Application Development Requirements

Complete ALL of the following Courses:

- CLD113 - Introduction to Python - 3 Credits
- CLD118 - Cloud Fundamentals - 3 Credits
- CLD121 - OOP (JavaScript) - 3 Credits
- CLD122 - Intro to Web Development - 3 Credits
- CLD126 - Test Driven Dvlmt (JavaScript) - 3 Credits
- CLD138 - OOP (Python) - 3 Credits
- CLD143 - Web App Dev I (HTML/CSS) - 3 Credits
- CLD152 - Web App Dev II (REACT) - 3 Credits
- CLD166 - Cloud App Dev I (REACT on AWS) - 3 Credits
- CLD168 - AWS Cloud Practitioner - 3 Credits
- CLD170 - Cloud App Dev II (Serverless) - 3 Credits
- CLD174 - Cloud Capstone - 3 Credits
  OR CLD175 - Info Technology Internship - 3 Credits
- ENG101 - Composition I - 3 Credits

Cloud Computing/Cloud Application Development Requirement

Earn at least 12 credits from the following:

- CLD129 - Progrm Foundations (Swift iOS) - 3 Credits
- CLD137 - C# Programming Language - 3 Credits
- CLD141 - Test Driven Develop (Python) - 3 Credits
- CLD147 - Website Production & Mgmt - 3 Credits
- CLD158 - Multi-Cloud Develop Services - 3 Credits
- CLD169 - Machine Learning and AI Fdn - 3 Credits
- INF105 - CompTIA A+ Core 1 - 3 Credits
- INF112 - Network Essentials - 3 Credits

General Education Requirement

Earn at least 3 credits from the following:

- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:

- Humanities Elective

General Education Requirement

Earn at least 3 credits from the following:

- Math Elective

General Education Requirement

Earn at least 3 credits from the following:

- Social Sciences Elective

Degree Maps

Degree Map Name
AAS Cloud Computing/Cloud Application Development
Total Degree Map Credits
63
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	15	0

Requirement Select

- CLD113 - Introduction to Python

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- CLD118 - Cloud Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- CLD138 - Object-Oriented Programming (Python)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- CLD168 - AWS Cloud Practitioner

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	15	0

Requirement Select
- CLD121 - Object-Oriented Programming (JavaScript)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CLD126 - Test Driven Development (JavaScript)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Cloud Computing Electives

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Cloud Computing Electives

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	9	0

Requirement Select
- CLD122 - Introduction to Web Development

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- Cloud Computing Electives

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	12	0

Requirement Select
- CLD143 - Web Application Development I (HTML/CSS)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CLD152 - Web Application Development II (REACT)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CLD166 - Cloud Application Development I (REACT on AWS)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CLD170 - Cloud Application Development II (Serverless REACT on AWS)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	12	0

Requirement Select
- CLD174 - Cloud Capstone

  OR
- CLD175 - Information Technology Internship

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90 - 135
Clinical	-
Criticality	No

Requirement Select
- Cloud Computing Electives

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select

- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select

- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-CLIM_ECT - Climate & Energy Control (HVAC), AAS

Overview

Department(s)
Applied Technologies

Degree Designation
Associate of Applied Science

Catalog Full Description
The Climate and Energy Control (HVAC) program prepares students for careers in both residential and commercial HVAC markets by offering technical training in electricity, heating, refrigeration, sheet metal fabrication, direct digital controls (DDC), and advanced HVAC applications. The program also includes an opportunity to obtain specialized skills in building automation. Designed for students who want to build on their existing Climate and Energy Control (HVAC) degree, Certificate C focuses on advanced building automation skills, including automation controls, building management systems, and data analytics for building performance. This program equips graduates with the technical expertise and industry-recognized credentials needed to succeed in an evolving and sustainable HVAC marketplace.he WSU Tech Climate and Energy Control (HVAC) program is aligned with the National Center for Education Statistics CIP code 47.0201: Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician prepares individuals to apply technical knowledge and skills to repair, install, service and maintain the operating condition of heating, air conditioning, and refrigeration systems. Includes instruction in diagnostic techniques, the use of testing equipment and the principles of mechanics, electricity, and electronics as they relate to the repair of heating, air conditioning and refrigeration systems.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Apply electrical theory to various electrical circuits

Name
Demonstrate knowledge of electrical components in various HVAC systems.

Name
Assess heating load and duct design

Name
Demonstrate proper brazing practices

Name
Apply control theory

Name
Troubleshoot and diagnose electrical circuits as they apply to HVAC/R Systsems

Name
Apply Knowledge of refrigeration theory and proper EPA practices

Program Costs
Climate & Energy Control (HVAC), AAS - $14,902.00

Climate & Energy Control (HVAC) - Automation, AAS - $15,914.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211

Requirements

Simple Requirements

Program Requirements

Climate & Energy Control (HVAC)

Type
Completion Requirement

Climate & Energy Control (HVAC)

Complete ALL of the following Courses:
- ACR112 - HVAC Fundamentals - 4 Credits
- ACR113 - Electrical Fundamentals - 4 Credits
- ACR116 - Workplace Skills - 1 Credits
- ACR117 - Intro Mechanical Refrigeration - 4 Credits
- ACR118 - Electrical Fundamentals II - 3 Credits
- ACR119 - Adv Electrical Theory for HVAC - 2 Credits
- ACR121 - Heating System Fundamentals - 3 Credits
- ACR122 - Heating System Fundamentals II - 3 Credits
- ACR123 - Heat Loads and Duct Sizing - 2 Credits
- ACR124 - Advanced Heating Systems - 3 Credits
- ACR126 - EPA 608 - 1 Credits
- ACR127 - Heat Pumps - 4 Credits
- ACR128 - Commercial HVAC - 4 Credits
- ACR129 - Commercial HVAC Lab - 4 Credits
- ACR140 - Sheet Metal Fabrication I - 3 Credits
- ENG101 - Composition I - 3 Credits
- SAF101 - Safety Orientation/OSHA 10 - 1 Credits

General Education Requirement

Earn at least 3 credits from the following:
- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:
- Humanities Elective

General Education Requirement

Earn at least 3 credits from the following:
- Math Elective

General Education Requirement

Earn at least 3 credits from the following:
- Social Sciences Elective

Entry Requirements
- Be 16 years of age or older
- Meet entrance exam requirements for general education requirements
- Complete college admissions documentation

Degree Maps

Degree Map Name
Climate & Energy Control (HVAC), AAS
Total Degree Map Credits
61
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	24	0

Requirement Select
- ACR112 - HVAC Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- ACR113 - Electrical Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- ACR116 - Workplace Skills

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- ACR117 - Intro to Mechanical Refrigeration

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- ACR121 - Heating System Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- ACR126 - EPA 608

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- ACR140 - Sheet Metal Fabrication I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- SAF101 - Safety Orientation/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	29	0

Requirement Select
- ACR118 - Electrical Fundamentals II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- ACR122 - Heating System Fundamentals II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ACR123 - Heat Loads and Duct Sizing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ACR124 - Advanced Heating Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- ACR127 - Heat Pumps

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- ACR128 - Commercial HVAC

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ACR129 - Commercial HVAC Lab

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	8	0

Requirement Select

- ACR119 - Advanced Electrical Theory for HVAC

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select

- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-COMPOSIT - Composite Technology, AAS

Overview

Department(s)
Aviation

Degree Designation
Associate of Applied Science

Catalog Full Description
This program prepares students to be successful in todays highly competitive world of aviation composite technologies. Supported by a solid background in composite theory, students will apply their knowledge in a state of the art composite laboratory at the National Center for Aviation Training. A well-rounded curriculum allows students hands-on experience in all the stages of the aircrafts life from design to production and repair. Coursework in the program includes CATIA, composite fabrication, composite repair and lean manufacturing. Students will complete their educational experience with general education courses in five areas of study including English, Communications, Humanities, Mathematics, and Social Sciences.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Students will be able to compare and contrast the materials and processes associated with the composites industry

Name
Students will be able to Fabricate composite components using the materials and processes associated with the composites industry.

Name
Students will be able to Repair composite components using the materials and processes associated with the composites industry

Name
Students will be able to perform basic NDI assessments on composite components using the equipment and processes associated with the NDI/ Composites industry

Program Costs
Composite Technology, AAS - $16,586.00

Cost does not include online fees, books, or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest combination of elective credits required.

Campus Location

WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Entry Requirements

- Be 18 years of age or older

Requirements

Simple Requirements

Program Requirements

Composite Technology, AAS

Type

Completion Requirement

Composite Technology Requirements

Complete ALL of the following Courses:

- CFT101 - Introduction To Composites - 2 Credits
- CFT106 - Composite Finish Trim - 2 Credits
- CFT107 - Composite Assembly - 2 Credits
- CFT130 - Composite Fab Methods/Applicat - 2 Credits
- CFT140 - Composite Inspection - 2 Credits
- CFT141 - Disassemble & Damage Removal - 3 Credits
- CFT142 - Composite Repair - 4 Credits
- CFT143 - Complex Composite Repairs - 3 Credits
- CFT144 - Electrical Bonding Repair - 1 Credits
- AVC102 - Precision Instruments - 1 Credits
- AVC104 - Quality Control Concepts - 1 Credits
- AVC105 - Aircraft Familiarization - 1 Credits
- AVC107 - Fundamentals for Aerospace Mfg - 1 Credits
- AVC108 - Aircraft Systems & Components - 4 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- AVC112 - Blueprint Reading - 2 Credits
- AVC117 - Hand & Power Tools - 4 Credits
- AVC120 - Introduction to Sealing - 1 Credits
- AVC125 - Bonding and Grounding - 1 Credits
- AVC140 - Electrical Bonding & Grounding - 1 Credits
- LEN100 - Lean for Operations - 3 Credits
- ENG101 - Composition I - 3 Credits

Composite Technology Requirement

Earn at least 3 credits from the following:

- Composite Technology Elective

General Education Requirement

Earn at least 3 credits from the following:

- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:

- Humanities Elective

General Education Requirement

Earn at least 3 credits from the following:

- Math Elective

General Education Requirement

Earn at least 3 credits from the following:

- Social Sciences Elective

Degree Maps

Degree Map Name

Composite Technology, AAS

Total Degree Map Credits

60

Degree Map Effective Catalog Year

2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	18	0

Requirement Select

- CFT101 - Introduction To Composites

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- CFT106 - Composite Finish Trim

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- CFT107 - Composite Assembly

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CFT130 - Composite Fabrication Methods/Applications

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- AVC102 - Precision Instruments

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC112 - Blueprint Reading

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- AVC117 - Hand & Power Tools

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AVC120 - Introduction to Sealing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC140 - Electrical Bonding & Grounding

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	14	0

Requirement Select
- AVC104 - Quality Control Concepts

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC105 - Aircraft Familiarization

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC107 - Fundamentals for Aerospace Manufacturing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC108 - Aircraft Systems & Components

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AVC125 - Bonding and Grounding

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	9	0

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Composite Technology Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	19	0

Requirement Select
- CFT140 - Composite Inspection

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- CFT141 - Disassemble & Damage Removal Techniques

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CFT142 - Composite Repair

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select
- CFT143 - Complex Composite Repairs

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CFT144 - Electrical Bonding Repair

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- LEN100 - Lean for Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-CRM_JUST - Criminal Justice, AAS

Overview

Department(s)
Professional Studies

Degree Designation
Associate of Applied Science

Catalog Full Description
This program is uniquely designed to prepare students for a successful career in law enforcement with a special focus on urban policing, diversity and criminal justice in the 21st century. The criminal justice field affords a multitude of career possibilities with graduates having the capability to serve as law enforcement officers, probation and parole officers, correctional officers, and other specialties at all levels of government. The WSU Tech Criminal Justice program is aligned with the National Center for Education Statistics CIP code 43.0107: Criminal Justice/Police Science prepares individuals to perform the duties of police and public security officers, including patrol and investigative activities, traffic control, crowd control and public relations, witness interviewing, evidence collection and management, basic crime prevention methods, weapon and equipment operation and maintenance, report preparation and other routine law enforcement responsibilities.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Possess an ethical foundation for policing modern society.

Name
Comprehend contemporary theories of policing.

Name
Understand the historical development of the police.

Name
Develop technical skills in investigating and documenting crimes.

Name
Articulate the relationship between the police and the community they serve.

Program Costs
Criminal Justice, AAS - $10,158.00.00

Technical Studies: Criminal Justice/Business Administration, AAS - $10,398.00

Technical Studies: Criminal Justice/EMS, AAS - $12,983.00

Cost does not include online fees, books, or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Criminal Justice, AAS

Type
Completion Requirement

Criminal Justice Requirements

Complete ALL of the following Courses:

- CRJ101 - Intro to Criminal Justice - 3 Credits
- CRJ105 - Criminal Investigation - 3 Credits
- CRJ110 - Criminal Law - 3 Credits
- CRJ115 - Agency Administration - 3 Credits
- CRJ120 - Juvenile Delinquency & Justice - 3 Credits
- CRJ125 - Law Enforcement Ops & Proc - 3 Credits
- CRJ130 - Criminal Procedures - 3 Credits
- CRJ135 - Criminal Just Interview & Rpt - 3 Credits
- CRJ140 - Prof Responsibility Crim Just - 3 Credits
- CRJ145 - Corrections - 3 Credits
- CRJ155 - Policing Diverse Cultures - 3 Credits
- CRJ160 - Internship in Criminal Justice - 3 Credits
- CRJ180 - KLETC/Law Enf Acad Trng - 12 Credits
- CPR001 - CPR For Healthcare Providers - 1 Credits
- ENG101 - Composition I - 3 Credits
- HIS120 - United States since 1865 - 3 Credits

General Education Requirement

Earn at least 3 credits from the following:

- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:

- Humanities Elective

General Education Requirement

Earn at least 3 credits from the following:

- Math Elective

General Education Requirement

Earn at least 3 credits from the following:

- Social Sciences Elective

Entry Requirements
Be 17 years of age or older, Complete the Accuplacer entry exams with minimum scores of 224 in Reading and Writing and Accuplacer QAS of 230 or higher. Or students can complete ACT entry exam with a minimum score of 18+ in Reading and English. ACT score of 19+ is required in math.

Degree Maps

Degree Map Name
Criminal Justice, AAS
Total Degree Map Credits
67
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	13	0

Requirement Select
- CRJ101 - Introduction to Criminal Justice

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ105 - Criminal Investigation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CPR001 - CPR For Healthcare Providers

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	15	0

Requirement Select
- CRJ110 - Criminal Law

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ130 - Criminal Procedures

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ140 - Professional Responsibility in Criminal Justice

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	3	0

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	12	0

Requirement Select
- CRJ115 - Agency Administration

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ120 - Juvenile Delinquency and Justice

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ125 - Law Enforcement Operations and Procedures

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- HIS120 - United States History since 1865

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	12	0

Requirement Select
- CRJ135 - Criminal Justice Interview and Report Writing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ145 - Corrections

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ155 - Policing Diverse Cultures

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ160 - Internship in Criminal Justice

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Summer	12	0

Requirement Select
- CRJ180 - KLETC or Equivalent Law Enforcement Academy Training

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	12
Progress Credits	-
Contact Hours	540
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-CUL_ARTS - Culinary Arts, AAS

Overview

Department(s)
Hospitality & Culinary Arts

Degree Designation
Associate of Applied Science

Catalog Full Description
The Culinary Arts program offers a comprehensive degree intended to provide students the knowledge and practical skills for success in the Culinary Industry. In the first half of the program, students will complete a core set of courses designed to provide a solid foundation of industry skills. Course topics include sanitation and safety, fundamental skills in culinary basics including rudimentary cooking, baking and knife skills as well as culinary nutrition and modern banquet cookery. In the second half of the program, the student builds upon this foundation with intermediate and advanced culinary courses. These courses include knowledge acquisition and skill development for innovation and sustainability in the culinary industry as well as a broad selection of elective courses for students to gain comprehensive instruction and experience in preparing, tasting, serving and evaluating traditional and regional dishes of the world. Course work also includes topics in Advanced Baking including Chocolate and Confectionary Techniques, Breads and Rolls, Cakes and Desserts. Students enrolled in the program will participate in a Bistro Practicum course which allows them to apply classroom and lab experiences in the real world.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
The student will identify the fundamental components and the current and future trends of the culinary industry.

Name
The student will demonstrate professional and ethical conduct and work practices to comply with industry standards.

Name
The student will demonstrate the proper use of kitchen vocabulary common to the culinary industry.

Name
The student will demonstrate the proper use of kitchen ingredients common to the culinary industry.

Name
The student will demonstrate knowledge and associated preparatory skills of the cuisines and cultures of the world, their common ingredients and cooking techniques.

Name
The student will apply interpersonal skills and problem-solving skills designed to enhance the guest experience.

Name
The student will demonstrate the critical skills associated with food and beverage management.

Name
The student will broaden their career perspectives and enhance personal and professional development opportunities for a successful career in the culinary industry.

Program Costs
Culinary Arts, AAS - $18,703.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech National Institute for Culinary and Hospitality Education (NICHE) – 124 S. Broadway, Wichita, KS 67202

Requirements

Simple Requirements

Program Requirements

Culinary Arts, AAS

Type
Completion Requirement

Culinary Arts Requirements

Complete ALL of the following Courses:

- CUL105 - Culinary Fundamentals - 3 Credits
- CUL115 - Culinary Nutrition - 3 Credits
- CUL120 - Modern Banquet Cookery - 3 Credits
- CUL125 - Baking & Pastry Skill Dvlpmnt - 3 Credits
- CUL130 - Culinary Innovation & Sustain - 3 Credits
- CUL135 - Cuisines and Cultures of U.S. - 3 Credits
- CUL145 - Cuisine/Culture Mediterranean - 3 Credits
- CUL150 - Cuisine & Culture North Europe - 3 Credits
- CUL155 - Cuisines and Cultures of Asia - 3 Credits
- BIS133 - Bistro Practicum I - 3 Credits
- HEM105 - Sanitation and Safety - 1 Credits
- HEM115 - Intro to Hospitality Industry - 3 Credits
- ENG101 - Composition I - 3 Credits

- SPH111 - Interpersonal Communication - 3 Credits

Culinary Arts Requirement

Earn at least 12 credits from the following:

- Culinary Arts Elective

General Education Requirement

Earn at least 3 credits from the following:

- Humanities Elective

General Education Requirement

Earn at least 3 credits from the following:

- Math Elective

General Education Requirement

Earn at least 3 credits from the following:

- Social Sciences Elective

Degree Maps

Degree Map Name
Culinary Arts, AAS
Total Degree Map Credits
61
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	16	0

Requirement Select

- CUL105 - Culinary Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- CUL115 - Culinary Nutrition

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- CUL120 - Modern Banquet Cookery

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- HEM105 - Sanitation and Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- SPH111 - Interpersonal Communication

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	15	0

Requirement Select
- CUL125 - Baking & Pastry Skill Development

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- BIS133 - Bistro Practicum I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- Culinary Arts Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- HEM115 - Introduction to the Hospitality Industry

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	6	0

Requirement Select
- Culinary Arts Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Culinary Arts Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	9	0

Requirement Select
- CUL130 - Culinary Innovation & Sustainability

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- Culinary Arts Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	15	0

Requirement Select
- CUL135 - Cuisines and Cultures of the United States

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CUL145 - Cuisines and Cultures of the Mediterranean

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CUL150 - Cuisines and Cultures of Northern Europe

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CUL155 - Cuisines and Cultures of Asia

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-DES_ARCH - Architectural Design Technology, AAS

Overview

Department(s)
Manufacturing

Degree Designation
Associate of Applied Science

Catalog Full Description
Architectural Design Technology is an interdisciplinary curriculum which prepares graduates to for careers in commercial and/or residential architectural fields. In a state of the art computer lab at the National Center for Aviation Training (NCAT) students will solve the real world architectural problems they will encounter in the field. Students will complete a core set of courses which include hands on application in the latest computer aided drafting software as well as CATIA. Additional course topics include Machine Drafting and Design and Materials and Processes. Students will round off their educational experience by completing 15 credits of general education courses in five areas of study including mathematics, humanities, social sciences, English and communications.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Apply architectural drafting and design principles using industry-standard software such as AutoCAD, Revit, and SketchUp.

Name
Interpret and produce construction drawings, blueprints, and technical documents.

Name
Develop 2D and 3D visualizations, renderings, and models to communicate design concepts effectively.

Name
Utilize Building Information Modeling (BIM) to enhance design accuracy and collaboration.

Name
Identify and select appropriate construction materials based on project specifications.

Name
Analyze architectural challenges and develop creative, functional solutions

Name
Apply engineering and design principles to optimize space, structure, and aesthetics.

Program Costs
Architectural Design Technology, AAS - $14,663.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Architectural Design Technology, AAS

Type
Completion Requirement

Architectural Design Technology Requirement

Complete ALL of the following Courses:
- MCD101 - Introduction to CAD I - 3 Credits
- MCD102 - Introduction to CAD II - 2 Credits
- MCD104 - Blueprint Reading for Drafting - 2 Credits
- MCD106 - Precision Measuring - 2 Credits
- MCD112 - Industrial Mat & Processes - 2 Credits
- MCD114 - Arch Drafting & Design - 3 Credits
- MCD115 - Machine Drafting & Design - 3 Credits
- MCD121 - Descriptive Geometry - 3 Credits
- MCD124 - Advanced AutoCAD - 4 Credits
- MCD132 - Basic Chief Arch/Arch Desktop - 3 Credits
- MCD134 - Adv Chief Arch/Arch Desktop - 3 Credits
- MCD164 - Residential Dsgn Autodesk Rev - 4 Credits
- MCD205 - Residential Drafting - 3 Credits
- MCD224 - Commercial Design Autodesk Rev - 3 Credits
- ENG101 - Composition I - 3 Credits
- PDV115 - Work Ethics - 2 Credits

Architectural Design Technology Requirement

Complete 1 - 2 course(s) and earn exactly 3 credits from the following:
- MCD130 - Basic Solidworks - 3 Credits
- MCD133 - Advanced Solidworks - 3 Credits
- MCD137 - Introduction to 3D Printing - 2 Credits
- MCD140 - Drafting Technology Intern - 4 Credits
- MCD156 - Interm Measuring Instruments - 2 Credits
- MCD210 - Advanced Measuring - 3 Credits
- CAT101 - CATIA Part Design & Sketcher - 4 Credits

General Education Requirement

Complete ANY of the following Course Sets:
- Communication Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Humanities Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Math Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Social Sciences Elective

Entry Requirements

- Be 16 years of age or older
- Complete admissions documents

Degree Maps

Degree Map Name
Architectural Design Technology, AAS
Total Degree Map Credits
60
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	12	0

Requirement Select
- MCD101 - Introduction to CAD I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MCD102 - Introduction to CAD II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- MCD104 - Blueprint Reading for Drafting

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MCD106 - Precision Measuring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MCD121 - Descriptive Geometry

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	17	0

Requirement Select
- MCD112 - Industrial Materials & Processes

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- MCD115 - Machine Drafting & Design

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MCD124 - Advanced AutoCAD

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- Architectural Design Technology Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- PDV115 - Work Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	16	0

Requirement Select
- MCD114 - Architectural Drafting & Design

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MCD164 - Residential Design Using Autodesk Revit

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- MCD224 - Commercial Design Using Autodesk Revit

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	15	0

Requirement Select
- MCD134 - Advanced Chief Architect/Architectural Desktop

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MCD132 - Basic Chief Architect/Architectural Desktop

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MCD205 - Residential Drafting

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-DIG_MRKT - Digital Marketing, AAS

Overview

Department(s)
Professional Studies

Degree Designation
Associate of Applied Science

Catalog Full Description
The Digital Marketing Program provides graduates with the skills necessary to succeed in the specialized realm of digital commerce. The program coursework combines traditional marketing skills with the specialized technical skills required to develop first-class digital marketing content. In scenario-based coursework students will create and apply digital marketing strategies that reflect real-world situations. Topics will include digital strategy, web development, and analytics as well as digital marketing, multimedia, SEO, and SEM techniques. All students will graduate with a professional portfolio, and students enrolled in the Associate of Applied Science degree program will participate in an internship/capstone course while completing 17 hours of general education.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
The student will be able to produce a digital portfolio highlighting skills associated with digital marketing

Name
The student will be able demonstrate familiarity with digital media tools and social media marketing platforms

Name
The student will be able to link classroom experiences with real work projects

Name
The student will measure and evaluate digital marketing efforts

Name
The Student will demonstrate the skills associated with web site development and management

Name
The Student will demonstrate the necessary skills to effectively participate in the Google Analytics Certification Exam

Program Costs
Digital Marketing, AAS $12,198.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Digital Marketing, AAS

Type
Completion Requirement

Digital Marketing Requirements

Complete ALL of the following Courses:

- DMK110 - Introduction to Media Arts - 3 Credits
- DMK120 - Basic Digital Editing - 3 Credits
- DMK125 - Community Building and Mgmt - 3 Credits
- DMK135 - Social Media Marketing & Mgmt - 3 Credits
- DMK140 - Intro to Audio/Visual Prod - 3 Credits
- DMK150 - Search Optimization & Market - 3 Credits
- DMK155 - Photography Fundamentals - 2 Credits
- DMK160 - Introduction to Analytics - 3 Credits
- DMK163 - Intro to Digital Advertising - 3 Credits
- DMK170 - Digital Marketing Capstone - 4 Credits
  OR DMK175 - Digital Marketing Internship - 4 Credits
- BUS135 - Intro to Public Relations - 3 Credits
  OR ESP150 - Esports Event Mgmt and Prod - 3 Credits
- BUS140 - Principles of Marketing - 3 Credits
- CLD122 - Intro to Web Development - 3 Credits
- CLD147 - Website Production & Mgmt - 3 Credits
- ENG101 - Composition I - 3 Credits
- ENG120 - Composition II - 3 Credits
- OPM115 - Introduction to Project Mgmt - 3 Credits
- SPH101 - Public Speaking - 3 Credits

General Education Requirement

Earn at least 3 credits from the following:

- Humanities Elective

General Education Requirement

Earn at least 3 credits from the following:

- Math Elective

Entry Requirements

- Be 16 years of age or older
- Completion of application and related procedures
- Complete entrance exams assessments: Accuplacer Reading & Accuplacer Writing at 237 and ALEKS PPL math at 30.

Degree Maps

Degree Map Name
Digital Marketing, AAS
Total Degree Map Credits
60
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	18	0

Requirement Select
- DMK110 - Introduction to Media Arts

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- DMK120 - Basic Digital Editing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- OPM115 - Introduction to Project Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- DMK135 - Social Media Marketing and Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	12	0

Requirement Select
- DMK125 - Community Building and Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- DMK140 - Introduction to Audio/Visual Production

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- BUS140 - Principles of Marketing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ENG120 - Composition II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	6	0

Requirement Select
- SPH101 - Public Speaking

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	12	0

Requirement Select
- DMK150 - Search Engine Optimization & Marketing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- DMK163 - Introduction to Digital Advertising

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CLD122 - Introduction to Web Development

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- BUS135 - Introduction to Public Relations
  OR
- ESP150 - Esports Event Management and Production

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	12	0

Requirement Select

- DMK155 - Photography Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- DMK160 - Introduction to Analytics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- DMK170 - Digital Marketing Capstone
  OR
- DMK175 - Digital Marketing Internship

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	180
Clinical	-
Criticality	No

Requirement Select

- CLD147 - Website Production & Management (Word Press)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-EDU_CATN - Para Educator, AAS

Overview

Department(s)
Professional Studies

Degree Designation
Associate of Applied Science

Catalog Full Description
The Para Educator program is designed to equip graduates with the skills needed to pursue a career in elementary education. The coursework provides a strong academic background in English, humanities, science, and social sciences. Building on this academic core, the program will provide a solid foundation in classroom management, assessment, instructional technology, along with experiential learning opportunities. Upon completion, graduates will be prepared to enter the workforce as a paraprofessional or transfer to a Baccalaureate degree program in Elementary Education.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Practical professional skills to assist in the establishment and maintenance of an effective, productive, and safe educational setting

Name
Communication skills focusing on effective written and oral communications in an educational setting with parents, fellow educational professionals and the community

Name
The students will demonstrate the skills needed to identify, assess, and assist with the education of a diverse student population

Name
Working foundation of the historical, philosophical, theoretical, and legal issues of education

Name
Personal ethical standards and professional practices used by successful education professionals

Name
Students will demonstrate effective use of instructional technology in the design, implementation and assessment of learning experiences to engage students and improve learning.

Program Costs
Para Educator, AAS - $9,680.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Para Educator, AAS

Type
Completion Requirement

Para Educator Requirements

Complete ALL of the following Courses:

- EDU120 - Introduction to Teaching - 3 Credits
- EDU140 - Children's Literature - 3 Credits
- EDU160 - Educational Technology - 3 Credits
- EDU180 - Educating Exceptional Students - 3 Credits
- EDU200 - Classroom Management - 3 Credits
- EDU210 - Assessing Student Learning - 3 Credits
- EDU220 - Field Experience - 1 Credits
- EDU235 - Foundations of Writing - 3 Credits
- EDU245 - Foundations in Early Literacy - 3 Credits
- ART100 - Art Appreciation - 3 Credits
- BIO110 - Principles of Biology - 5 Credits
- ENG101 - Composition I - 3 Credits
- ENG120 - Composition II - 3 Credits
- HIS110 - United States History to 1877 - 3 Credits
- MTH112 - College Algebra - 3 Credits
- POL101 - American Government - 3 Credits
- PSY101 - General Psychology - 3 Credits
- PSY120 - Developmental Psychology - 3 Credits
- SOC101 - Principles of Sociology - 3 Credits
- SPH101 - Public Speaking - 3 Credits

Degree Maps

Degree Map Name
Para Educator, AAS
Total Degree Map Credits
60
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	15	0

Requirement Select
- EDU120 - Introduction to Teaching

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- EDU180 - Educating Exceptional Students

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PSY101 - General Psychology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- SPH101 - Public Speaking

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	15	0

Requirement Select
- EDU140 - Children's Literature

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- EDU160 - Educational Technology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ART100 - Art Appreciation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ENG120 - Composition II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- MTH112 - College Algebra

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	14	0

Requirement Select
- EDU200 - Classroom Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- EDU245 - Foundations in Early Literacy

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- POL101 - American Government

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- BIO110 - Principles of Biology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	15	0

Requirement Select
- EDU210 - Assessing Student Learning

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- EDU235 - Foundations of Writing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- HIS110 - United States History to 1877

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- PSY120 - Developmental Psychology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- SOC101 - Principles of Sociology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Summer	1	0

Requirement Select

- EDU220 - Field Experience

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	25
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-ELEC_TEC - Electrical Technology, AAS

Overview

Department(s)
Applied Technologies

Degree Designation
Associate of Applied Science

Catalog Full Description
The Electrical Technology program offers a comprehensive curriculum designed to prepare graduates to take the Journeyman Electrician licensure exam. This program prepares students to apply technical knowledge and skills in the installation, operation, maintenance, and repair of electric apparatus and systems. Students will gain a solid foundation in electronics, electrical systems, wiring methods, power transmission, safety practices, and applicable codes and standards. The program encompasses a wide range of courses that cover essential topics in the field of electrical technology. Students will develop a strong understanding of AC/DC circuits, print reading, residential and commercial wiring, motor controls, low voltage wiring, programmable logic controllers, and fire alarm, emergency, and health care systems. They will also explore the emerging fields of solar and wind power generation. In addition to the specialized courses, students will complete 15 credits of general education courses to enhance their communication, critical thinking, and problem-solving skills.

The WSU Tech Electrical Technology program is aligned with the National Center for Education Statistics CIP code 46.0302: Electrician prepares individuals to apply technical knowledge and skills to install, operate, maintain, and repair electric apparatus and systems such as residential, commercial, and industrial electric-power wiring; and DC and AC motors, controls, and electrical distribution panels. Includes instruction in the principles of electronics and electrical systems, wiring, power transmission, safety, industrial and household appliances, job estimation, electrical testing and inspection, and applicable codes and standards.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Apply Technical Knowledge and Skills: Graduates will possess the technical knowledge and skills necessary to install, operate, maintain, and repair various electric apparatus and systems. They will demonstrate proficiency in electrical power wiring, DC and AC motors, controls, electrical distribution panels, and low voltage wiring.

Name
Interpret Electrical Diagrams: Students will be able to read and interpret electrical diagrams, schematics, and blueprints accurately. They will understand symbols, labels, and annotations commonly used in electrical drawings, enabling them to effectively plan and execute electrical installations and repairs.

Name
Execute Residential and Commercial Wiring: Graduates will demonstrate competence in residential and commercial wiring methods. They will be able to select and install appropriate wiring materials, adhere to safety regulations, and apply the National Electrical Code (NEC) requirements in wiring residential and commercial buildings.

Name
Comprehend the National Electrical Code: Students will gain a comprehensive understanding of the National Electrical Code (NEC) and its practical application in electrical installations. They will be able to identify and interpret NEC requirements, ensuring compliance with safety standards and industry best practices.

Name
Implement Motor Control Systems: Graduates will possess the knowledge and skills to install, operate, and troubleshoot motor control systems. They will understand motor control diagrams, wire motor control circuits, and employ appropriate testing and troubleshooting techniques to ensure optimal performance.

Name
Perform Low Voltage Wiring: Students will learn to install and maintain low voltage wiring systems commonly found in residential, commercial, and industrial settings. They will be able to work with data, voice, and video cabling, security systems, and other low voltage applications.

Program Costs
Electrical Technology, AAS -$16,152.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211

Requirements

Simple Requirements

Program Requirements

Electrical Technology, AAS

Type
Completion Requirement

Electrical Technology Requirements

Complete ALL of the following Courses:
- ELE110 - Print Reading - 2 Credits
- ELE120 - AC/DC Circuits - 4 Credits
- ELE130 - Commercial Wiring I - 4 Credits
- ELE132 - Commercial Wiring Lab - 4 Credits
- ELE135 - Low Voltage Wiring - 2 Credits
- ELE140 - Motor Controls - 2 Credits
- ELE150 - National Electrical Code I - 4 Credits
- ELE160 - National Electrical Code II - 4 Credits
- ELE170 - Programmable Logic Controllers - 2 Credits
- ELE180 - Residential Wiring I - 4 Credits
- ELE182 - Residential Wiring Lab - 4 Credits
- SAF135 - Safety/OSHA 30 - 3 Credits
- ENG101 - Composition I - 3 Credits

General Education Requirement

Earn at least 3 credits from the following:
- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:
- Humanities Elective

General Education Requirement

Earn at least 3 credits from the following:
- Math Elective

General Education Requirement

Earn at least 3 credits from the following:
- Social Sciences Elective

Electrical Technology Requirement

Earn at least 6 credits from the following:
- Electrical Technology Electives

Entry Requirements
- Be 16 years of age or older
- Meet entrance exam requirements for general education requirements
- Complete college admissions documentation

Degree Maps

Degree Map Name
Electrical Technology, AAS
Total Degree Map Credits
60
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	23	0

Requirement Select
- ELE110 - Print Reading

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- ELE120 - AC/DC Circuits

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ELE135 - Low Voltage Wiring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- ELE150 - National Electrical Code I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ELE180 - Residential Wiring I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ELE182 - Residential Wiring Lab

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select
- SAF135 - Safety/OSHA 30

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	19	0

Requirement Select
- ELE130 - Commercial Wiring I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ELE132 - Commercial Wiring Lab

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select
- ELE140 - Motor Controls

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- ELE160 - National Electrical Code II

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ELE170 - Programmable Logic Controllers

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	6	0

Requirement Select
- Electrical Technology Electives

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	3
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	12	0

Requirement Select
- Electrical Technology Electives

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	3
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-ENG_DES - Engineering Design Technology, AAS

Overview

Department(s)
Manufacturing

Degree Designation
Associate of Applied Science

Catalog Full Description
Engineering Design Technology is an interdisciplinary curriculum that prepares graduates for various positions in manufacturing design. All students will complete a core set of courses selected to provide a well-rounded understanding of design. Topics include hands-on instruction in current technical competency areas, including Computer Aided Drafting (CAD), 3-D solid modeling, and CATIA. CATIA courses are taught with the National Institute of Aviation Research (NIAR). Students will round off their educational experience by completing 20 credits of general education courses in five areas of study, including mathematics, humanities, natural sciences, social sciences, English, and communications.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Develop detailed engineering drawings and 3D models using CAD software such as SolidWorks, AutoCAD, and CATIA

Name
Interpret and create technical blueprints and schematics according to industry standards.

Name
Apply fundamental engineering principles to design and analyze mechanical components and systems.

Name
Use mathematical and scientific concepts to evaluate design feasibility and functionality.

Name
Develop innovative solutions to engineering design challenges using creative problem-solving techniques.

Name
Utilize design thinking and prototyping to enhance product development.

Name
Apply ANSI, ISO, and GD&T (Geometric Dimensioning & Tolerancing) standards to ensure precision and compliance in design.

Program Costs
Engineering Design Technology, TC - $16,389.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Engineering Design Technology, AAS

Type
Completion Requirement

Engineering Design Technology Requirement

Complete ALL of the following Courses:
- MCD101 - Introduction to CAD I - 3 Credits
- MCD102 - Introduction to CAD II - 2 Credits
- MCD104 - Blueprint Reading for Drafting - 2 Credits
- MCD106 - Precision Measuring - 2 Credits
- MCD115 - Machine Drafting & Design - 3 Credits
- MCD121 - Descriptive Geometry - 3 Credits
- MCD124 - Advanced AutoCAD - 4 Credits
- MCD137 - Introduction to 3D Printing - 2 Credits
- CAT101 - CATIA Part Design & Sketcher - 4 Credits
- CAT103 - CATIA 3D Tolerancing & Annot - 4 Credits
- CAT105 - CATIA Assembly Design - 4 Credits
- CAT110 - CATIA Wireframe & Surfaces - 4 Credits
- ENG101 - Composition I - 3 Credits
- PDV115 - Work Ethics - 2 Credits

Engineering Design Technology Requirement

Complete ANY of the following Course Sets:
- Engineering Design Elective

General Education Requirement

Earn at least 3 credits from the following:
- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:
- Humanities Elective

General Education Requirement

Earn at least 3 credits from the following:
- Math Elective

General Education Requirement

Earn at least 3 credits from the following:
- Social Sciences Elective

General Education Requirement

Earn at least 5 credits from the following:
- Science Elective

Entry Requirements
- Be 16 year of age or older
- Complete all admissions documents

Degree Maps

Degree Map Name
Engineering Design Technology, AAS
Total Degree Map Credits
62
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	12	0

Requirement Select
- MCD101 - Introduction to CAD I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MCD102 - Introduction to CAD II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- MCD104 - Blueprint Reading for Drafting

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MCD106 - Precision Measuring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MCD121 - Descriptive Geometry

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	14	0

Requirement Select
- MCD115 - Machine Drafting & Design

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MCD124 - Advanced AutoCAD

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- MCD137 - Introduction to 3D Printing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Engineering Design Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- PDV115 - Work Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	8	0

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Science Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	14	0

Requirement Select
- CAT101 - CATIA Part Design & Sketcher

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- CAT105 - CATIA Assembly Design

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	14	0

Requirement Select
- CAT103 - CATIA 3D Tolerancing & Annotations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- CAT110 - CATIA Wireframe & Surfaces

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-HEAV_EQP - Heavy Equipment Operation, AAS

Overview

Department(s)
Applied Technologies

Degree Designation
Associate of Applied Science

Catalog Full Description
The Heavy Equipment Operations program prepares students with the technical knowledge and hands-on skills required to operate and maintain a wide range of construction and earthmoving equipment used in the heavy civil and infrastructure industries. Students gain practical experience on industry-standard machines such as loaders, dozers, excavators, motor graders, scrapers, and dump trucks while applying principles of earthmoving, grading, and compaction.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Inspect, maintain, and operate heavy equipment safely and efficiently in accordance with manufacturer and regulatory standards.

Name
Apply earthmoving, grading, and compaction principles to perform sitework operations within design tolerances.

Name
Interpret civil drawings, grade stakes, and layout data to establish grades and excavation limits.

Name
Operate multiple types of heavy equipment—including loaders, dozers, excavators, and graders—to perform coordinated site preparation activities.

Name
Demonstrate safe work practices, communication, and traffic control within active construction sites.

Name
Evaluate soil types, equipment capabilities, and site conditions to determine the most effective operational approach.

Name
Collaborate with a team to complete field-based projects simulating real-world jobsite operations.

Program Costs
Heavy Equipment Operation, AAS - $16,134.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
CTEC + WSU Tech – 1301 E. 27th Terrace, Pittsburg, KS 66762

Requirements

Simple Requirements

Program Requirements

Heavy Equipment Operation, AAS

Type
Completion Requirement

Required Courses

Complete ALL of the following Courses:
- SAF101 - Safety Orientation/OSHA 10 - 1 Credits
- HEO105 - Construction Industry - 3 Credits
- HEO110 - Construction Tools/Rigging/Emp - 3 Credits
- HEO120 - Equipment Operations & Safety - 4 Credits
- HEO125 - Earthmoving and Grading Operat - 5 Credits
- HEO130 - Equipment Inspection and Oper - 5 Credits
- HEO135 - Sitework Layout & Soil Analysi - 4 Credits
- ENG101 - Composition I - 3 Credits

Heavy Equipment Operation Electives

Earn at least 20 credits from the following:
- Heavy Equipment Operation Elective

General Education Requirements

Complete ANY of the following Course Sets:
- Communication Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Humanities Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Math Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Social Sciences Elective

Entry Requirements
- 16 years of age
- Complete all the admission documents

Degree Maps

Degree Map Name
Heavy Equipment Operations , AAS
Total Degree Map Credits
60
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	19	0

Requirement Select
- SAF101 - Safety Orientation/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- HEO105 - Construction Industry

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- HEO110 - Construction Tools, Rigging, & Employability Skills

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- HEO120 - Heavy Equipment Operations and Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- HEO125 - Earthmoving and Grading Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	12	0

Requirement Select
- HEO130 - Equipment Inspection and Operational Readiness

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- HEO135 - Sitework Layout and Soil Analysis

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	8	0

Requirement Select
- Heavy Equipment Operation Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	8	0

Requirement Select
- Heavy Equipment Operation Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Summer	13	0

Requirement Select
- Heavy Equipment Operation Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Heavy Equipment Operation Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-HLTH_ADM - Healthcare Administration & Management, AAS

Overview

Department(s)
Nursing

Degree Designation
Associate of Applied Science

Catalog Full Description
The AAS degree in Healthcare Administration and Management is a two-year program emphasizing Practical Nursing standards, then focusing on the necessary skills required for an entry level administrative/management position in healthcare. This program provides additional skills to enhance the success of the practical nurse certificate. It will include study skills, time management, social awareness skills, an introduction to critical thinking, APA format, review of PN policies and procedures, and learning in a hybrid/online format. The WSU Tech Practical Nurse program is aligned with the National Center for Education Statistics CIP code 51.3901: Licensed Practical/Vocational Nurse Training: prepares individuals to assist in providing general nursing care under the direction of a registered nurse, physician or dentist. Includes instruction in taking patient vital signs, applying sterile dressings, patient health education, and assistance with examinations and treatment.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Relationship -Centered Care: Provide nursing care that is relationship-centered, caring, culturally sensitive and based on the physiological, psychosocial and spiritual needs of clients with commonly occurring health alterations that have predictable outcomes.

Name
Teamwork and Collaboration: Collaborate with the client and members of the inter-professional health care team to promote continuity of client care and shared decision making.

Name
Evidence based Practice: Use current evidence as a basis for nursing practice.

Name
Informatics: Use information and client care technology to support the delivery of safe, quality client care.

Name
Quality Improvement: Participate in quality improvement activities assessing their effect on client outcomes.

Name
Safety: Provide an environment that is safe and reduces risk of harm for clients, self, and others.

Name
Professionalism: Demonstrate accountability for client care that incorporates legal and ethical principles, regulatory guidelines, and standards of nursing practice

Name
Leadership: Use leadership skills that support the provision and coordination of client care.

Program Costs
Healthcare Administration & Management, AAS - $17,543.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Healthcare Administration & Management, AAS

Type
Completion Requirement

Healthcare Administration & Management Requirements

Complete ALL of the following Courses:

- PNR119 - KSPN Pharm and Safe Med Admin - 2 Credits
- PNR120 - KSPN Foundations of Nursing - 4 Credits
- PNR121 - KSPN Foundations Nrsng Clin - 2 Credits
- PNR128 - KSPN Nursing Care of Adults I - 5 Credits
- PNR129 - KSPN Care of Adults I Clinical - 3 Credits
- PNR130 - KSPN Maternal Child Nursing - 2 Credits
- PNR131 - KSPN Mtrnl Child Nrs Clinical - 1 Credits
- PNR135 - KSPN Mental Health Nursing - 2 Credits
- PNR138 - KSPN Nursing Care of Adults II - 5 Credits
- PNR139 - KSPN Care of Adults II Clin - 2 Credits
- PNR141 - KSPN Care of Aging Adults - 2 Credits
- PNR166 - KSPN Leadership, Roles & Issue - 2 Credits
- PNR170 - Healthcare Practice Management - 3 Credits
- PNR180 - Healthcare Issues - 3 Credits
- BIO110 - Principles of Biology - 5 Credits

OR CHM110 - General Chemistry - 5 Credits
- BIO150 - Human Anatomy & Physiology - 5 Credits
- ENG101 - Composition I - 3 Credits
- PSY101 - General Psychology - 3 Credits
- PSY120 - Developmental Psychology - 3 Credits

Healthcare Administration & Management Requirement

Earn at least 4 credits from the following:
- CNA101 - Certified Nurse Aide - 5 Credits
  OR BIO160 - Microbiology - 5 Credits
  OR PNR175 - Healthcare Management Research - 4 Credits

General Education Requirement

Earn at least 3 credits from the following:
- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:
- Math Elective

Entry Requirements

- Be 18 years of age or older
- Complete a Nursing Program application
- current Kansas Certified Nurse Aide (CNA)
- Complete NLN NEX Score of 138 or higher and Verbal NLN NEX Score of 70 or higher

List additional Program Admission Requirements

Program Admissions Prerequisites

- Principles of Biology Or General Chemistry - BIO 110 requires Minimum Score of "C" within 5 years of completion date
- Anatomy and Physiology - Minimum Score of "B" within 5 years of completion date
- General Psychology - Minimum Score of "C"
- Developmental Psychology - Minimum Score of "C"
- ORI 015 PN Information Session

Upon Admission to the Program

- Pay for and pass a criminal background check and drug screen test at an agency designated by WSU Tech.
- Complete required health examinations and immunizations at their own expense, including COVID-19
- A minimum cumulative GPA of 2.5 in all prerequisite courses is also required for program acceptance.

Degree Maps

Degree Map Name
Healthcare Administration & Management, AAS
Total Degree Map Credits
67
Degree Map Effective Catalog Year
2027 -

Degree Map Narrative

The following courses must be completed prior to acceptance to the Healthcare Administration & Management Program: BIO 150, PSY 101, PSY 120, and BIO 110 or CHM 110

Year	Semester	Actual Credits	Progress Credits
-	-	16	0

Requirement Select
- BIO110 - Principles of Biology
  OR
- CHM110 - General Chemistry

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- BIO150 - Human Anatomy & Physiology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- PSY101 - General Psychology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PSY120 - Developmental Psychology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	16	0

Requirement Select
- PNR119 - KSPN Fundamentals of Pharmacology and Safe Medication Administration

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PNR120 - KSPN Foundations of Nursing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- PNR121 - KSPN Foundations of Nursing Clinicals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- PNR128 - KSPN Nursing Care of Adults I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- PNR129 - KSPN Nursing Care of Adults I Clinical

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	135
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	16	0

Requirement Select
- PNR130 - KSPN Maternal Child Nursing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- PNR131 - KSPN Maternal Child Nursing Clinical

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PNR135 - KSPN Mental Health Nursing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- PNR138 - KSPN Nursing Care of Adults II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- PNR139 - KSPN Nursing Care of Adults II Clinical

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- PNR141 - KSPN Care of Aging Adults

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- PNR166 - KSPN Leadership, Roles, and Issues

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	6	0

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	-	13	0

Requirement Select
- PNR170 - Healthcare Practice Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PNR180 - Healthcare Issues

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- Healthcare Administration & Management Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select

- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-HSP_EVNT - Hospitality and Events Management, AAS

Overview

Department(s)
Hospitality & Culinary Arts

Degree Designation
Associate of Applied Science

Catalog Full Description
The Hospitality and Events Management program offers a multi-disciplinary degree intended to provide students with the knowledge and practical skills for success in the Hospitality Industry. In the first half of the programs, students will complete a core set of courses designed to provide a solid foundation of industry skills. The program offers two distinct tracks including Food and Beverage Management and Food Business Management. Course work varies depending on the selected track but includes topics such as Wine Fundamentals, Culinary Fundamentals, Introduction to Entrepreneurship, Event Catering Strategies. Students in each track will participate in an internship course which allows them to apply classroom and lab experiences in the real world.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
The student will identify the fundamental components and the current and future trends of the hospitality industry

Name
The student will demonstrate professional and ethical conduct and work practices to comply with industry standards.

Name
The student will demonstrate the financial skills common to the hospitality industry

Name
The Student will apply customer service skills and problem solving skills designed to enhance the guest experience

Name
The student will demonstrate the critical skills associated with food and beverage management

Name
The student will demonstrate the critical skills in events management

Name
The student will demonstrate the critical skills in lodging management.

Name
The student will broaden their career perspectives and enhance personal and professional development opportunities for a successful career in the hospitality industry

Program Costs
Food Business Management, AAS $15,786.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech National Institute for Culinary and Hospitality Education (NICHE) – 124 S. Broadway, Wichita, KS 67202

Requirements

Simple Requirements

Program Requirements

Food Business Management, AAS

Type
Completion Requirement

Food Business Management Requirements

Complete ALL of the following Courses:
- HEM105 - Sanitation and Safety - 1 Credits
- HEM110 - Hospitality Math - 3 Credits
- HEM115 - Intro to Hospitality Industry - 3 Credits
- HEM140 - Hospitality Financial Mgmt - 3 Credits
- HEM143 - Intro to Food Business Mgmt - 5 Credits
- HEM233 - Restaurant Incubator - 3 Credits
- HEM235 - Hospitality Management Intern - 3 Credits
- CUL105 - Culinary Fundamentals - 3 Credits
- CUL115 - Culinary Nutrition - 3 Credits
- CUL120 - Modern Banquet Cookery - 3 Credits
- CUL125 - Baking & Pastry Skill Dvlpmnt - 3 Credits
- BIS133 - Bistro Practicum I - 3 Credits
- BUS104 - Introduction to Business - 3 Credits
- BUS140 - Principles of Marketing - 3 Credits
- ENT110 - Intro to Entrepreneurship - 3 Credits
- ENG101 - Composition I - 3 Credits

General Education Requirement

Earn at least 3 credits from the following:
- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:
- Humanities Elective

General Education Requirement

Earn at least 3 credits from the following:
- Math Elective

General Education Requirement

Earn at least 3 credits from the following:
- Social Sciences Elective

Entry Requirements
- Be 16 years of age or older
  Students enrolled in the Food and Beverage track of the Hospitality and Events Management program must be 21 years of age before enrolling in the 200 level courses
- Completion of application and related procedures

Degree Maps

Degree Map Name
Food Business Management
Total Degree Map Credits
60
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	13	0

Requirement Select
- HEM105 - Sanitation and Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- CUL105 - Culinary Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CUL115 - Culinary Nutrition

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CUL120 - Modern Banquet Cookery

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	18	0

Requirement Select
- HEM110 - Hospitality Math

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- HEM115 - Introduction to the Hospitality Industry

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CUL125 - Baking & Pastry Skill Development

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- BIS133 - Bistro Practicum I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- BUS104 - Introduction to Business

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	6	0

Requirement Select
- HEM140 - Hospitality Financial Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- HEM235 - Hospitality Management Internship

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	135
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	14	0

Requirement Select
- HEM143 - Introduction to Food Business Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- BUS140 - Principles of Marketing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	9	0

Requirement Select
- HEM233 - Restaurant Incubator

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select

- ENT110 - Introduction to Entrepreneurship

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-IND_AUTO - Industrial Machine/ Maintenance Technology, AAS

Overview

Department(s)
Automation and Advanced Tech

Degree Designation
Associate of Applied Science

Catalog Full Description
Industrial Machine/Maintenance Technology program provides the solid foundational knowledge and skills necessary to succeed in the mechanical and automated manufacturing environment. Graduates will learn to analyze, troubleshoot, and align mechanical and automated industrial machinery. Program course work includes electronics, industrial wiring, motor controls, programmable logic controls, instrumentation, industrial fluid power, manufacturing automation concepts, and robotics. Students will round off their educational experience by completing general education courses in five areas of study including mathematics, humanities, and social sciences, English, and communications. The WSU Tech Industrial Machine/ Maintenance Technology program is aligned with the National Center for Education Statistics CIP code 47.0303: Industrial Mechanics and Maintenance Technology/Technician prepares individuals to apply technical knowledge and skills to repair and maintain industrial machinery and equipment such as cranes, pumps, engines and motors, pneumatic tools, conveyor systems, production machinery, marine deck machinery, and steam propulsion, refinery, and pipeline-distribution systems.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Demonstrate proper techniques and practices in the repair, installation and maintenance of industrial equipment and systems.

Name
Demonstrate the ability to program and operate automated manufacturing equipment

Name
Apply problem solving and critical thinking skills to troubleshoot hydraulic, pneumatic and electrical industrial systems

Name
Apply safe and approved practices in the workplace

Name
Demonstrate the ability to use a Snap-On 575 Digital Multimeter.

Program Costs

Industrial Machine/Maintenance Technology - $16,721.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location

WSU Tech City Center – 301 S. Grove, Wichita, KS 67211

Requirements

Simple Requirements

Program Requirements

Industrial Machine/Maintenance Technology, AAS

Type

Completion Requirement

Industrial Machine/Maintenance Technology Requirement

Complete ALL of the following Courses:

- IND109 - Programmable Logic Ctrlr (PLC) - 3 Credits
- IND111 - Foundations of Manufacturing - 2 Credits
- IND115 - Industrial Safety - 1 Credits
- IND116 - Advanced Motor Controls - 3 Credits
- IND117 - Variable Speed Motor Control - 3 Credits
- IND121 - Mechanical Systems Reliability - 3 Credits
- IND122 - AC/DC Circuits - 4 Credits
- IND130 - Mechanical Systems - 3 Credits
- IND131 - Industrial Prog Logic Controls - 3 Credits
- IND132 - Industrial Process Control - 3 Credits
- IND137 - Industrial Schematics - 2 Credits
- IND143 - Electrical System Troubleshoot - 3 Credits
- IND147 - Fluid Power I - 3 Credits
- IND150 - Manufacturing Equipment & Tool - 2 Credits
- IND152 - Predictive Maintenance - 2 Credits
- IND157 - Preventative Maintenance - 2 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- ENG101 - Composition I - 3 Credits
- PDV115 - Work Ethics - 2 Credits
- SPH111 - Interpersonal Communication - 3 Credits

Industrial Machine/Maintenance Technology Requirement

Earn at least 3 credits from the following:

- IND139 - CNC Operation for Maintenance - 3 Credits
- IND160 - Fluid Power II - 3 Credits
- IND165 - Industrial Process Control II - 3 Credits
- IND170 - CNC Installation - 2 Credits
- IND175 - Advanced CNC Maintenance App - 4 Credits
- ROB100 - Introduction to Robotics - 3 Credits

General Education Requirement

Earn at least 3 credits from the following:

- Humanities Elective

General Education Requirement

Earn at least 3 credits from the following:

- Math Elective

General Education Requirement

Earn at least 3 credits from the following:

- Social Sciences Elective

Entry Requirements

- Be 16 years of age or older
- Complete the admissions documentation

Degree Maps

Degree Map Name

Industrial Machine/Maintenance Technology, AAS

Total Degree Map Credits

63

Degree Map Effective Catalog Year

2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	18	0

Requirement Select

- IND111 - Foundations of Manufacturing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- IND115 - Industrial Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- IND117 - Variable Speed Motor Control

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- IND122 - AC/DC Circuits

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- IND150 - Manufacturing Equipment and Tools

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- PDV115 - Work Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	14	0

Requirement Select
- IND109 - Programmable Logic Controllers (PLC)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- IND116 - Advanced Motor Controls

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- IND131 - Industrial Programmable Logic Controls (PLC)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- IND137 - Industrial Schematics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- IND143 - Electrical System Troubleshooting

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	6	0

Requirement Select
- IND147 - Fluid Power I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- Industrial Machine/Maintenance Technology Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	13	0

Requirement Select
- IND121 - Mechanical Systems Reliability

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- IND130 - Mechanical Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- IND132 - Industrial Process Control

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- IND152 - Predictive Maintenance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- IND157 - Preventative Maintenance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	12	0

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- SPH111 - Interpersonal Communication

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-INF_TECH - Computer Support Specialist, AAS

Overview

Department(s)
Information Technology

Degree Designation
Associate of Applied Science

Catalog Full Description

Computer Support Specialist
The Computer Support Specialist program prepares individuals to provide technical assistance, support, and advice to computer users to troubleshoot software, hardware and networking problems. The program includes instruction in computer concepts, information systems, networking, security, operating systems, the Internet, software applications, help desk concepts, effective written and verbal communication skills, team management, project management, customer service and problem solving skills. Students are prepared to enter the workforce as a Computer User Support Specialist, Help Desk Technician, Technical Support Specialist or IT Support Representative. The WSU Tech Computer Support Specialist program is aligned with the National Center for Education Statistics CIP code 11.1006: Computer Support Specialist prepares individuals to provide technical assistance, support, and advice to computer users to help troubleshoot software and hardware problems. Includes instruction in computer concepts, information systems, networking, operating systems, computer hardware, the Internet, software applications, help desk concepts and problem solving, and principles of customer service.

Computer Support Specialist with Emphasis in Cyber Security
The Computer Support Specialist with Emphasis in Cyber Security associate of applied science (AAS) program prepares students to work in the field of Cyber Security. Learning opportunities develop academic, technical and professional knowledge and skill required for job acquisition. The program is comprised of a set of core courses in information technology fundamentals and advanced courses focused on Cyber law/ethics, server security, digital forensics, and advanced network security. Program electives provide students the opportunity to concentrate on additional IT technical skills. Program graduates may also receive a Computer Support Specialist Emphasis in Cyber Security technical certificate. The WSU Tech Computer Support Specialist with Emphasis in Cyber Security program is aligned with the National Center for Education Statistics CIP code 11.1006: Computer Support Specialist prepares individuals to provide technical assistance, support, and advice to computer users to help troubleshoot software and hardware problems. Includes instruction in computer concepts, information systems, networking, operating systems, computer hardware, the Internet, software applications, help desk concepts and problem solving, and principles of customer service.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
The student will demonstrate the ability to manage, troubleshoot and repair information technology hardware.

Name
The student will demonstrate an understanding of various operating systems.

Name
The student will be able to analyze the status of computer networks, support computer networks, and manage a network implementation project.

Name
The student will demonstrate the ability to provide end-user support.

Name
The student will demonstrate the ability to solve information technology problems.

Name
The student will demonstrate the necessary customer service skills as an IT professional.

Name
Student will demonstrate the knowledge of how to work at the command line level.

Name
Utilize standard software tools , information security tools and devices common to the industry

Name
Use incident response models and forensic techniques to investigate security incidents

Name
Perform information gathering and vulnerability scanning activities

Name
Identify and present indicators of a network security breach while preserving the integrity of digital evidence

Name
Explore the legal, social and ethical cybersecurity concerns related to industry

Program Costs

Computer Support Specialist $14,335.00

Computer Support Specialist Emphasis in Cyber Security $14,312.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location

WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Computer Support Specialist, AAS

Type

Completion Requirement

Computer Support Specialist

Complete ALL of the following Courses:

- INF105 - CompTIA A+ Core 1 - 3 Credits
- INF110 - CompTIA A+ Core 2 - 3 Credits
- INF112 - Network Essentials - 3 Credits
- INF115 - Network+ Part I - 3 Credits
- INF116 - Network+ Part II - 3 Credits
- INF120 - Security+ - 3 Credits
- INF134 - Server + - 3 Credits
- INF139 - Cybersecurity Essentials - 3 Credits
- INF142 - Cloud+ - 3 Credits
- INF144 - Virtualization - 3 Credits
- INF164 - Switching, Routing, & Wireless - 3 Credits
- INF167 - Enterprise Network, Sec & Auto - 3 Credits
- INF172 - Multi-Cloud Networking - 3 Credits
- INF174 - Info Technology Capstone - 3 Credits
  OR INF175 - Info Technology Internship - 3 Credits
- CED115 - Computer Applications - 3 Credits
- ENG101 - Composition I - 3 Credits

Computer Support Specialist Requirement

Earn at least 6 credits from the following:

- Computer Support Specialist Elective

General Education Requirement

Earn at least 3 credits from the following:

- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:

- Math Elective

General Education Requirement

Earn at least 3 credits from the following:

- Social Sciences Elective

Computer Support Specialist with Emphasis in Cyber Security, AAS

Type

Completion Requirement

Computer Support Specialist with Emphasis in Cyber Security

Complete ALL of the following Courses:

- INF105 - CompTIA A+ Core 1 - 3 Credits
- INF110 - CompTIA A+ Core 2 - 3 Credits
- INF112 - Network Essentials - 3 Credits
- INF113 - Introduction to Programming - 3 Credits
- INF115 - Network+ Part I - 3 Credits
- INF116 - Network+ Part II - 3 Credits
- INF120 - Security+ - 3 Credits
- INF134 - Server + - 3 Credits
- INF136 - Introduction to PowerShell - 3 Credits
- INF139 - Cybersecurity Essentials - 3 Credits
- INF154 - Ethical Hacker - 3 Credits
- INF160 - Server Security - 3 Credits
- INF165 - Advanced Cyber Security - 3 Credits
- INF174 - Info Technology Capstone - 3 Credits
  OR INF175 - Info Technology Internship - 3 Credits
- CED115 - Computer Applications - 3 Credits
- ENG101 - Composition I - 3 Credits

Computer Support Specialist with Emphasis in Cyber Security Requirement

Earn at least 6 credits from the following:

- Computer Support Specialist with Emphasis in Cyber Security Elective

General Education Requirement

Earn at least 3 credits from the following:

- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:

- Math Elective

General Education Requirement

Earn at least 3 credits from the following:

- Social Sciences Elective

Entry Requirements

- Be 16 years of age or older
- Completion of application and related procedures

Degree Maps

Degree Map Name

Computer Support Specialist With Emphasis in Cyber Security, AAS

Total Degree Map Credits

63

Degree Map Effective Catalog Year

2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	15	0

Requirement Select
- INF105 - CompTIA A+ Core 1

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- INF110 - CompTIA A+ Core 2

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF112 - Network Essentials

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF139 - Cybersecurity Essentials

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	15	0

Requirement Select
- INF115 - Network+ Part I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF116 - Network+ Part II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF120 - Security+

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF134 - Server +

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	9	0

Requirement Select
- INF160 - Server Security

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF165 - Advanced Cyber Security

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	12	0

Requirement Select
- INF113 - Introduction to Programming

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF136 - Introduction to PowerShell

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- INF154 - Ethical Hacker

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- Computer Support Specialist with Emphasis in Cyber Security Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	12	0

Requirement Select

- INF174 - Information Technology Capstone

OR

- INF175 - Information Technology Internship

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	135
Clinical	-
Criticality	No

Requirement Select

- Computer Support Specialist with Emphasis in Cyber Security Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select

- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select

- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

Degree Map Name
Computer Support Specialist, AAS
Total Degree Map Credits
63
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	15	0

Requirement Select

- INF105 - CompTIA A+ Core 1

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- INF110 - CompTIA A+ Core 2

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF112 - Network Essentials

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF139 - Cybersecurity Essentials

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	15	0

Requirement Select
- INF115 - Network+ Part I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF116 - Network+ Part II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF120 - Security+

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF134 - Server +

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	9	0

Requirement Select

- INF164 - Switching, Routing, and Wireless Essentials

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- INF167 - Enterprise Networking, Security, and Automation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	12	0

Requirement Select

- INF142 - Cloud+

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- INF144 - Virtualization

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- INF172 - Multi-Cloud Networking

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- Computer Support Specialist Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	12	0

Requirement Select

- INF174 - Information Technology Capstone

  OR

- AAD120 - Data Visualization

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60 - 135
Clinical	-
Criticality	No

Requirement Select

- CED115 - Computer Applications

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- Computer Support Specialist Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select

- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-INT_DES - Interior Design

Overview

Department(s)
Professional Studies

Degree Designation
Associate of Applied Science

Catalog Full Description
This Interior Design program provides competency-based training in research techniques, problem solving, proficiencies and presentation skills required to be a successful professional interior designer. The program focuses on creativity and critical thinking. Students learn the basics of interior design, including the principles and elements of design; blueprint reading; building technology; color theory; materials; fabrics; history of furniture and architecture; lighting technologies; drawing for interiors; and business law for interiors. Students also gain practical experience, and through out the program, they build a professional portfolio.Students will round off their educational experience by completing 15 credits of general education courses in five areas of study including mathematics, natural and social sciences, English and communications. Students completing the degree are eligible to take the national exam to become a licensed interior designer after appropriate completion of work experience as required by the National Council of Interior Design Qualifications (NCIDQ).

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Analyze the clients needs, goals and life and safety requirements

Name
Integrate findings with knowledge of interior design

Name
Formulate preliminary design concepts that are appropriate, functional and aesthetic

Name
Develop and present final design recommendations through appropriate presentation media.

Name
Prepare a cover letter, resume, and portfolio to achieve success in a mock interview.

Name
Demonstrate effective oral communication skills through proficient delivery of information and ideas in presentations.

Name
Create presentation materials that enhance the quality and impact of oral presentations.

Program Costs
Interior Design, AAS - $13,600.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Interior Design

Type
Completion Requirement

Interior Design Requirements

Complete ALL of the following Courses:

- INT101 - Interior Design Fundamentals - 3 Credits
- INT105 - BP Reading for Interior Design - 3 Credits
- INT110 - Color Theory - 3 Credits
- INT126 - Textiles - 3 Credits
- INT127 - Matrls Interior Environments - 3 Credits
- INT141 - History of Furniture and Arch - 5 Credits
- INT155 - Lighting Technologies - 3 Credits
- INT160 - Design Studio I - 3 Credits
- INT165 - Design Studio II - 3 Credits
- INT166 - AutoCAD for Interior Design - 5 Credits
- INT168 - Basic Chief Architect Interior - 3 Credits
- INT170 - Business Pract & Portfolio Dev - 4 Credits
- INT173 - Design Studio III - 3 Credits
- INT190 - Drafting for Interiors - 3 Credits
- INT192 - Perspective Drawing - 3 Credits
- INT193 - Rendering for Interior Design - 3 Credits
- INT196 - Interior Design Codes & Stand - 3 Credits
- INT218 - Kitchen & Bath Design - 3 Credits
- ART100 - Art Appreciation - 3 Credits
- CED115 - Computer Applications - 3 Credits
- ENG101 - Composition I - 3 Credits
- SPH101 - Public Speaking - 3 Credits

General Education Requirement

Earn at least 3 credits from the following:

- Math Elective

Entry Requirements
Be 16 years of age or older

Degree Maps

Degree Map Name
Interior Design, AAS
Total Degree Map Credits
74
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	15	0

Requirement Select

- INT101 - Interior Design Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- INT105 - Blueprint Reading for Interior Design

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- INT110 - Color Theory

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- INT126 - Textiles

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- INT196 - Interior Design Codes & Standards

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	17	0

Requirement Select
- INT127 - Materials for Interior Environments

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- INT141 - History of Furniture & Architecture

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select
- INT155 - Lighting Technologies

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- INT190 - Drafting for Interiors

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- INT193 - Rendering for Interior Design

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	9	0

Requirement Select
- ART100 - Art Appreciation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CED115 - Computer Applications

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	14	0

Requirement Select
- INT160 - Design Studio I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- INT165 - Design Studio II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- INT166 - AutoCAD for Interior Design

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select
- INT218 - Kitchen & Bath Design

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	13	0

Requirement Select
- INT168 - Basic Chief Architect for Interior Design

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- INT170 - Business Practices & Portfolio Development

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- INT173 - Design Studio III

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- INT192 - Perspective Drawing for Interior Design

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Summer	6	0

Requirement Select
- SPH101 - Public Speaking

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-IRON_TCH - Iron Worker Apprenticeship, AAS

Overview

Department(s)
Apprenticeship & Appl Learning

Degree Designation
Associate of Applied Science

Catalog Full Description
The Iron Worker Apprenticeship Associate of Applied Science (AAS) degree is designed for individuals who have completed a registered apprenticeship program through an approved Ironwork training facility. Students receive 45 credits for prior learning based on their journeyman card and complete an additional 15 credit hours of general education to earn the degree. This program combines advanced technical training with foundational college coursework to support career growth and leadership opportunities in the skilled trades.

Program Level
Undergraduate

Effective Start Term
Fall 2025

Learning Outcomes

Name
Demonstrate advanced iron workers skills, safety practices, and problem-solving abilities consistent with the standards of a licensed journeyman as verified through completion of an approved apprenticeship program.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211

Requirements

Simple Requirements

Program Requirements

Ironworkers Apprenticeship, AAS

Type
Completion Requirement

Iron Worker Apprenticeship Requirements

Complete ALL of the following Courses:
- IWT225 - Ironworker Apprenticeship - 45 Credits
- ENG101 - Composition I - 3 Credits

General Education Requirement

Earn at least 15 credits from the following:
- Communication Elective
- Humanities Elective
- Math Elective
- Science Elective
- Social Sciences Elective

Entry Requirements
Complete all college admissions documents

Journeyman Card

AAS-LSC_MGMT - Logistics and Supply Chain Management, AAS

Overview

Department(s)
Professional Studies

Degree Designation
Associate of Applied Science

Catalog Full Description
In this program students learn the fundamental principles of logistic and transportation. Students study the procurement, movement, storage and processing of materials and information across the entire supply chain. Students will study the process from the acquisition of raw materials and components through manufacturing to delivery of finished products to end users. Special attention is given to the roles of technology and customer service in the supply chain. Additional courses in project and business management, ethics and 15 credits of general education will provide student with the depth and breadth of knowledge needed to succeed in this growing field.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Describe contemporary logistics management and examine its increased global importance.

Name
Differentiate logistics and supply chain management functions within a firm.

Name
Illustrate potential barriers to supply chain management implementation and identify current supply chain integration complexities.

Name
Examine technology issues for effective and efficient utilization of information in logistics management.

Name
Explain various financial tools to measure logistics contract performance, manage losses & recovery.

Name
Interpret the concept of logistics social responsibility in relation to operational sustainability and ethics.

Name
Explain demand forecasting models for order and inventory management purposes.

Name
Examine the strategic importance of the warehouse management process and performance.

Name
Compare transportation infrastructures and identify different modes of transportation.

Name
Explain the impact of regulation on transportation and classify carriers.

Name
Discuss how logistical services are procured and rates are determined in relation to service provider selection.

Name
Interpret international logistics and explain operational details of global logistical activities.

Name
Explain documentation as well as terms of sale and methods of payment for international shipments.

Program Costs
Logistics and Supply Chain Management, AAS - $11,700.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Logistics and Supply Chain Managment, AAS

Type
Completion Requirement

Logistics and Supply Chain Management Requirements

Complete ALL of the following Courses:
- LGM101 - Principles Logistics & Supply - 3 Credits
- LGM102 - Inventory Control - 3 Credits
- LGM105 - Warehouse Management - 3 Credits
- LGM106 - Transportation & Traffic Mgmt - 3 Credits
- LGM108 - International Logistics - 3 Credits
- LGM109 - Applications and ERP Systems - 3 Credits
- LGM110 - Logistics Safety/OSHA 10 - 2 Credits
- LGM111 - Purchasing, Contracts, Freight - 3 Credits
- LGM150 - Supply Chain Analytics - 3 Credits
- LGM196 - Capstone Experience in LGM - 4 Credits
- BUS104 - Introduction to Business - 3 Credits
- ENG101 - Composition I - 3 Credits
- OPM115 - Introduction to Project Mgmt - 3 Credits
- PHL110 - Ethics - 3 Credits

Logistics and Supply Chain Management Requirement

Earn at least 6 credits from the following:
- Logistics and Supply Chain Management Elective

General Education Requirement

Earn at least 3 credits from the following:
- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:
- Humanities Elective

General Education Requirement

Earn at least 3 credits from the following:
- Math Elective

General Education Requirement

Earn at least 3 credits from the following:
- Social Sciences Elective

Entry Requirements
Be 16 years of age or older, Documentation of high school graduation or satisfaction of high school equivalency certificate requirements, or students currently enrolled in high school or GED program and have attained junior status, Completion of application and related procedures

Degree Maps

Degree Map Name
Logistics and Supply Chain Management, AAS
Total Degree Map Credits
60
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	12	0

Requirement Select

- LGM101 - Principles of Logistics and Supply Chain Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- LGM102 - Inventory Control

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- BUS104 - Introduction to Business

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	12	0

Requirement Select

- LGM111 - Purchasing, Contracts, and Freight Claims

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- LGM150 - Supply Chain Analytics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- OPM115 - Introduction to Project Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	6	0

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- PHL110 - Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	12	0

Requirement Select
- LGM105 - Warehouse Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- LGM106 - Transportation and Traffic Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Logistics and Supply Chain Management Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	11	0

Requirement Select
- LGM108 - International Logistics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- LGM109 - Applications and ERP Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- LGM110 - Logistics Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select

- Logistics and Supply Chain Management Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Summer	7	0

Requirement Select

- LGM196 - Capstone Experience in Logistics & Supply Chain Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-MACH_TEC - Machining Technology (Machining & Manufacturing Technology), AAS

Overview

Department(s)
Manufacturing

Degree Designation
Associate of Applied Science

Catalog Full Description
This program gives the students the opportunity to gain skills, knowledge, and abilities in various machining processes and procedures. A significant emphasis is placed on CNC machining, including 3, 4, and 5-axis milling and CNC lathe. Classroom and laboratory instruction in safety, precision measuring, geometric dimension and tolerancing, and metrology is available. Students will enhance their competencies by gaining multi-machine setup and operations skills and robotic collaborative assist technologies, including machine tending and automatic part movement. Students will also gain advanced machining experience that includes hardened or exotic materials. Students will round out their experience by completing 15 credits of general education courses. The WSU Tech Machining Technology (Machining & Manufacturing Technology)program is aligned with the National Center for Education Statistics CIP code 48.0501: Machine Tool Technology/Machinist prepares individuals to apply technical knowledge and skills to plan, manufacture, assemble, test, and repair parts, mechanisms, machines, and structures in which materials are cast, formed, shaped, molded, heat treated, cut, twisted, pressed, fused, stamped or worked.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Operate machine tool equipment commonly found in industry including manual and computer controlled lathes, milling machines, drill presses and cutting machines

Name
Manufacture parts from various materials in accordance with specifications from blueprints, electronic drawings and shop sketches

Name
Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking

Name
Apply safety principles in a work environment to minimize hazards and prevent losses to productivity

Name
Demonstrate employability skills needed to obtain and retain employment in machine tool and related fields

Name
Use CAD and CAM programs to design parts and program manufacturing machines

Program Costs
Machining Technology (Machining & Manufacturing Technology), AAS
-$14,450.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Machining Technology (Machining & Manufacturing Technology),AAS

Type
Completion Requirement

Machining Technology (Machining & Manufacturing Technology) Requirements

Complete ALL of the following Courses:
- MMG113 - Print Reading - 2 Credits
- MMG116 - Quality Control & Inspection - 1 Credits
- MMG130 - Bench Work - 1 Credits
- MMG131 - Metallurgy - 1 Credits
- MMG132 - Machine Tool Processes - 1 Credits
- MMG135 - Machining Fundamentals - 3 Credits
- MMG140 - Metrology - 4 Credits
- MMG155 - CNC Lathe - 3 Credits
- MMG156 - CNC Operations - 3 Credits
- MMG160 - CNC Milling I - 3 Credits
- MMG164 - Advanced Machining Processes - 4 Credits
- MMG170 - Mastercam Mill 2 Axis - 4 Credits
- MMG173 - G D & T for Machining - 3 Credits
- MMG180 - Mastercam 4 & 5 Axis Mill - 4 Credits
- MMG184 - Multi-Axis Milling - 4 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- ENG101 - Composition I - 3 Credits
- MCD106 - Precision Measuring - 2 Credits
- PDV115 - Work Ethics - 2 Credits

General Education Requirement

Complete ANY of the following Course Sets:
- Communication Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Humanities Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Math Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Social Sciences Elective

Entry Requirements
Be 16 years of age or older

Degree Maps

Degree Map Name
Machining Technology (Machining & Manufacturing Technology), AAS
Total Degree Map Credits
61
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	19	0

Requirement Select
- MMG113 - Print Reading

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MMG116 - Quality Control & Inspection

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MMG131 - Metallurgy

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MMG135 - Machining Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MMG155 - CNC Lathe

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- MMG156 - CNC Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MMG160 - CNC Milling I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- PDV115 - Work Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	18	0

Requirement Select
- MMG130 - Bench Work

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MMG140 - Metrology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- MMG170 - Mastercam Mill 2 Axis

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- MMG184 - Multi-Axis Milling

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- MCD106 - Precision Measuring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	6	0

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	12	0

Requirement Select
- MMG132 - Machine Tool Processes

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MMG164 - Advanced Machining Processes

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- MMG173 - G D & T for Machining

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MMG180 - Mastercam 4 & 5 Axis Mill

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	6	0

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-MAINT_TC - Aviation Maintenance Technology, AAS

Overview

Department(s)
Aviation

Degree Designation
Associate of Applied Science

Catalog Full Description
This program meets the requirements for students to take the exam for the airframe and powerplant mechanic certificate. The certificate authorizes the holder to approve aircraft that has undergone inspection or maintenance for return to service. This curriculum is approved by the Federal Aviation Administration. Graduates from this program are in demand not only in the field of aviation but in other fields that require a high degree of mechanical knowledge.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Install and repair sheet metal and non-metallic structures

Name
Inspect and install assembly and rigging components

Name
Perform an airframe inspection

Name
Inspect and service aircraft landing gear systems

Name
Inspect and repair hydraulic and pneumatic power systems

Name
Troubleshoot and service aircraft fuel systems

Name
Inspect and repair aircraft electrical systems

Name
Perform an inspection of reciprocating and/or turbine engines

Name
Inspect and repair ignition and starting systems

Name
Inspect and repair engine fuel systems

Name
Inspect and repair induction and engine airflow systems

Name
Inspect and repair engine exhaust and reversers systems

Name
Inspect and repair propellers

Name
Inspect and troubleshoot engine instrument systems

Name
Install safety wire on nuts, bolts, and turnbuckles.

Name
Fabricate a rigid line with a flare and a bend.

Program Costs
Aviation Maintenance Technology, AAS - $33,680.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Aviation Maintenance Technology, AAS

Type
Completion Requirement

Aviation Maintenance Technology Requirements

Complete ALL of the following Courses:

- AMT187 - General I - 4 Credits
- AMT188 - General II - 4 Credits
- AMT189 - General III - 5 Credits
- AMT190 - General IV - 5 Credits
  OR AMF191 - General - 5 Credits
- AMT233 - Airframe I - 4 Credits
- AMT234 - Airframe II - 5 Credits
- AMT235 - Airframe III - 5 Credits
- AMT236 - Airframe IV - 5 Credits
- AMT237 - Airframe V - 5 Credits
- AMT238 - Airframe VI - 5 Credits
- AMT239 - Airframe VII - 5 Credits
  OR AMF240 - Airframe - 5 Credits
- AMT253 - Powerplant I - 4 Credits
- AMT254 - Powerplant II - 5 Credits
- AMT255 - Powerplant III - 5 Credits
- AMT256 - Powerplant IV - 6 Credits
- AMT257 - Powerplant V - 5 Credits
  OR AMF258 - Powerplant - 5 Credits
- ENG101 - Composition I - 3 Credits

General Education Requirement

Complete ANY of the following Course Sets:

- Communication Elective

General Education Requirement

Complete ANY of the following Course Sets:

- Humanities Elective

General Education Requirement

Complete ANY of the following Course Sets:

- Math Elective

General Education Requirement

Complete ANY of the following Course Sets:

- Social Sciences Elective

Entry Requirements

Be 16 years of age or older, Show documentation of high school graduation or satisfaction of high school equivalency prior to graduation from the program, Meet entrance exam requirements, Must be able to read, write and speak the English Language.

Degree Maps

Degree Map Name
Aviation Maintenance Technology, AAS
Total Degree Map Credits
92
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	21	0

Requirement Select

- AMT187 - General I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- AMT188 - General II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- AMT189 - General III

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select

- AMT190 - General IV
  OR
- AMF191 - General

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	75 - 105
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	22	0

Requirement Select
- AMT233 - Airframe I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AMT234 - Airframe II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- AMT235 - Airframe III

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- AMT236 - Airframe IV

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	10	0

Requirement Select
- AMT237 - Airframe V

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- AMT238 - Airframe VI

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	22	0

Requirement Select

- AMT239 - Airframe VII

OR

- AMF240 - Airframe

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	75 - 105
Clinical	-
Criticality	No

Requirement Select

- AMT253 - Powerplant I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- AMT254 - Powerplant II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select

- AMT255 - Powerplant III

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select

- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	17	0

Requirement Select

- AMT256 - Powerplant IV

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	6
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select

- AMT257 - Powerplant V

OR

- AMF258 - Powerplant

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	75 - 105
Clinical	-
Criticality	No

Requirement Select

- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select

- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-MNF_TECH - Manufacturing Technology, AAS

Overview

Department(s)
Manufacturing

Degree Designation
Associate of Applied Science

Catalog Full Description
This program provides graduates with a well-rounded education in basic manufacturing processes and progresses them through multiple manufacturing concepts to more advanced automation skills including industry specific skills of assembly and production for a variety of manufacturing sectors. All students will experience a core curriculum focused on the foundational skills in manufacturing processes including precision measuring, blueprint reading quality control, and basic design concepts. Different pathways allow for students to learn on state-of-the-art industrial trainers and systems to match industry skills in assembly, operations, fabrication, maintenance, and CNC operators. Onsite networks allow the building of virtual factories, buildings, and other smart components. Students will create integration scenarios, troubleshooting activities, root-cause analysis, and other real-world scenarios.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Identify the basic procedures and processes associated with manufacturing

Name
Identify the basic metallurgical principles as they relate to manufacturing

Name
Demonstrate advanced systems technology skills as they relate to manufacturing

Name
Apply safe and approved practices in the workplace

Name
Analyze, interpret, modify and prepare drawings used in the manufacturing process

Name
Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking

Name
Apply appropriate mathematical skills to solve real-world problems

Name
Demonstrate the ability to utilize tools and equipment used in the manufacturing environment

Name
Demonstrate the ability to safely operate manufacturing joining, cutting, and bending

Name
Perform assembly tasks utilized in a wide range of manufacturing processes

Name
Identify potential maintenance issues with basic production systems.

Name
Demonstrate the basics of electrical wiring and AC/DC principles

Name
Identify potential fluid system issues which will require maintenance personnel to correct

Name
Perform basic PLC programming

Name
Analyze and solve manufacturing production issues utilizing machine automation solutions

Program Costs
Manufacturing Technology, AAS - $14,648.00

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226, FUTURE READY CENTER - 1403 North Waco, Wichita, KS 67203

Requirements

Simple Requirements

Program Requirements

Manufacturing Technology, AAS

Type
Completion Requirement

Manufacturing Technology Requirements

Complete ALL of the following Courses:
- MNF110 - CNC Basics - 2 Credits
- MNF113 - Blueprint Basics Manufacturing - 2 Credits
- MNF115 - Forklift Operations - 1 Credits
- MNF120 - Processes & Production I - 3 Credits
- MNF125 - Maintenance Training - 4 Credits
- MNF130 - Processes & Production II - 3 Credits
- MNF163 - Production Assembly - 3 Credits
- AVC104 - Quality Control Concepts - 1 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- AVC135 - Hand Tools - 1 Credits
- AVC145 - Power Island - 1 Credits
- MCD106 - Precision Measuring - 2 Credits
- MCD137 - Introduction to 3D Printing - 2 Credits
- MMG131 - Metallurgy - 1 Credits
- PDV115 - Work Ethics - 2 Credits
- ENG101 - Composition I - 3 Credits

Manufacturing Technology Requirement

Earn at least 16 credits from the following:
- Manufacturing Technology Electives

General Education Requirement

Complete ANY of the following Course Sets:
- Communication Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Humanities Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Math Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Social Sciences Elective

Entry Requirements
- Be 16 years of age or older

Degree Maps

Degree Map Name
Manufacturing Technology, AAS
Total Degree Map Credits
60
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	11	0

Requirement Select
- MNF113 - Blueprint Basics For Manufacturing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MNF115 - Forklift Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MNF120 - Manufacturing Processes & Production I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AVC104 - Quality Control Concepts

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC135 - Hand Tools

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC145 - Power Island

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MMG131 - Metallurgy

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	18	0

Requirement Select
- MNF110 - CNC Basics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- MNF125 - Maintenance Training

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- MNF130 - Manufacturing Processes & Production II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MNF163 - Production Assembly

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- MCD106 - Precision Measuring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MCD137 - Introduction to 3D Printing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PDV115 - Work Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	6	0

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	14	0

Requirement Select
- Manufacturing Technology Electives

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	8
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	11	0

Requirement Select
- Manufacturing Technology Electives

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	8
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-MNT_HLTH - Mental Health Technician, AAS

Overview

Department(s)
Nursing

Degree Designation
Associate of Applied Science

Catalog Full Description
The Mental Health Technician program integrates core mental health courses with general education. Students engage in hands-on learning, developing technical proficiency in nursing skills, emergency procedures, and advanced techniques. The curriculum emphasizes mental health competence, covering the causes and treatment of mental illness, resilience, and effective communication. The program also focuses on pharmacology and drug administration skills and insights into behavioral science factors impacting mental health. Graduates emerge with a well-rounded skill set to provide compassionate care in mental and physical health settings and are prepared to take the Licensed Mental Health Technician exam.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Apply basic nursing skills for health maintenance and promotion, including proficiency in bed making, personal hygiene, activities of daily living (ADL), infection prevention, vital signs, and safety measures.

Name
Acquire and integrate advanced nursing skills related to infection control, ostomy care, catheterization care, oxygen administration, suctioning, and care of clients receiving intravenous infusion therapy.

Name
Develop and apply basic observation skills, communication skills, and reporting responsibilities necessary for the mental health technician role.

Name
Integrate knowledge of mental disorders with therapeutic nursing principles, treatment, and rehabilitation interventions. Demonstrate the ability to apply technical skills in the treatment and rehabilitation of clients with both mental and physical illnesses.

Name
Recognize the impact of social, economic, and cultural factors in the development of mental illness. Understand group and family dynamics and their relationship to mental illness, emphasizing the effects of serious and persistent mental illness on daily functioning, interpersonal relationships, and quality of life.

Name
Develop cultural competence and sensitivity to address the diverse needs of individuals from various backgrounds, recognizing the influence of cultural factors on mental health.

Name
Demonstrate competence in emergency procedures, such as fire and disaster response, CPR, First Aid, and assisting with emergency oxygen and suctioning equipment.

Name
Understand the concepts of mental health and mental illness, including causes, symptoms, and treatment. Demonstrate knowledge of diagnostic criteria for major mental illnesses.

Name
Demonstrate an understanding of psychiatric/mental health concepts and the role of a Mental Health Technician in working with clients. Develop therapeutic communication skills and apply safety measures in a mental health setting.

Name
Understand basic concepts of drug administration and the pharmacological effects of drugs. Demonstrate proficiency in safe and accurate drug administration through various routes

Program Costs
Mental Health Technician, AAS $14,170.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Mental Health Technician, AAS

Type
Completion Requirement

Mental Health Technician Requirements

Complete ALL of the following Courses:

- MNT120 - Understanding Mental Illness - 2 Credits
- MNT130 - Behavioral Science - 3 Credits
- MNT140 - Technical Health Skills I - 5 Credits
- MNT170 - Pharmacology & Drug Admin - 8 Credits
- MNT180 - Technical Health Skills II - 5 Credits
- MNT190 - Therapeutic Communication - 2 Credits
- MNT200 - Psychiatric Interventions - 8 Credits
- ALH110 - Principles of Nutrition - 3 Credits
- ENG101 - Composition I - 3 Credits
- PSY101 - General Psychology - 3 Credits
- PSY120 - Developmental Psychology - 3 Credits
- SOC101 - Principles of Sociology - 3 Credits

General Education Requirement

Complete ANY of the following Course Sets:

- Communication Elective

General Education Requirement

Earn at least 6 credits from the following:

- Humanities Elective

General Education Requirement

Complete ANY of the following Course Sets:

- Math Elective

Entry Requirements

Be 18 years of age or older to participate in clinicals, Documentation of high school graduation or satisfaction of high school equivalency certificate requirements, or students currently enrolled in high school or GED program and have attained junior status, Completion of application and related procedures

Degree Maps

Degree Map Name
Mental Health Technician, AAS
Total Degree Map Credits
60
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	19	0

Requirement Select

- MNT120 - Understanding Mental Illness

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select

- MNT130 - Behavioral Science

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- MNT140 - Technical Health Skills I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	135
Clinical	-
Criticality	No

Requirement Select

- PSY101 - General Psychology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- PSY120 - Developmental Psychology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	23	0

Requirement Select
- MNT170 - Pharmacology & Drug Administration

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	8
Progress Credits	-
Contact Hours	165
Clinical	-
Criticality	No

Requirement Select
- MNT180 - Technical Health Skills II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	135
Clinical	-
Criticality	No

Requirement Select
- MNT190 - Therapeutic Communication

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MNT200 - Psychiatric Interventions

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	8
Progress Credits	-
Contact Hours	210
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	18	0

Requirement Select
- ALH110 - Principles of Nutrition

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- SOC101 - Principles of Sociology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-MOB_EQPM - Mobile Equipment Technology, AAS

Overview

Department(s)
Applied Technologies

Degree Designation
Associate of Applied Science

Catalog Full Description
The Mobile Equipment Technology program prepares students to service, maintain, repair, and operate a variety of diesel-powered mobile equipment. Students develop a strong understanding of engine systems, hydraulics, electrical systems, powertrains, and other critical sub-systems. Through hands-on training, students learn to diagnose component failures, perform timely and accurate repairs, conduct preventive maintenance, and safely operate heavy equipment used across multiple industries. Students may pursue one of three tracks at the Associate of Applied Science (AAS) degree level: Mobile Equipment Technology (equipment maintenance and repair focus),Mobile Equipment Technology - Think Big (specialized Caterpillar Inc. partnership program), Heavy Equipment Operator (operation of bulldozers, excavators, loaders, and related heavy machinery). At the Technical Certificate (TC) level, students may choose between the Mobile Equipment Technology or Heavy Equipment Operator tracks. (The Think Big program is available only at the AAS level.) This flexible structure allows students to tailor their education to match their career goals, whether they aim to specialize in equipment maintenance and diagnostics or develop expertise in heavy equipment operation. Graduates are prepared for employment in industries such as construction, agriculture, transportation, energy, and heavy equipment services.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Prioritize safety and regulatory compliance in all aspects of mobile equipment repair and maintenance, ensuring adherence to industry standards and regulations.

Name
Value strong communication skills, enabling them to effectively interact with colleagues, clients, and supervisors in a professional manner.

Name
Demonstrate proficiency in repairing and maintaining diesel engines, fuel and exhaust systems, and machine-specific systems commonly found in mobile equipment.

Name
Obtain advanced diagnostic skills, utilizing diagnostic tests to identify issues in mobile equipment systems effectively.

Name
Exhibit competence in diagnosing and repairing powertrain systems, including engines, transmissions, and drivetrains, to ensure optimal performance and efficiency.

Name
Demonstrate mastery in fluid power principles and applications, enabling them to troubleshoot, repair, and maintain hydraulic systems in mobile equipment effectively.

Name
Show awareness in diagnosing and repairing electrical systems in mobile equipment, including wiring, circuits, and components, to ensure safe and reliable operation

Name
Diagnose and repair heating and air conditioning systems in mobile equipment, ensuring operator comfort and efficiency in various environmental conditions.

Name
Optimize engine performance in mobile equipment, improving fuel efficiency, power output, and overall reliability.

Name
Diagnose and repair braking, suspension, and steering systems in mobile equipment, ensuring safe operation and stability

Name
Acquaint self in fundamentals of dealership operations within the mobile equipment industry, including customer service, sales, and employer core values.

Name
Diagnose and repair equipment specific systems, such as heating and air conditioning, suspension systems, steering, air brakes, data links, voltage regulation, or transfer switches, based on specialized area of interest.

Name
Apply industry-standard operating procedures to safely and efficiently operate a variety of heavy equipment, including loaders, dozers, excavators, graders, forklifts, and scrapers, while performing preventive maintenance and adhering to OSHA/MSHA safety regulations.

Name
Interpret civil drawings and site plans, apply excavation and grading calculations, and utilize GPS/GNSS technology to manage site layout, material movement, drainage systems, and haul operations in alignment with project specifications.

Name
Demonstrate effective worksite communication using signaling systems, manage equipment and personnel logistics for site development projects, troubleshoot field equipment issues, and lead team-based operations to meet industry quality and safety standards.

Program Costs

Mobile Equipment Technology, Electric Power Generation, AAS - $16,457.00

Mobile Equipment Technology, Heavy Equipment, AAS - $16,577.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location

WSU Tech City Center – 301 S. Grove, Wichita, KS 67211

Requirements

Simple Requirements

Program Requirements

Mobile Equipment Technology - Electric Power Generation, AAS

Type

Completion Requirement

Mobile Equipment Technology - Electric Power Generation, AAS

Complete ALL of the following Courses:

- EQP119 - Internship I - 2 Credits
- EQP121 - Diesel Engine Repair - 3 Credits
- EQP124 - Electrical Systems - 3 Credits
- EQP125 - Machine Electronics - 3 Credits
- EQP129 - Internship II - 2 Credits
- EQP131 - Diesel Engine Performance - 3 Credits
- EQP132 - Engine Fuel Systems - 3 Credits
- EQP139 - Internship III - 2 Credits
- EQP149 - Internship IV - 2 Credits
- EQP180 - Fluid Power - 3 Credits
- EQP210 - Dealership Service Operations - 2 Credits
- EQP225 - Control Panels and Data Links - 4 Credits
- EQP230 - Automatic Transfer Switches - 4 Credits
- EQP235 - Voltage Regulation - 4 Credits
- EQP240 - Generators & EPG Calculations - 4 Credits
- TAS160 - Transportation Industry Safety - 2 Credits
- ENG101 - Composition I - 3 Credits

General Education Requirement

Complete ANY of the following Course Sets:

- Communication Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Humanities Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Math Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Social Sciences Elective

Mobile Equipment Technology, Heavy Equipment, AAS

Type
Completion Requirement

Mobile Equipment Technology, Heavy Equipment, AAS

Complete ALL of the following Courses:
- EQP119 - Internship I - 2 Credits
- EQP121 - Diesel Engine Repair - 3 Credits
- EQP124 - Electrical Systems - 3 Credits
- EQP125 - Machine Electronics - 3 Credits
- EQP128 - Mobile Air Conditioning - 2 Credits
- EQP129 - Internship II - 2 Credits
- EQP131 - Diesel Engine Performance - 3 Credits
- EQP132 - Engine Fuel Systems - 3 Credits
- EQP134 - Machine Specific Systems - 2 Credits
- EQP135 - Mobile Equipment Diagnostics - 3 Credits
- EQP139 - Internship III - 2 Credits
- EQP149 - Internship IV - 2 Credits
- EQP180 - Fluid Power - 3 Credits
- EQP206 - Powertrain Systems - 3 Credits
- EQP207 - Powertrain Systems II - 3 Credits
- EQP210 - Dealership Service Operations - 2 Credits
- EQP220 - Advanced Fluid Power - 3 Credits
- TAS160 - Transportation Industry Safety - 2 Credits
- ENG101 - Composition I - 3 Credits

General Education Requirement

Complete ANY of the following Course Sets:
- Communication Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Humanities Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Math Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Social Sciences Elective

Entry Requirements
- 16 years of age
- Complete all college admission documents
- Complete entrance exams for general education requirements

List additional Program Admission Requirements
Mobile Equipment Technology, Think Big

- All of the above program entry requirements
- Apply and be accepted to the Caterpillar :Think Big Program

Degree Maps

Degree Map Name
Mobile Equipment Technology - Heavy Equipment, AAS
Total Degree Map Credits
61
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	15	0

Requirement Select
- EQP119 - Internship I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- EQP121 - Diesel Engine Repair

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- EQP124 - Electrical Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- EQP210 - Dealership Service Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- TAS160 - Transportation Industry Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	13	0

Requirement Select
- EQP128 - Mobile Air Conditioning

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- EQP129 - Internship II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- EQP132 - Engine Fuel Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- EQP180 - Fluid Power

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	6	0

Requirement Select
- EQP206 - Powertrain Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- EQP220 - Advanced Fluid Power

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	14	0

Requirement Select
- EQP125 - Machine Electronics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- EQP131 - Diesel Engine Performance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- EQP139 - Internship III

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- EQP207 - Powertrain Systems II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	13	0

Requirement Select
- EQP134 - Machine Specific Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- EQP135 - Mobile Equipment Diagnostics Test

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- EQP149 - Internship IV

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

Degree Map Name
Mobile Equipment Technology - Electric Power Generation, AAS
Total Degree Map Credits
61
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	15	0

Requirement Select
- EQP119 - Internship I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- EQP121 - Diesel Engine Repair

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- EQP124 - Electrical Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- EQP210 - Dealership Service Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- TAS160 - Transportation Industry Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	11	0

Requirement Select
- EQP129 - Internship II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- EQP132 - Engine Fuel Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- EQP180 - Fluid Power

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	4	0

Requirement Select
- EQP225 - Control Panels and Data Links

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	16	0

Requirement Select
- EQP125 - Machine Electronics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- EQP139 - Internship III

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- EQP230 - Automatic Transfer Switches

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- EQP235 - Voltage Regulation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	15	0

Requirement Select
- EQP131 - Diesel Engine Performance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- EQP149 - Internship IV

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- EQP240 - Generators & EPG Calculations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select

- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-MSNR_CON - Masonry Construction, AAS

Overview

Department(s)
Applied Technologies

Degree Designation
Associate of Applied Science

Catalog Full Description
The Masonry Construction program prepares students for careers in the construction industry as skilled brick masons and block masons. Students gain hands-on experience in the layout, construction, and repair of structures using brick, block, and stone materials, while learning to read blueprints, mix and apply mortar, and safely operate industry-standard tools and equipment. In addition to the Technical Certificate, students will learn fundamental framing and carpentry.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Apply safety standards and jobsite procedures to maintain compliance with OSHA and industry expectations in all phases of masonry work.

Name
Interpret construction drawings, specifications, and codes to plan and execute masonry projects accurately.

Name
Select, prepare, and maintain masonry tools, materials, and equipment for proper and efficient use in the field.

Name
Mix, test, and apply mortar, grout, and reinforcement materials to achieve required strength and finish quality.

Name
Lay and align masonry units using appropriate bonding, leveling, and spacing techniques for structural and decorative applications.

Name
Construct structural and specialty masonry systems such as walls, arches, openings, and veneers according to trade standards.

Name
Perform inspection and quality assurance checks to ensure dimensional accuracy, surface finish, and code compliance.

Name
Estimate material quantities and labor requirements for residential and commercial masonry projects.

Name
Demonstrate teamwork, time management, and communication skills required to contribute effectively on a construction crew.

Name
Integrate principles of framing, layout, and finish carpentry to coordinate multi-trade construction activities.

Name
Apply quantitative reasoning and technical mathematics to solve construction layout, material, and cost calculations.

Name
Demonstrate written, verbal, and digital communication skills to produce clear documentation, reports, and jobsite correspondence.

Name
Utilize project planning and management principles to organize tasks, allocate resources, and oversee small crews.

Program Costs
Masonry Construction, AAS - $12,656.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
CTEC + WSU Tech – 1301 E. 27th Terrace, Pittsburg, KS 66762

Requirements

Simple Requirements

Program Requirements

Masonry Requirements, AAS

Type
Completion Requirement

Masonry Construction Requirements

Complete ALL of the following Courses:

- SAF101 - Safety Orientation/OSHA 10 - 1 Credits
- CCP100 - Introductory Craft Skills - 3 Credits
- CCP108 - Construction Basics - 2 Credits
- CCP112 - Carpentry I - 3 Credits
- CCP122 - Carpentry II - 4 Credits
- MAS123 - Masonry Materials and Methods - 5 Credits
- MAS133 - Masonry Installation Practices - 5 Credits
- MAS143 - Masonry Layout & Bonding Tech - 6 Credits
- MAS159 - Structural Masonry Application - 5 Credits
- MAS169 - Masonry Finishes and Specialty - 5 Credits
- MAS179 - Adv Masonry Laying Techniques - 6 Credits
- ENG101 - Composition I - 3 Credits

General Education Requirement

Earn at least 3 credits from the following:

- Math Elective

General Education Requirement

Earn at least 3 credits from the following:

- Humanities Elective

General Education Requirement

Earn at least 3 credits from the following:

- Social Sciences Elective

General Education Requirement

Earn at least 3 credits from the following:

- Communication Elective

Entry Requirements

- 16 years of age
- Complete all admission documents

Degree Maps

Degree Map Name
Masonry Construction, AAS
Total Degree Map Credits
60
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	14	0

Requirement Select
- SAF101 - Safety Orientation/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MAS123 - Masonry Materials and Methods

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- MAS133 - Masonry Installation Practices

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	13	0

Requirement Select
- MAS159 - Structural Masonry Applications

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- MAS169 - Masonry Finishes and Specialty Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	135
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	14	0

Requirement Select
- CCP100 - Introductory Craft Skills

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CCP108 - Construction Basics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MAS143 - Masonry Layout and Bonding Techniques

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	6
Progress Credits	-
Contact Hours	165
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	9	0

Requirement Select
- MAS179 - Advanced Masonry Laying Techniques

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	6
Progress Credits	-
Contact Hours	165
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 3	Fall	10	0

Requirement Select
- CCP112 - Carpentry I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- CCP122 - Carpentry II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-NDT - Nondestructive Testing, AAS

Overview

Department(s)
Aviation

Degree Designation
Associate of Applied Science

Catalog Full Description
The associate degree program is a sequence of courses designed to produce a technician who understands NDTs role in the aerospace industry, has mastered the American Society for Nondestructive Testing coursework for Levels I and II certification and has the depth and breadth of knowledge which comes from general education courses. In this program students will complete Levels I and II ASNT competencies for six NDT methods including liquid penetrant, ultrasonic, eddy current, visual, radiography and magnetic particle inspection. Students will round off their educational experience by completing 20 credits of general education courses in five areas of study including humanities, mathematics, natural and social sciences, English and communications.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Demonstrate the Level I standards identified by the American Society of Nondestructive Testing for the following methods: Penetrant Inspection, Visual Magnetic Particle, Radiographic, Eddy Current and Ultrasonic

Name
Demonstrate the Level II standards identified by the American Society of Nondestructive Testing for the following methods: Penetrant Inspection, Visual Magnetic Particle, Radiographic, Eddy Current and Ultrasonic

Name
Integrate and apply aerospace structures and composite material fabrication concepts into the NDT curriculum

Name
Apply NDT concepts to the Aerospace Assemblies

Program Costs
Nondestructive Testing, AAS - $15,467.00

Cost does not include online fees, books, or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Nondestructive Testing, AAS

Type
Completion Requirement

Nondestructive Testing Course List

Complete ALL of the following Courses:
- NDT100 - Penetrant Inspection - 3 Credits
- NDT101 - Magnetic Particle Testing - 3 Credits
- NDT102 - Radiation Safety - 3 Credits
- NDT103 - Radiographic Testing Level II - 3 Credits
- NDT106 - Formulations and Calculations - 2 Credits
- NDT107 - Radiographic Testing Level I - 3 Credits
- NDT110 - Eddy Current Level I - 3 Credits
- NDT111 - Eddy Current Level II - 3 Credits
- NDT112 - Ultrasonic Test Method Lvl I - 3 Credits
- NDT113 - Ultrasonic Test Method Lvl II - 3 Credits
- NDT114 - Visual Inspection - 2 Credits
- NDT123 - Adv Ultrasonic Testing Methods - 5 Credits
- AVC102 - Precision Instruments - 1 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- CFT101 - Introduction To Composites - 2 Credits
- ENG101 - Composition I - 3 Credits
- PHS110 - Physical Science - 5 Credits

General Education Requirement

Complete ANY of the following Course Sets:
- Communication Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Humanities Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Math Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Social Sciences Elective

Entry Requirements
- Be 18 years of age or older
- Complete all admission documents

Degree Maps

Degree Map Name
Nondestructive Testing, AAS
Total Degree Map Credits
60
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	19	0

Requirement Select
- NDT100 - Penetrant Inspection

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- NDT101 - Magnetic Particle Testing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	40
Clinical	-
Criticality	No

Requirement Select
- NDT106 - Formulations and Calculations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- NDT110 - Eddy Current Level I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	40
Clinical	-
Criticality	No

Requirement Select
- NDT111 - Eddy Current Level II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- NDT112 - Ultrasonic Testing Method Level I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	40
Clinical	-
Criticality	No

Requirement Select
- NDT114 - Visual Inspection

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	17	0

Requirement Select
- NDT102 - Radiation Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- NDT103 - Radiographic Testing Level II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- NDT107 - Radiographic Testing Level I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	40
Clinical	-
Criticality	No

Requirement Select
- NDT113 - Ultrasonic Testing Method Level II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- NDT123 - Advanced Ultrasonic Testing Methods

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	12	0

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	12	0

Requirement Select
- AVC102 - Precision Instruments

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- CFT101 - Introduction To Composites

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PHS110 - Physical Science

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-PLMP_TCH - Plumbers & Pipefitters Apprenticeship, AAS

Overview

Department(s)
Apprenticeship & Appl Learning

Degree Designation
Associate of Applied Science

Catalog Full Description
The Plumber & Pipefitter Apprenticeship Associate of Applied Science (AAS) degree is designed for individuals who have completed a registered apprenticeship program through an approved Plumber or Pipefitter training facility. Students receive 45 credits for prior learning based on their journeyman card and complete an additional 15 credit hours of general education to earn the degree. This program combines advanced technical training with foundational college coursework to support career growth and leadership opportunities in the skilled trades.

Program Level
Undergraduate

Effective Start Term
Fall 2025

Learning Outcomes

Name
Demonstrate advanced plumbing and pipefitting skills, safety practices, and problem-solving abilities consistent with the standards of a licensed journeyman as verified through completion of an approved apprenticeship program.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211

Requirements

Simple Requirements

Program Requirements

Plumber & Pipefitter Apprenticeship, AAS

Type
Completion Requirement

Plumbers & Pipefitters Apprenticeship Requirements

Complete ALL of the following Courses:
- PPT225 - Plumbers & Pipefitters Apps - 45 Credits
- ENG101 - Composition I - 3 Credits

General Education Requirement

Earn at least 15 credits from the following:
- Communication Elective
- Humanities Elective
- Math Elective
- Social Sciences Elective
- Science Elective

Entry Requirements
- Complete all admissions documentation
- Provide Plumbers & Pipefitters journeyman card
- Plumbers & Pipefitters Transcript from approved training facility

AAS-PROF_PLT - Professional Pilot, AAS

Overview

Department(s)
Aviation

Degree Designation
Associate of Applied Science

Catalog Full Description
This program prepares students for careers in the aviation industry as Professional Pilots. The program provides students the opportunity to progress through five FAA certifications/ratings including Private Pilot, Instrument Rating, Commercial Pilot, Multi-Engine Rating and Certified Flight Instructor. Located at the National Center for Aviation Training the program focuses on solid aviation skill sets, using state of the art equipment and is grounded in safety and risk management.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Demonstrate mastery of aeronautical knowledge and experience required for FAA certifications, including Private Pilot, Instrument Rating, Commercial Pilot, Multiengine, and Flight Instructor.

Name
Apply aviation regulations, procedures, and safety protocols to ensure compliance with Federal Aviation Administration (FAA) standards.

Name
Promote a culture of safety through adherence to human factors principles, safety reporting, and proactive risk mitigation.

Name
Execute safe and effective flight maneuvers using appropriate aeronautical decision-making (ADM), risk management, and crew resource management (CRM) strategies.

Name
Analyze meteorological and environmental data to make informed flight planning and in-flight decisions.

Program Costs

Name
Utilize aviation technology and tools—including navigation systems, flight planning software, and simulators—to enhance performance and situational awareness.

Professional Pilot, AAS - $98,700.00

Professional Pilot Private Pilot and Instrument Rating Transfer Lab), AAS - $66,118.00

Professional Pilot (Private Pilot Transfer Lab), AAS - $80,344.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who quality. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Professional Pilot, AAS

Type
Completion Requirement

Professional Pilot Requirements

Complete ALL of the following Courses:

- PLT104 - Introduction to Aviation - 3 Credits
- PLT112 - Private Pilot Flight Lab - 3 Credits
- PLT116 - Aviation Weather - 3 Credits
- PLT120 - Instrument Regs and Procedures - 3 Credits
- PLT126 - Aviation Standardization - 2 Credits
- PLT128 - Instrument Flight Lab - 3 Credits
- PLT130 - Aerodynamics and Aircraft Perf - 2 Credits
- PLT132 - Aviation Safety & Human Factor - 3 Credits
- PLT134 - Aircraft Systems for Pilots - 2 Credits
- PLT136 - Crew Resource Management - 2 Credits
- PLT144 - Intro to Commercial Flight - 3 Credits
- PLT146 - Air Traffic Control & Airspace - 2 Credits
- PLT152 - Commercial Flight Lab - 3 Credits
- PLT154 - Aviation Law and Regulations - 2 Credits
- PLT156 - Multiengine Aircraft Operation - 1 Credits
- PLT160 - Multiengine Flight Lab - 2 Credits
- PLT168 - Certified Flight Instruction - 4 Credits
- PLT176 - Certified Flight Instruct Lab - 2 Credits
- ENG101 - Composition I - 3 Credits

General Education Requirement

Complete ANY of the following Course Sets:

- Communication Elective

General Education Requirement

Complete ANY of the following Course Sets:

- Humanities Elective

General Education Requirement

Complete ANY of the following Course Sets:

- Math Elective

General Education Requirement

Complete ANY of the following Course Sets:

- Social Sciences Elective

Entry Requirements

Be 17 years of age or older

Completion of application and related procedures

Documentation of high school graduation or satisfaction of high school equivalency certificate requirements Satisfactory completion of a GED

Class 3 Medical Exam

Full financing must be in place prior to acceptance

Student Pilot Certificate Math and English placement scores that equate to intermediate algebra and composition I

Physical requirements - due to the safety requirements of flying in a Cessna 172 student cannot be taller than 6’3” or exceed 250 lbs.

Degree Maps

Degree Map Name
Professional Pilot, AAS
Total Degree Map Credits
60
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	16	0

Requirement Select
- PLT104 - Introduction to Aviation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PLT112 - Private Pilot Flight Lab

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- PLT126 - Aviation Standardization and Career Paths

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- PLT132 - Aviation Safety and Human Factors

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PLT146 - Air Traffic Control and Airspace

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	16	0

Requirement Select
- PLT116 - Aviation Weather

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PLT120 - Instrument Regulations and Procedures

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PLT128 - Instrument Flight Lab

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- PLT136 - Crew Resource Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- PLT154 - Aviation Law and Regulations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	16	0

Requirement Select
- PLT130 - Aerodynamics and Aircraft Performance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- PLT134 - Aircraft Systems for Pilots

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- PLT144 - Introduction to Commercial Flight

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PLT152 - Commercial Flight Lab

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	12	0

Requirement Select
- PLT156 - Multiengine Aircraft Operation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- PLT160 - Multiengine Flight Lab

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- PLT168 - Certified Flight Instruction

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- PLT176 - Certified Flight Instruction Lab

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-QUAL_INS - Quality Assurance Inspection, AAS

Overview

Department(s)
Manufacturing

Degree Designation
Associate of Applied Science

Catalog Full Description
The Quality Assurance Inspection program offers students the foundational skills to excel in various manufacturing environments. This program is designed for individuals aiming to ensure that products meet industry standards and customer expectations, focusing on quality control and inspection techniques. Through courses such as Quality Documentation, students will learn the importance of meticulous record-keeping in maintaining quality assurance standards. The Material Testing and Analysis course introduces students to various testing methods to assess material properties and detect potential defects. Additionally, the Root Cause Analysis course empowers students to investigate failures and implement effective solutions to improve manufacturing processes. Students will delve into essential topics such as Traceability, ensuring every component can be traced throughout its lifecycle, and Precision Measuring, which is critical for verifying product specifications. Understanding Human Factors helps students recognize the influence of human behavior on quality outcomes, while Metrology teaches them the principles of measurement necessary for quality control. This program incorporates two applied learning opportunities, providing students with hands-on experience in real manufacturing settings. By the end of the program, graduates will possess the skills to carry out thorough inspections, conduct tests, and ensure products are produced to the highest quality standards, ready to support diverse manufacturing sectors.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Identify safety hazards and proper work processes to ensure a safe working environment and company success.

Name
Apply proper quality management tools and Techniques to real world situations.

Name
Understand integrity of document control, including version control, approval processes, and distribution.

Name
Use variety of measurement techniques to ensure quality of manufacturing and or assembly applications.

Name

Interpret blueprint and specification documents for identification of proper application to inspection and procedures.

Program Costs

Quality Assurance Inspection, AAS - $14,530.00

Cost does not include online fees, books or tools. Financial assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location

WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Quality Assurance Inspection, AAS

Type

Completion Requirement

Quality Assurance Inspection Required Courses

Complete ALL of the following Courses:

- QAI135 - Quality Assurance Orientation - 1 Credits
- QAI145 - Quality Management - 3 Credits
- QAI155 - Quality Doc and Traceability - 3 Credits
- QAI165 - Materials Testing and Analysis - 3 Credits
- QAI175 - QAI Internship I - 3 Credits
- QAI185 - Statistical Process Control - 1 Credits
- QAI195 - Root Cause Analysis - 1 Credits
- QAI201 - Geo Dimensioning & Tolerance - 3 Credits
- QAI215 - Human Factors in Manufacturing - 3 Credits
- QAI225 - QAI Internship II - 4 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- AVC112 - Blueprint Reading - 2 Credits
- CAT101 - CATIA Part Design & Sketcher - 4 Credits
- MCD106 - Precision Measuring - 2 Credits
- MCD210 - Advanced Measuring - 3 Credits
- TFF120 - Metrology - 4 Credits
  OR MMG140 - Metrology - 4 Credits
- CED115 - Computer Applications - 3 Credits
- ENG101 - Composition I - 3 Credits
- PDV115 - Work Ethics - 2 Credits

General Education Requirement

Complete ANY of the following Course Sets:

- Communication Elective

General Education Requirement

Complete ANY of the following Course Sets:

- Humanities Elective

General Education Requirement

Complete ANY of the following Course Sets:

- Math Elective

General Education Requirement

Complete ANY of the following Course Sets:

- Social Sciences Elective

Entry Requirements

Be 16 years of age or older, Completion of application and related procedures

Degree Maps

Degree Map Name

Quality Assurance Inspection, AAS

Total Degree Map Credits

61

Degree Map Effective Catalog Year

2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	15	0

Requirement Select

- QAI135 - Quality Assurance Orientation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- AVC112 - Blueprint Reading

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MCD106 - Precision Measuring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- PDV115 - Work Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- Quality Assurance Inspection Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	15	0

Requirement Select
- QAI145 - Quality Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- QAI155 - Quality Documentation and Traceability

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- QAI201 - Geometric Dimensioning & Tolerance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- QAI215 - Human Factors in Manufacturing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	16	0

Requirement Select
- QAI165 - Materials Testing and Analysis

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- QAI175 - Quality Assurance Inspection Internship I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	135
Clinical	-
Criticality	No

Requirement Select
- QAI185 - Statistical Process Control

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MCD210 - Advanced Measuring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CED115 - Computer Applications

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	15	0

Requirement Select
- QAI195 - Root Cause Analysis

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- QAI225 - Quality Assurance Inspection Internship II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	180
Clinical	-
Criticality	No

Requirement Select
- CAT101 - CATIA Part Design & Sketcher

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-REG_NRSE - Associate Degree Nurse (A.D.N.), AAS

Overview

Department(s)
Nursing

Degree Designation
Associate of Applied Science

Catalog Full Description
The WSU Tech Associate Degree Nurse (A.D.N.) program is designed to provide students with quality academic and clinical instruction. The program educates students in response to society's continually advancing healthcare needs while developing lifelong learners. Students also learn about emergency care procedures and the legal requirements for medical personnel. The Registered Nurse program provides students with the knowledge and skills they need to sit for the NCLEX licensure exam. After graduation and passing this licensure exam, students can pursue a career as an entry-level registered nurse in a variety of clinical and hospital settings. The Associate Degree Nurse(A.D.N.) program can typically be completed over a 2 year period. The curriculum includes registered nursing courses, as well as liberal arts courses. The nursing component of the program includes clinical experiences with rotations in both inpatient and outpatient settings where students learn how to perform patient assessments and basic healthcare duties. In addition to general education courses that include psychology and sociology, core Associate Degree Nurse (A.D.N) courses include: Anatomy & Physiology, Biology, Microbiology, Nutrition, Fundamentals of Nursing, Advanced Medical/Surgical Nursing, Nursing Pharmacology. The WSU Tech Associate Degree Nurse (A.D.N.) program is aligned with the National Center for Education Statistics CIP code 51.3801: Registered Nursing/ Registered Nurse prepares individuals in the knowledge, techniques and procedures for promoting health, providing care for sick, disabled, infirmed, or other individuals or groups. Includes instruction in the administration of medication and treatments, assisting a physician during treatments and examinations, Referring patients to physicians and other health care specialists, and planning education for health maintenance.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Integrate caring behaviors in practicing the art and science of nursing within a diverse population.

Name
Implement professional standards and scope of practice within legal, ethical, and regulatory frame works.

Name
Collaborate with clients and members of the inter-professional health care team to optimize client outcomes.

Name
Formulate safe and effective clinical judgements guided by the nursing process, clinical reasoning, and evidence-based practice.

Name
Provide leadership in the management care and provide leadership to meet client needs using available resources and current technology.

Name
Generate teaching and learning processes to promote and maintain health and reduce risks for a global population.

Name
Demonstrate effective communication methods to manage client needs and to interact with other healthcare team members.

Program Costs
Associate Degree Nurse (A.D.N.), AAS - $19,401.00

Associate Degree Nurse(A.D.N.) - Bridge Program, AAS - $19,042.00 (Students who have previously completed applicable **PNR coursework** may be eligible to receive transfer credit. Students should contact their academic advisor for specific cost information based on their prior coursework.)

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Associate Degree Nurse (A.D.N.), AAS

Type
Completion Requirement

Associate Degree Nurse (ADN) Requirements

Complete ALL of the following Courses:
- ADN120 - Intro to Nursing Concepts - 1 Credits
- ADN130 - Foundational Concepts Nursing - 6 Credits
- ADN140 - Pharmacological Concepts I - 2 Credits
- ADN150 - Prof Nursing Concepts I - 4 Credits
- ADN160 - Client Care Concepts I - 6 Credits
- ADN170 - Pharmacological Concepts II - 2 Credits
- ADN180 - Client Care Concepts II - 6 Credits
- ADN190 - Prof Nursing Concepts II - 4 Credits
- ADN200 - Client Care Concepts III - 6 Credits
- ADN210 - Transition to Practice - 4 Credits
- ALH175 - Intro to Pathophysiology - 4 Credits
- BIO110 - Principles of Biology - 5 Credits
  OR CHM110 - General Chemistry - 5 Credits
- BIO150 - Human Anatomy & Physiology - 5 Credits
- ENG101 - Composition I - 3 Credits
- PSY101 - General Psychology - 3 Credits
- PSY120 - Developmental Psychology - 3 Credits

Associate Degree Nurse (ADN) Requirement

Earn at least 6 credits from the following:
- ALH110 - Principles of Nutrition - 3 Credits
- ALH101 - Medical Terminology - 3 Credits
- SOC101 - Principles of Sociology - 3 Credits

Associate Degree Nurse(A.D.N.) - Bridge Program

Type
Completion Requirement

Associate Degree Nurse credits from Liscensed Practical Nurse Program

Complete ALL of the following Course Sets:
- Associate Degree Nurse Credits from Liscensed Practical Nurse Program

Associate Degree Nurse(ADN) - Bridge From LPN

Complete ALL of the following Courses:
- ADN110 - Transitioning from LPN to RN - 4 Credits
- ADN120 - Intro to Nursing Concepts - 1 Credits
- ADN180 - Client Care Concepts II - 6 Credits
- ADN190 - Prof Nursing Concepts II - 4 Credits
- ADN200 - Client Care Concepts III - 6 Credits
- ADN210 - Transition to Practice - 4 Credits
- ALH175 - Intro to Pathophysiology - 4 Credits
- BIO110 - Principles of Biology - 5 Credits
  OR CHM110 - General Chemistry - 5 Credits
- BIO150 - Human Anatomy & Physiology - 5 Credits
- ENG101 - Composition I - 3 Credits
- PSY101 - General Psychology - 3 Credits
- PSY120 - Developmental Psychology - 3 Credits

Associate Degree Nurse (A.D.N.) - Bridge Program Requirement

Earn at least 6 credits from the following:
- ALH101 - Medical Terminology - 3 Credits
- ALH110 - Principles of Nutrition - 3 Credits
- SOC101 - Principles of Sociology - 3 Credits

Entry Requirements
Complete a Nursing Program Application, Be a current Kansas Certified Nurse Aide (CNA), Copy of current CNA certificate from KDADS to WSUTech, Current CPR certification with the American Heart Association for Health Care Providers for infant, child and Adult AED, Successfully complete the NLN NEX : Composite Score NLN NEX must be a minimum of 138 and Verbal NLN NEX score must be a minimum of 63, Attend an in-person information session prior to registration

List additional Program Admission Requirements
Admission Requirements Associate Degree Nurse (A.D.N.) Program

- Anatomy and Physiology (A&P) - Minimum score of "B" acceptable for no more than 5 years after completion date
- General Psychology - Minimum score of "B" acceptable
- Pathophysiology - Minimum score of "B" acceptable for no more than 5 years after completion date

- ENG 101 English Composition - Minimum score of "B" acceptable
- BIO 110 Principles of Biology or CHM 110 General Chemistry - Minimum score of "B" acceptable
- Students who are currently enrolled in prerequisite courses may bring a current, unofficial transcript or equivalent to the information session.
- All prerequisite courses must be completed by May 31st for August entry or October 31 for January entry. Midterm grades are not accepted for admission decisions.

Upon Admission to the Program

- Pay for and pass a criminal background check and drug-screen test at an agency designated by WSU Tech
- Complete required health examinations and immunizations at their own expense by designated date

Admission Requirements for the Associate Degree Nurse (A.D.N.) - Bridge Program

- Anatomy and Physiology (A&P) - Minimum score of "B" acceptable for no more than 5 years after completion date. However, the 5 -year limit is waived if the applicant is a currently practicing LPN
- General Psychology - Minimum score of "B" acceptable
- Pathophysiology - Minimum score of "B" acceptable for no more than 5 years after completion date
- ENG 101 English Composition - Minimum score of "B" acceptable
- BIO 110 Principles of Biology or CHM 110 General Chemistry - Minimum score of "B" acceptable. However, starting Spring 2027, the 5 -year limit is waived if the applicant is a currently practicing LPN
- ADN 110 Transitioning from LPN to RN
- Students who are currently enrolled in prerequisite courses may bring a current, unofficial transcript or equivalent to the information session.
- All prerequisite courses must be completed by April 15 for August entry or September 15 for January entry. Midterm grades are not accepted for admission decisions.

Upon Admission to the Program

- Pay for and pass a criminal background check and drug-screen test at an agency designated by WSU Tech
- Complete required health examinations and immunizations at their own expense by designated date

Degree Maps

Degree Map Name
Associate Degree Nurse (A.D.N.) - Bridge Program
Total Degree Map Credits
70
Degree Map Effective Catalog Year
2027 -

Degree Map Narrative

The Bridge program requires 16 credits be transferred from an accredited LPN program

The following courses must be completed prior to acceptance to the Associate Degree Nurse (A.D.N) Program: ALH 175, PSY 101, ENG 101, BIO 150, and BIO 110 or CHM 110

Year	Semester	Actual Credits	Progress Credits
-	-	36	0

Requirement Select
- ALH175 - Introduction to Pathophysiology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- BIO110 - Principles of Biology
  OR
- CHM110 - General Chemistry

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- BIO150 - Human Anatomy & Physiology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PSY101 - General Psychology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Associate Degree Nurse Credits from Liscensed Practical Nurse Program

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	16
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	7	0

Requirement Select
- ADN110 - Concepts of Professional Nursing: Transitioning from LPN to RN

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- ALH101 - Medical Terminology

  OR
- ALH110 - Principles of Nutrition

  OR
- SOC101 - Principles of Sociology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	14	0

Requirement Select
- ADN120 - Introduction to Nursing Concepts

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- ADN180 - Client Care Concepts II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	6
Progress Credits	-
Contact Hours	150
Clinical	-
Criticality	No

Requirement Select
- ADN190 - Professional Nursing Concepts II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- PSY120 - Developmental Psychology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	13	0

Requirement Select
- ADN200 - Client Care Concepts III

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	6
Progress Credits	-
Contact Hours	150
Clinical	-
Criticality	No

Requirement Select
- ADN210 - Transition to Practice

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select
- ALH101 - Medical Terminology
  OR
- ALH110 - Principles of Nutrition
  OR
- SOC101 - Principles of Sociology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

Degree Map Name
Associate Degree Nurse (A.D.N.)
Total Degree Map Credits
70
Degree Map Effective Catalog Year
2027 -

Degree Map Narrative

The following courses must be completed prior to acceptance to the Associate Degree Nurse (A.D.N.) Program: ALH 175, PSY 101, ENG 101, BIO 150, and BIO 110 or CHM 110

Year	Semester	Actual Credits	Progress Credits
-	-	20	0

Requirement Select
- ALH175 - Introduction to Pathophysiology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- BIO110 - Principles of Biology
  OR
- CHM110 - General Chemistry

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- BIO150 - Human Anatomy & Physiology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PSY101 - General Psychology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	12	0

Requirement Select
- ADN120 - Introduction to Nursing Concepts

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- ADN130 - Foundational Concepts in Nursing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	6
Progress Credits	-
Contact Hours	150
Clinical	-
Criticality	No

Requirement Select
- ADN140 - Pharmacological Concepts in Nursing I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- PSY120 - Developmental Psychology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	12	0

Requirement Select
- ADN150 - Professional Nursing Concepts I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ADN160 - Client Care Concepts I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	6
Progress Credits	-
Contact Hours	150
Clinical	-
Criticality	No

Requirement Select
- ADN170 - Pharmacological Concepts in Nursing II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	13	0

Requirement Select
- ADN180 - Client Care Concepts II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	6
Progress Credits	-
Contact Hours	150
Clinical	-
Criticality	No

Requirement Select
- ADN190 - Professional Nursing Concepts II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ALH101 - Medical Terminology
  OR
- ALH110 - Principles of Nutrition
  OR
- SOC101 - Principles of Sociology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	13	0

Requirement Select
- ADN200 - Client Care Concepts III

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	6
Progress Credits	-
Contact Hours	150
Clinical	-
Criticality	No

Requirement Select
- ADN210 - Transition to Practice

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select
- ALH101 - Medical Terminology
  OR
- ALH110 - Principles of Nutrition
  OR
- SOC101 - Principles of Sociology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-ROBOTICS - Robotics, AAS

Overview

Department(s)
Automation and Advanced Tech

Degree Designation
Associate of Applied Science

Catalog Full Description
The WSU Tech Robotics program provides graduates with industry aligned courses designed to prepare them for entry into the highly technical field of Industrial and Collaborative Robotics. The program is a joint effort between WSU Tech and Wichita State Universitys National Institute for Aviation Research (NIAR). All students will experience a core curriculum focused on the foundational skills of robotics including usage, programming, design for application and implementation of robotic equipment and automated equipment to support manufacturing automation in areas such as welding, advanced coatings, and material handling. Working with industry recognized visual programming environments and a state-of-the-art robotics laboratory, students will apply cutting edge robotics research and electronic and mechanical systems to support the Industrial Internet of Things (IIoT). Students will gain the skills that support the design, build, implementation and data collection of IIoT using electronic sensors, small computer hardware and applications to collect, translate and deliver data to analytical business systems. Students will learn to program Programable Logic Controllers (PLC's), communicate between PLC's and robots, set up HMI's (human machine interface) to control and monitor the process, and even explore new advancements in Smart Factory environments such as machine learning and AI.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
At the end of this program students will be able to demonstrate through laboratory and classroom work the ability to apply proper techniques and practices in the assembly, repair, installation and maintenance of robotic equipment

Name
At the end of this program students will be able to demonstrate through laboratory and classroom work the ability program and operate robotic equipment

Name
At the end of this program students will be able to apply problem solving and critical thinking skills to troubleshoot robotic equipment

Name
At the end of this program students will be able to demonstrate through laboratory and classroom work the ability to apply proper techniques and practices in identification, assembly, and interfacing of IoT components.

Name
At the end of this program students will be able to apply problem solving and critical thinking skills to survey robotic equipment

Name
Demonstrate basic robotic programming skills.

Name
Demonstrate basic and advanced programming skills for basic robotic equipment

Name
Demonstrate problem solving and critical thinking skills to troubleshoot robotic equipment

Name
Demonstrate the ability to program and manage Programmable Logic Controls for robotic manufacturing processes and advanced work cell integration

Name
Demonstrate maintenance and support techniques for robotics equipment

Name
Demonstrate electronic sensor selection, ability to apply proper techniques to interface and integrate IoT (Internet of Things) components and software

Name
Demonstrate sensor data collection of IoT and sensor data delivery to BIG Data Analytics or BI (Business Intelligence Systems)

Name
Demonstrate advanced robot programming with Machine Learning

Program Costs
Robotics, AAS - $17,406.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Robotics, AAS

Type
Completion Requirement

Robotics Requirements

Complete ALL of the following Courses:

- ROB100 - Introduction to Robotics - 3 Credits
- ROB103 - Applied Robotics Lab I - 4 Credits
- ROB104 - Robotics Simulation - 2 Credits
- ROB106 - Robotics Controller Maint - 1 Credits
- ROB115 - Intro to Programming Robots - 4 Credits
- ROB118 - Basic Circuits - 3 Credits
- ROB120 - IoT: Internet of Things - 3 Credits
- ROB124 - Robotic Navigation - 2 Credits
- ROB128 - Basic PLC - 3 Credits
- ROB130 - IoT: Connected Things - 3 Credits
- ROB134 - Robotic Perception & Manipulat - 4 Credits
- ROB138 - Advanced PLC - 3 Credits
- ROB140 - IoT: Big Data Analytics - 3 Credits
- ROB145 - Applied Robotics Lab II - 2 Credits
- ROB170 - Robotics Internship - 3 Credits
  OR ROB172 - Robotics Capstone - 3 Credits
- ENG101 - Composition I - 3 Credits
- MTH112 - College Algebra - 3 Credits

Robotics Requirements

Earn at least 6 credits from the following:

- ROB144 - Machine Learning for Robotics - 3 Credits
- ROB148 - PLC System Design & Simulation - 3 Credits
- ROB150 - IoT Fundamentals: Security - 3 Credits
- ROB155 - Advanced Industrial Workcell - 3 Credits

General Education Requirement

Complete ANY of the following Course Sets:

- Communication Elective

General Education Requirement

Complete ANY of the following Course Sets:

- Humanities Elective

General Education Requirement

Complete ANY of the following Course Sets:

- Social Sciences Elective

Entry Requirements

- Be 16 years of age or older
  Complete all admission documents

Degree Maps

Degree Map Name
Robotics, AAS
Total Degree Map Credits
64
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	15	0

Requirement Select

- ROB100 - Introduction to Robotics
- **AND** ROB118 - Basic Circuits
- **AND** ROB128 - Basic PLC
- **AND** MTH112 - College Algebra

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	12
Progress Credits	-
Contact Hours	270
Clinical	-
Criticality	No

Requirement Select

- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	12	0

Requirement Select

- ROB115 - Introduction to Programming Robots in ROS
- **AND** ROB124 - Robotic Navigation
- **AND** ROB138 - Advanced PLC

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	9
Progress Credits	-
Contact Hours	210
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	6	0

Requirement Select
- ROB120 - IoT Fundamentals: Introduction to the Internet of Things
- **AND** ROB130 - IoT Fundamentals: Connected Things

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	6
Progress Credits	-
Contact Hours	135
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	15	0

Requirement Select
- ROB103 - Applied Robotics Lab I
- **AND** ROB104 - Robotics Simulation
- **AND** ROB106 - Robotics Controller Maintenance
- **AND** ROB140 - IoT Fundamentals: Big Data Analytics
- **AND** ROB145 - Applied Robotics Lab II
- **AND** ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	15
Progress Credits	-
Contact Hours	345
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	16	0

Requirement Select
- ROB134 - Robotic Perception and Manipulation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- Robotics Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	6
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- ROB170 - Robotics Internship
  OR
- ROB172 - Robotics Capstone

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	135
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-SMTL_APP - Sheetmetal Technology Apprenticeship

Overview

Department(s)
Apprenticeship & Appl Learning

Degree Designation
Associate of Applied Science

Catalog Full Description
The Sheetmetal Technology Apprenticeship Associate of Applied Science (AAS) degree is designed for individuals who have completed a registered apprenticeship program through an approved Sheetmetal Technology training facility. Students receive 45 credits for prior learning based on their journeyman card and complete an additional 15 credit hours of general education to earn the degree. This program combines advanced technical training with foundational college coursework to support career growth and leadership opportunities in the skilled trades.

Program Level
Undergraduate

Effective Start Term
Fall 2025

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Sheetmetal Technology Apprenticeship, AAS

Type
Completion Requirement

Sheetmetal Technology Apprenticeship Requirements

Complete ALL of the following Courses:

- SMA225 - Sheetmetal Tech Apprenticeship - 45 Credits
- ENG101 - Composition I - 3 Credits

General Education Requirement

Earn at least 15 credits from the following:

- Communication Elective
- Humanities Elective
- Math Elective
- Science Elective
- Social Sciences Elective

Entry Requirements
Complete all college admissions documents

Journeyman Card

AAS-SURG_TEC - Surgical Technology, AAS

Overview

Department(s)
Health Sciences

Degree Designation
Associate of Applied Science

Catalog Full Description
The Surgical Technology program prepares students to function in the operating room environment by combining classroom and simulated laboratory instruction with actual surgical clinical experiences. Successful completion of the program allows graduates to take the national certification examination to become a certified surgical technologist (CST). Students may request consideration for advanced placement by submitting an official transcript of coursework. This program does not offer credit for experiential learning. The Associate of Applied Science degree, is typically a 2-year program that includes all prerequisite, general education and program course work. As a condition of participation in SGT119 Clinical I and SGT129 Clinical II, students do not receive any compensation from WSU Tech or the clinical affiliate. Students assist physicians during surgical procedures, but at no time are they substituted for a health care facility staff members. The WSU Tech Surgical Technology program is aligned with the National Center for Education Statistics CIP code 51.0909: Surgical Technology/Technologist prepares individuals, under the supervision of physicians and surgical nurses, to maintain, monitor, and enforce the sterile field and adherence to aseptic technique by preoperative, surgical team, and postoperative personnel. Includes instruction in instrument and equipment sterilization and handling, surgical supplies management, wound exposure and closure, surgical computer and robot operation and monitoring, maintenance of hemostasis, and patient and team scrubbing.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Students will apply knowledge and skills from the biological sciences to safely provide assistance during all aspects of patient care.

Name
Students will employ appropriate ethical, professional, and respectful values while providing care to diverse populations within the healthcare system

Name
Students will discuss and demonstrate universal precautions, principals of asepsis and sterilization in the surgical setting.

Name
Students will discuss wound healing and the role of the surgical technologist in patient care.

Name
Students will demonstrate a strong surgical conscience, accountability, and legal implications of a persons actions as a member of the surgical team.

Name
Students will integrate knowledge gained in core surgical technology courses to prepare for and assist with surgical interventions

Name
Students will utilize learned competencies to assemble and operate instruments, equipment and supplies for the delivery of patient care as an entry-level practitioner during basic surgical procedures

Name
Students will retain theoretical knowledge and proficiency in skills to demonstrate an entry-level surgical technologist through successful completion of the NBSTSA exam and obtaining a position in a facility that relates to surgical technology.

Program Costs
Surgical Technology, AAS - $15,098.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Surgical Technology, AAS

Type
Completion Requirement

Surgical Technology Requirements

Complete ALL of the following Courses:

- SGT101 - Intro to Surgical Technology - 4 Credits
- SGT107 - Pharmacology for Surgical Tech - 3 Credits
- SGT115 - Surgical Procedures I - 5 Credits
- SGT119 - Surg Tech-Clinic Experience I - 6 Credits
- SGT120 - Prin & Prac in Surg Tech - 5 Credits
- SGT125 - Surgical Procedures II - 5 Credits
- SGT129 - Surg Tech Clinic Experience II - 7 Credits
- SGT140 - Prin & Pract Surg Tech Lab - 3 Credits
- SGT145 - ST Certification Review - 1 Credits
- ALH101 - Medical Terminology - 3 Credits
- BIO150 - Human Anatomy & Physiology - 5 Credits
- BIO160 - Microbiology - 5 Credits
- CPR001 - CPR For Healthcare Providers - 1 Credits
- ENG101 - Composition I - 3 Credits
- PSY101 - General Psychology - 3 Credits
  OR SOC101 - Principles of Sociology - 3 Credits

General Education Requirement

Earn at least 3 credits from the following:

- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:

- Math Elective

Entry Requirements
Be 18 years of age or older

1. Complete and submit WSU Tech application
2. Request official transcripts (high school, GED and any college credits) be mailed directly to the Registrar
3. Complete the Free Application for Federal Student Aid (FAFSA)
4. Successfully complete placement exams for Reading, Writing and Math (photo ID and payment are required to take the assessments)

List additional Program Admission Requirements
Program Admission Requirements

- All the following courses must be completed prior to admission to the program
  - BIO 150 Anatomy and Physiology - Minimum Score of "B" within 5 years of completion date
  - BIO 160 Microbiology - Minimum Score of "B" within 5 years of completion date
  - ALH 101 Medical Terminology - Minimum Score of "B" within 5 years of completion date
  - CPR 001 CPR
  - ENG 101 English Composition
  - Math Elective
  - PSY 101 General Psychology or SOC 101 Principles of Sociology
  - Communications Elective

Degree Maps

Degree Map Name
Surgical Technology, AAS
Total Degree Map Credits
65
Degree Map Effective Catalog Year
2027 -

Degree Map Narrative
The following courses must be completed prior to acceptance to the Surgical Technology Program: ALH101, CPR 001, BIO 150, BIO 160, ENG 101, PSY 101 OR SOC 101, Communication Elective, and Math Elective.

Year	Semester	Actual Credits	Progress Credits
-	-	26	0

Requirement Select
- ALH101 - Medical Terminology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CPR001 - CPR For Healthcare Providers

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- BIO160 - Microbiology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- BIO150 - Human Anatomy & Physiology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PSY101 - General Psychology

  OR
- SOC101 - Principles of Sociology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	22	0

Requirement Select

- SGT101 - Introduction to Surgical Technology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- SGT115 - Surgical Procedures I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select

- SGT120 - Principles and Practices in Surgical Technology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- SGT125 - Surgical Procedures II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select

- SGT140 - Principles and Practices in Surgical Technology Lab

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	17	0

Requirement Select

- SGT107 - Pharmacology for Surgical Technology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- SGT119 - Surgical Technology - Clinical Experience I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	6
Progress Credits	-
Contact Hours	270
Clinical	-
Criticality	No

Requirement Select

- SGT129 - Surgical Technology - Clinical Experience II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	7
Progress Credits	-
Contact Hours	315
Clinical	-
Criticality	No

Requirement Select

- SGT145 - ST Certification Review

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-TOOL_FIX - Tooling and Fixture Fabrication, AAS

Overview

Department(s)
Aviation

Degree Designation
Associate of Applied Science

Catalog Full Description
The Tooling and Fixture Fabrication Program offers a multidisciplinary degree providing students with the knowledge and practical skills to become a tool and jig builder in multiple manufacturing environments. This program follows an apprenticeship model which blends theory-based classroom/lab instruction with on the job experience. Each week the students will have the opportunity to apply what they learn in the state-of-the-art labs and classrooms at the National Center for Aviation Training to manufacture aircraft at local aerospace organizations. The technical courses will include mechanical design, aviation/aerospace manufacturing, welding, machining, and electronics. General Education courses plus workplace skills training will provide the depth and breadth of knowledge students need to succeed in a global economy.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Obtain general industry OSHA 10 card and apply safety principles in a work environment to minimize hazards and prevent losses to productivity

Name
Learn and apply skills and knowledge from multidisciplinary technical courses in mechanical design, aviation/aerospace manufacturing, welding, machining, and electronics toward the construction and fabrication of tools, jigs, and fixtures

Name
Build and fabricate tools, jigs, and fixtures from various materials in accordance with specifications and quality standards from blueprints, electronic drawings and shop sketches for various applications in multiple manufacturing and related environments

Name
Analyze, through various methodologies, the quality and functionality of built tools, jigs, and fixtures to meet specifications, tolerances, and standards appropriate to their application

Program Costs
Tooling and Fixture Fabrication, AAS - $16,698.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location

WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Tooling and Fixture Fabrication, AAS

Type

Completion Requirement

Tooling and Fixture Fabrication Requirements

Complete ALL of the following Courses:

- TFF108 - Welding Safety & Orientation - 1 Credits
- TFF110 - Tap and Die - 1 Credits
- TFF112 - Print Reading - 3 Credits
- TFF114 - Introduction to CAD I - 3 Credits
- TFF115 - Hand and Power Tools - 1 Credits
- TFF117 - Precision Measuring - 2 Credits
- TFF118 - Welding Applications - 4 Credits
- TFF120 - Metrology - 4 Credits
- TFF125 - Tooling Capstone - 4 Credits
- TFF130 - Machining I - 3 Credits
- TFF135 - Direct & Alternating Current - 4 Credits
- TFF140 - Machining II - 3 Credits
- TFF150 - Fixture Construction - 5 Credits
  OR TFF155 - Tool and Fixture Fab Capstone - 5 Credits
- AER106 - Aerospace Mfg Tooling Orientat - 1 Credits
- AER150 - Assembly Overview I - 3 Credits
- AVC103 - Geometric Dimension & Toleran - 1 Credits
- AVC104 - Quality Control Concepts - 1 Credits
- AVC107 - Fundamentals for Aerospace Mfg - 1 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- AVC150 - Human Factors - 1 Credits
- AVC170 - Conflict Resolution - 1 Credits
- CAT101 - CATIA Part Design & Sketcher - 4 Credits
- ENG101 - Composition I - 3 Credits

General Education Requirement

Complete ANY of the following Course Sets:

- Communication Elective

General Education Requirement

Complete ANY of the following Course Sets:

- Humanities Elective

General Education Requirement

Complete ANY of the following Course Sets:

- Math Elective

General Education Requirement

Complete ANY of the following Course Sets:

- Social Sciences Elective

Entry Requirements

- Be 16 years of age or older
- Complete all admission documents

Degree Maps

Degree Map Name
Tooling and Fixture Fabrication, AAS
Total Degree Map Credits
67
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	13	0

Requirement Select

- TFF110 - Tap and Die

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- TFF112 - Print Reading

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- TFF115 - Hand and Power Tools for Aerospace Tooling

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- TFF117 - Precision Measuring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- AER106 - Aerospace Manufacturing Tooling Orientation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC104 - Quality Control Concepts

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC107 - Fundamentals for Aerospace Manufacturing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC150 - Human Factors

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC170 - Conflict Resolution

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	12	0

Requirement Select
- TFF130 - Machining I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- TFF140 - Machining II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	8	0

Requirement Select
- TFF108 - Welding Safety & Orientation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- TFF118 - Welding Applications

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	14	0

Requirement Select
- TFF114 - Introduction to CAD I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AVC103 - Geometric Dimensioning & Tolerancing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- CAT101 - CATIA Part Design & Sketcher

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	20	0

Requirement Select
- TFF120 - Metrology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- TFF125 - Tooling Capstone

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select
- TFF135 - Direct & Alternating Current

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- TFF150 - Fixture Construction

  OR
- TFF155 - Tooling and Fixture Fabrication Capstone

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	225
Clinical	-
Criticality	No

Requirement Select
- AER150 - Assembly Overview I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-UNMA_NED - Unmanned Aircraft Systems, AAS

Overview

Department(s)
Aviation

Degree Designation
Associate of Applied Science

Catalog Full Description
Unmanned Aircraft Systems (Drones) are revolutionizing data collection operations in multi sectors of the US economy including commercial industries, scientific research and local/state and Federal government entities. In this program students will learn the skills and knowledge to design, program and operate an effective UAS mission. Students will obtain a Part 107 license and rating while developing a safety - oriented mindset through risk management and situational awareness. Topics include GIS, Multirotor, UAS Ground School, Beyond Line of Site (BLoS) drone preparation, and FixedWing Flight.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Design and program an effective drone flight plan based on mission parameters

Name
Compare and Contrast the various types of UAS hardware and software

Name
Describe the challenges of effectively, ethically and safely integrating a UAS into the National Airspace

Name
Demonstrate skills in Drone communications, navigation

Name
Demonstrate skills in photogrammetry

Name
Demonstrate skills in communicating data collection in ArcGIS systems and maps.

Program Costs
Unmanned Aircraft Systems, AAS - $16,59400

Cost does not include online fees, books, or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Unmanned Aircraft Systems, AAS

Type
Completion Requirement

Unmanned Aircraft Systems Course List

Complete ALL of the following Courses:

- UAS180 - Ground School - 4 Credits
- UAS185 - Multi-Rotor Flight - 4 Credits
- UAS190 - Videography - 4 Credits
- UAS220 - UAS Multi-Rotor Maintenance - 5 Credits
- UAS225 - Post-Processing - 3 Credits
- UAS235 - Small Business Fundamentals - 3 Credits
- UAS240 - Multi-Rotor Instructor - 5 Credits
- UAS250 - Advanced Post-Processing - 5 Credits
- UAS255 - Advanced Payloads - 3 Credits
- UAS260 - Fixed-Wing Construction - 3 Credits
- UAS267 - Advanced UAS Operations - 3 Credits
- UAS273 - Capstone - 4 Credits
  OR UAS275 - Internship - 4 Credits
- ENG101 - Composition I - 3 Credits
- MTH112 - College Algebra - 3 Credits

General Education Requirement

Earn at least 3 credits from the following:

- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:

- Humanities Elective

General Education Requirement

Earn at least 3 credits from the following:

- Social Sciences Elective

Entry Requirements
Be 16 years of age or older, Documentation of high school graduation or satisfaction of high school equivalency certificate requirements, or students currently enrolled in high school or GED program and have attained junior status

Degree Maps

Degree Map Name
Unmanned Aircraft Systems
Total Degree Map Credits
61
Degree Map Effective Catalog Year

2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	23	0

Requirement Select
- UAS180 - Ground School

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- UAS185 - Multi-Rotor Flight

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- UAS190 - Videography

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- UAS220 - UAS Multi-Rotor Maintenance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- UAS225 - Post-Processing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- UAS235 - UAS Small Business Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	23	0

Requirement Select
- UAS240 - Multi-Rotor Instructor

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- UAS250 - Advanced Post-Processing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- UAS255 - Advanced Payloads

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- UAS260 - Fixed-Wing Construction

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- UAS267 - Advanced UAS Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- UAS273 - Capstone

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	180
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	15	0

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- MTH112 - College Algebra

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select

- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-VET_TECH - Veterinary Nursing, AAS

Overview

Department(s)
Health Sciences

Degree Designation
Associate of Applied Science

Catalog Full Description
The Veterinary Nursing program prepares the student for a career as a veterinary nurse. Upon completion of the curriculum, the student is eligible to take the Veterinary Technician National Examination (VTNE) toward certification as a credentialed veterinary nurse. The curriculum includes practical and theoretical course work which prepares the student for employment in various areas of animal healthcare including veterinary hospitals, veterinary clinics, research facilities, and diagnostic laboratories. The instruction in this program consists of skills and concepts related to; patient management, patient care, clinical procedures, communication with owners, animal nursing care, animal health/ nutrition, animal handling, clinical pathology, radiology, anesthesiology, dental prophylaxis, surgical assisting, clinical laboratory procedures, office administration skills, patient and owner management, and applicable standards and regulations.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Employ math applications for veterinary nursing care.

Name
Apply veterinary nursing skills as it relates to various species

Name
Demonstrate proficiency in sample collection, handling and interpretation of results as dicated by DVM, while maintaining safety standards

Name
Demonstarte and understanding of functional animal anatomy and phsiology as it pretains to commonplace procedures and protocols in veterinary clinical setting

Name
Demonstrate an understanding of the roles and responsibilities of the Veterinary Nurse with regard to the concepts of the regulatory environment in veterinary medicine.

Name
Utilize medical communication skils for verterinary nursing

Program Costs
Veterinary Nursing, AAS - $23,323.00

Veterinary Nursing, High School Pathway, AAS - $20,023.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Veterinary Nursing, AAS

Type
Completion Requirement

Veterinary Nursing Requirement

Complete ALL of the following Courses:

- VET101 - Intro to Veterinary Nursing - 3 Credits
- VET110 - Vet Anatomy and Physiology - 4 Credits
- VET105 - Vet Business Proc/Office Mgmt - 2 Credits
- VET115 - Vet Clinical Pathology I - 3 Credits
- VET120 - Vet Nursing Procedures I - 3 Credits
- VET130 - Vet Emergency, Critical Medic - 2 Credits
- VET140 - Veterinary Pharmacology - 2 Credits
- VET200 - Vet Professional Wellness - 2 Credits
- VET215 - Vet Clinical Pathology II - 3 Credits
- VET220 - Vet Nursing Procedures II - 2 Credits
- VET230 - Vet Diagnostic Imaging w/Lab - 3 Credits
- VET240 - Vet Anesthesia & Surg Assist - 3 Credits
- VET250 - Large Animal Disease/Med Care - 2 Credits
- VET260 - Vet Clinical Pathology III - 3 Credits
- VET265 - Avian, Exotic & Lab Animals - 2 Credits
- VET270 - Veterinary Nursing Seminar - 1 Credits
- VET275 - Veterinary Clinical Practicum - 6 Credits
- BIO110 - Principles of Biology - 5 Credits
- CHM110 - General Chemistry - 5 Credits
- ENG101 - Composition I - 3 Credits

General Education Requirement

Complete ANY of the following Course Sets:

- Communication Elective

General Education Requirement

Complete ANY of the following Course Sets:

- Humanities Elective

General Education Requirement

Complete ANY of the following Course Sets:

- Math Elective

Entry Requirements

- Be 18 years of age or older
- Documentation of high school graduation or satisfaction of high school equivalency certificate requirements.

List additional Program Admission Requirements

Admission Requirements VET Program

- Principles of Biology - Minimum score of "B" acceptable for no more than 5 years after completion date
- General Chemistry - Minimum score of "B" acceptable for no more than 5 years after completion date
- ENG 101 English Composition - Minimum score of "C"
- Math Elective - Minimum score of "B"
- Humanities Elective - Minimum score of "C"
- Communication Elective- Minimum score of "C"
- Overall 3.0 GPA is a requirement to apply to VET program

"Overall, 3.0 GPA is required in prerequisite classes only to apply to VET program"

Degree Maps

Degree Map Name
Veterinary Nursing, AAS
Total Degree Map Credits
68
Degree Map Effective Catalog Year
2027 -

Degree Map Narrative
The following courses must be completed prior to admission the Veterinary Nursing program. BIO 110, CHM 110, ENG 101, Communication, Humanities, and Math Elective

Year	Semester	Actual Credits	Progress Credits
-	-	22	0

Requirement Select

- BIO110 - Principles of Biology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- CHM110 - General Chemistry

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	14	0

Requirement Select
- VET101 - Introduction to Veterinary Nursing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- VET110 - Veterinary Anatomy and Physiology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- VET115 - Veterinary Clinical Pathology I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- VET140 - Veterinary Pharmacology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- VET200 - Veterinary Professional Wellness

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	12	0

Requirement Select
- VET120 - Veterinary Nursing Procedures I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- VET130 - Veterinary Emergency, Critical Medicine and Hospital Procedures

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- VET215 - Veterinary Clinical Pathology II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- VET250 - Veterinary Nursing: Large Animal Disease and Medical Care

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- VET265 - Veterinary Nursing Procedures: Avian, Exotic and Lab Animals Disease and Medical Care

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	6	0

Requirement Select
- VET275 - Veterinary Clinical Practicum

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	6
Progress Credits	-
Contact Hours	270
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	14	0

Requirement Select

- VET105 - Veterinary Business Procedures/Office Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select

- VET220 - Veterinary Nursing Procedures II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- VET230 - Veterinary Diagnostic Imaging with Lab

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- VET240 - Veterinary Anesthesia and Surgical Assisting

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- VET260 - Veterinary Clinical Pathology III

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- VET270 - Veterinary Nursing Seminar

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

AAS-WELD - Welding Technology, AAS

Overview

Department(s)
Manufacturing

Degree Designation
Associate of Applied Science

Catalog Full Description
This program allows students to gain knowledge and skills in cutting, arc welding, MIG and TIG welding and provides some exposure to oxy-acetylene cutting and welding. Program includes classroom and lab instruction in safety, blueprint reading and sketching, tools and materials used in the various forms of welding, machine adjustments and rod selection, skill requirements for various welding positions, weld testing and qualifications, fabrication and layout of various welding projects. Students will have the opportunity to complete one or more American Welding qualification tests. Students will round off their educational experience by completing 15 credits of general education courses in five areas of study including mathematics, natural and social sciences, English and communications. The WSU Tech Welding Technology program is aligned with the National Center for Education Statistics CIP code 48.0508: Welding Technology/Welder prepares individuals to apply technical knowledge and skills to join or cut metal surfaces. Includes instruction in arc welding, resistance welding, brazing and soldering, cutting, high-energy beam welding and cutting, solid state welding, ferrous and non-ferrous materials, oxidation-reduction reactions, welding metallurgy, welding processes and heat treating, structural design, safety, and applicable codes and standards.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Obtain general industry OSHA 10 card

Name
Fabricate a project to specifications utilizing a print

Name
Inspect and test welds to American Welding Society (AWS) specifications

Name
Demonstrate ability to produce fillet welds

Name
Demonstrate ability to produce full penetration open root welds

Program Costs
Welding Technology, AAS - $18,405.00

Cost does not include online fees, books or tools. Financial assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211, WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Welding Technology, AAS

Type
Completion Requirement

Welding Technology Requirements

Complete ALL of the following Courses:
- CWG103 - Blue Print Reading for Welders - 3 Credits
- CWG105 - Welding Safety OSHA & Orient - 2 Credits
- CWG107 - Prin of Welding - 2 Credits
- CWG112 - Work Ethics - 2 Credits
- CWG115 - SMAW - 3 Credits
- CWG116 - SMAW II - 4 Credits
- CWG120 - GMAW - 3 Credits
- CWG121 - GMAW II - 4 Credits
- CWG125 - GTAW - 3 Credits
- CWG126 - GTAW II - 4 Credits
- CWG135 - Measurement and Specification - 1 Credits
- CWG141 - Oxy-Acetylene Weld & Cutting - 2 Credits
- ENG101 - Composition I - 3 Credits

Welding Technology Requirements

Complete exactly 2 course(s) and earn exactly 8 credits from the following:
- CWG130 - Robotic Welding - 4 Credits
- CWG145 - Fabrication & Design - 4 Credits
- CWG155 - Flux Cored Arc Welding - 4 Credits
- CWG160 - Welding Internship - 4 Credits

Student must also enroll in at least one D1.1 Qualification course (CWG 243 or CWG 242) for a technical elective. Students may take both D1.1 Qualification courses for the purpose of technical elective completion.

Welding Technology Technical Elective

Complete at least 1 of the following courses:
- CWG242 - SMAW D1.1 Qualification - 4 Credits
- CWG243 - GMAW D1.1 Qualification - 4 Credits

General Education Requirement

Complete ANY of the following Course Sets:
- Communication Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Humanities Elective

General Education Requirement

Complete ANY of the following Course Sets:

- Math Elective

General Education Requirement

Complete ANY of the following Course Sets:

- Social Sciences Elective

Entry Requirements

Be 16 years of age or older

Degree Maps

Degree Map Name
Welding Technology, AAS
Total Degree Map Credits
60
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	17	0

Requirement Select

- CWG103 - Blue Print Reading for Welders

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- CWG105 - Welding Safety OSHA and Orientation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- CWG107 - Principles of Welding

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- CWG112 - Work Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select

- CWG120 - GMAW

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- CWG121 - GMAW II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- CWG135 - Measurement and Specification

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	15	0

Requirement Select
- CWG115 - SMAW

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CWG116 - SMAW II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- CWG141 - Oxy Acetylene Welding & Cutting

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	11	0

Requirement Select
- CWG242 - SMAW D1.1 Qualification

  OR
- CWG243 - GMAW D1.1 Qualification

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Welding Technology Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	17	0

Requirement Select
- CWG125 - GTAW

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CWG126 - GTAW II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- Welding Technology Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Social Sciences Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

CC-ACC_AMTA - Accelerated Aviation Maintenance Technology - Airframe, COC

Overview

Department(s)
Aviation

Degree Designation
Certificate of Completion

Catalog Full Description
The General and Airframe Course is an accelerated training program designed to prepare eligible aviation maintenance professionals to successfully complete the FAA General and Airframe written examinations and the associated Oral and Practical (O&P) testing required under 14 CFR Part 65.

This intensive program combines structured classroom instruction, guided written test preparation, and hands-on maintenance activities to reinforce core aviation maintenance principles. Students will utilize industry recognized FAA written test preparation software to strengthen subject knowledge, identify knowledge gaps, and build confidence prior to testing.

Hands-on laboratory activities and structured O&P preparation sessions simulate FAA Designated Mechanic Examiner (DME) testing conditions and focus on the practical skills required for certification. Following completion of the FAA written examinations, instructors review each student's test performance and knowledge area reports to tailor Oral and Practical preparation activities. This individualized approach focuses additional training on identified knowledge gaps, ensuring students are better prepared for the FAA examination process.

Instruction is delivered by experienced aviation maintenance professionals and incorporates both theoretical instruction and applied learning to ensure students are fully prepared for certification testing.

Program Level
Undergraduate

Effective Start Term
Fall 2025

Learning Outcomes

Name
The student will pass the General section of the O & P exam

Name
The student will review material within the general program within this time period in preparation for Oral & Practical exams.

Name
The student will review material within the airframe program within this time period in preparation for Oral & Practical exams.

Name
The student will pass the Airframe O & P exam

Program Costs
Accelerated Aviation Maintenance Technology - Airframe - $3,429.00

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Accelerated Aviation Maintenance Technology - Airframe, COC

Type
Completion Requirement

Accelerated Aviation Maintenance Technology - Airframe

Complete ALL of the following Courses:
- AMT191 - General - 3 Credits
- AMT240 - Airframe - 4 Credits

Degree Maps

Degree Map Name
Accelerated Aviation Maintenance Technology - Airframe
Total Degree Map Credits
7
Degree Map Effective Catalog Year
2026 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	7	0

Requirement Select
- AMT191 - General

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AMT240 - Airframe

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

CC-ACC_AMTP - Accelerated Aviation Maintenance Technology - Powerplant, COC

Overview

Department(s)
Aviation

Degree Designation
Certificate of Completion

Catalog Full Description
The General and Powerplant Course is an accelerated training program designed to prepare eligible aviation maintenance professionals to successfully complete the FAA General and Powerplant written examinations and the associated Oral and Practical (O&P) testing required under 14 CFR Part 65.

This intensive program combines structured classroom instruction, guided written test preparation, and hands-on maintenance activities to reinforce core aviation maintenance principles. Students will utilize industry recognized FAA written test preparation software to strengthen subject knowledge, identify knowledge gaps, and build confidence prior to testing.

Hands-on laboratory activities and structured O&P preparation sessions simulate FAA Designated Mechanic Examiner (DME) testing conditions and focus on the practical skills required for certification. Following completion of the FAA written examinations, instructors review each student's test performance and knowledge area reports to tailor Oral and Practical preparation activities. This individualized approach focuses additional training on identified knowledge gaps, ensuring students are better prepared for the FAA examination process.

Instruction is delivered by experienced aviation maintenance professionals and incorporates both theoretical instruction and applied learning to ensure students are fully prepared for certification testing.

Program Level
Undergraduate

Effective Start Term
Fall 2025

Learning Outcomes

Name
The student will pass the General section of the O & P exam

Name
The student will review material within the general program within this time period in preparation for Oral & Practical exams.

Name
The student will pass the O & P Powerplant practical exam

Name
The student will review material within the powerplant program within this time period in preparation for Oral & Practical exams.

Program Costs
Accelerated Aviation Maintenance Technology - Powerplant - $3,769.00

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

Requirements

Simple Requirements

Program Requirements

Accelerated Aviation Maintenance Technology - Powerplant

Type
Completion Requirement

Accelerated Aviation Maintenance Technology - Powerplant

Complete ALL of the following Courses:

- AMT191 - General - 3 Credits
- AMT258 - Powerplant - 3 Credits

Degree Maps

Degree Map Name
Accelerated Aviation Maintenance Technology - Powerplant
Total Degree Map Credits
6
Degree Map Effective Catalog Year
2026 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	6	0

Requirement Select

- AMT191 - General

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- AMT258 - Powerplant

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

CC-CNA - Certified Nurse Aide, COC

Overview

Department(s)
Health Sciences

Degree Designation
Certificate of Completion

Catalog Full Description
The Certified Nurse Aide (CNA) program prepares students to be caregivers in nursing homes while working under the supervision of licensed nurses. The instruction includes classroom, laboratory and clinical experiences. Students must successfully complete a competency skills checklist, maintain attendance as defined in the course syllabus and achieve satisfactory grades. Daytime classes meet for approximately five weeks, and evening classes meet for approximately three months. The program meets the guidelines of the Kansas Department on Aging and Disability Services and graduates may take the state examination to become CNAs after successful completion of the course.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Professional Ethics & Conduct: Demonstrate professionalism, ethical behavior, and adherence to legal standards and regulations in a healthcare setting.

Name
Patient Rights & Advocacy: Understand and respect patient rights, privacy, and confidentiality while serving as an advocate for patient needs and preferences.

Name
Effective Communication: Develop strong verbal and non-verbal communication skills to interact effectively with patients, families, and healthcare team members.

Name
Infection Control Practices: Apply proper infection control procedures, such as hand hygiene, equipment sterilization, and the use of personal protective equipment (PPE).

Name
Vital Signs Monitoring: Accurately measure and record vital signs, including temperature, blood pressure, pulse, and respiration, following standard protocols.

Name
Patient Care Skills: Demonstrate the ability to provide basic patient care, including bathing, dressing, feeding, and ensuring the comfort and safety of patients.

Name
Emergency/Disaster Response: Recognize and respond to disaster and medical emergency situations.

Program Costs
Certified Nurse Aide, COC - $947.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Certified Nurse Aide, COC

Type
Completion Requirement

Certified Nurse Aide Requirement

Complete ALL of the following Courses:
- CNA101 - Certified Nurse Aide - 5 Credits

Entry Requirements
- Be 16 years of age or older
- Provide documentation of a negative PPD TB skin test within the last year or negative chest x-ray within the last three years
- Documentation of COVID vaccination or completion of the Exemption Request Document
- Copy of your social security card

Degree Maps

Degree Map Name
Certified Nurse Aide , TC
Total Degree Map Credits
5
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	5	0

Requirement Select

- CNA101 - Certified Nurse Aide

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

CC-EDDY_CURR - Eddy Current Technician, COC

Overview

Department(s)
Aviation

Degree Designation
Certificate of Completion

Catalog Full Description
The associate degree program is a sequence of courses designed to produce a technician who understands NDTs role in the aerospace industry, has mastered the American Society for Nondestructive Testing coursework for Levels I and II certification and has the depth and breadth of knowledge which comes from general education courses. In this program students will complete Levels I and II ASNT competencies for six NDT methods including liquid penetrant, ultrasonic, eddy current, visual, radiography and magnetic particle inspection. Students will round off their educational experience by completing 20 credits of general education courses in five areas of study including humanities, mathematics, natural and social sciences, English and communications.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
1. Demonstrate the Level I standards identified by the American Society of Nondestructive Testing for the following methods: Penetrant Inspection, Visual Magnetic Particle, Radiographic, Eddy Current and Ultrasonic

Name
Demonstrate the Level II standards identified by the American Society of Nondestructive Testing for the following methods: Penetrant Inspection, Visual Magnetic Particle, Radiographic, Eddy Current and Ultrasonic

Program Costs
Eddy Current Technician, COC - $2,472.00

Cost does not include online fees, books, or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Eddy Current Technician

Type
Completion Requirement

Eddy Current Technician Requirement

Complete ALL of the following Courses:

- NDT106 - Formulations and Calculations - 2 Credits
- NDT110 - Eddy Current Level I - 3 Credits
- NDT111 - Eddy Current Level II - 3 Credits

Entry Requirements

Be 18 years of age or older

Degree Maps

Degree Map Name
Eddy Current Technician
Total Degree Map Credits
8
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	8	0

Requirement Select

- NDT106 - Formulations and Calculations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select

- NDT110 - Eddy Current Level I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	40
Clinical	-
Criticality	No

Requirement Select

- NDT111 - Eddy Current Level II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

CC-EM_MEDTEC - Emergency Medical Technician, COC

Overview

Department(s)
Health Sciences

Degree Designation
Certificate of Completion

Catalog Full Description
The goal of the Emergency Medical Services- EMT program is to produce competent, entry level Emergency Medical Technicians to serve in career positions in the community. This program is designed to equip students with the highest level of pre-hospital care. The program consists of four components of instruction: didactic instruction, skills laboratory, clinical experience and field internship. Students are prepared to care for the sick and injured in emergency medical settings. The program prepares students to develop quick reactions and competent care practices to respond to emergency calls, perform medical services and transport patients to medical facilities. This program establishes a student's EMT- Basic certification.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Scene Size-Up and Management: Perform an initial scene size-up to identify hazards, determine the need for additional resources, ensure scene safety, and initiate appropriate scene and patient management strategies.

Name
Mass Casualty Incident and Triage Management: Identify multiple-casualty incidents (MCIs) and apply local triage and incident command systems to effectively prioritize and manage patient care.

Name
Professional Communication: Communicate clearly and accurately with dispatch centers, medical control, other responders, and receiving healthcare personnel, including the use of prehospital care reports and radio communication.

Name
Infection Control and Patient Handling: Demonstrate the use of appropriate personal protective equipment (PPE) and infection control procedures and move patients safely using proper body mechanics and appropriate lifting/moving techniques—with and without assistive devices.

Name
Patient Assessment and Vital Signs: Perform comprehensive patient assessments (primary, secondary, and ongoing) including measurement and interpretation of vital signs (e.g., blood pressure, respiratory rate, heart rate, oxygen saturation), mental status, skin condition, and other key indicators to guide treatment decisions.

Name
Bleeding Control and Shock Management: Control external bleeding using appropriate techniques such as direct pressure, tourniquets, pressure dressings, and elevation, while recognizing and managing signs of shock in trauma and medical patients.

Name
Spinal Motion Restriction and Immobilization: Perform spinal motion restriction using cervical collars, full-body immobilization devices, and assist higher-level providers with immobilization procedures as indicated by patient condition and mechanism of injury.

Name
Basic and Advanced Airway Management: Maintain airway patency using manual maneuvers, suctioning techniques, and basic adjuncts (OPA, NPA), and—at the appropriate level—insert supraglottic airways (excluding laryngeal mask airways) to support ventilation.

Name
Oxygen Administration and Ventilatory Support: Administer oxygen using a variety of delivery devices (e.g., nasal cannula, non-rebreather, simple mask, venturi mask), and support ventilation using devices such as bag-valve-mask (BVM), manually triggered ventilators, and automatic transport ventilators.

Name
Respiratory Monitoring and Support Techniques: Monitor and assess respiratory effectiveness using tools such as pulse oximetry, auscultation of breath sounds, capnography, and colorimetric CO_2 detection, and perform gastric decompression as indicated using nasogastric or orogastric tubes within scope

Name
Cardiac Arrest Recognition and Resuscitation: Recognize and respond to cardiac arrest, respiratory arrest, and airway obstruction emergencies by performing high-quality CPR (manual or mechanical), applying cardiac monitoring electrodes, and delivering post-resuscitative care, including airway and ventilatory support.

Name
Medication Administration and Medical Protocols: Administer medications in accordance with the Kansas Board of EMS "Approved Medication List," following medical protocols and standing orders, including delivery via routes appropriate to EMR, EMT, or AEMT certification levels.

Program Costs
Emergency Medical Technician, COC - $3,800.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirement Select
- Emergency Medical Technician

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	12
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

Requirements

Simple Requirements

Program Requirements

Emergency Medical Technician

Type
Completion Requirement

Emergency Medical Technician Requirment

Complete ANY of the following Course Sets:
- Emergency Medical Technician

Entry Requirements
Documentation of high school graduation or satisfaction of high school equivalency certificate requirements, or students currently enrolled in high school or GED program and have attained junior status and the student must be at least 17 years of age by the end of the semester, Documented negative PPD TB skin test within the last year or negative chest X - Ray within the last three years, Completion of application and related procedures

Degree Maps

Degree Map Name
Emergency Medical Technician
Total Degree Map Credits
12
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	12	0

CC-HOME_HLTH - Home Health Aide, COC

Overview

Department(s)
Health Sciences

Degree Designation
Certificate of Completion

Catalog Full Description
The Home Health Aide course prepares the certified nurse aide (CNA) to care for clients in community and home settings. Graduates may take an examination to become a certified home health aide. Documentation and identification of client needs is an important part of this course. Many home health aides are also hired to work at hospice agencies and with agencies working with children.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Basic Patient Care: Indicates an understanding of assisting patients with activities of daily living (ADLs), how to safely assist patients with mobility, including transfers, range of motion exercises and the proper use of mobility aids, while prevention falls or injuries. All while maintaining dignity and comfort.

Name
Monitoring, Documentation and Reporting: Understands how to accurately measure and document vital signs, such as temperature, pulse, respiration, and blood pressure, as well as know when to report changes in a patient's physical or emotional condition.

Name
Effective Communication: Recognition of how to communicate with clients and their families clearly and compassionately regardless of age, race, cultural or religious differences. Foster a trusting environment by working with other healthcare team members to support the care plan. Explain how the care plan may be different for clients with altered needs, i.e.: children, developmental disabilities, and the elderly.

Name
Safety and Infection Control: Employ principles of safety and infection prevention, including proper hand hygiene, the use of personal protective equipment (PPE), and infection control techniques. Recognize the characteristics of abuse, neglect and exploitation. Determine the chain of command for reporting purposes.

Name
Nutrition and Meal Preparation: Indicates competency in importance of supporting patients' nutritional needs by preparing healthy meals, understanding dietary restrictions, and assisting with feeding when necessary.

Name
Legal and Ethical Responsibilities: Apply knowledge of patient rights, confidentiality, and ethical practices in home health care, adhering to HIPAA and other legal guidelines. Understand the difference between palliative/ hospice care. Identify the psychosocial aspects of death and dying and discuss the plan of action in case of a death in the home.

Program Costs
Home Health Aide, COC - $392.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Home Health Aide

Type
Completion Requirement

Home Health Aide Requirements

Complete ALL of the following Courses:
- HHA100 - Home Health Aide - 2 Credits

Entry Requirements
- A current Kansas Certified Nurse Aide Certification
- Documentation of COVID vaccination or completion of the Exemption Request Document
- Complete all college admission documents

Degree Maps

Degree Map Name
Home Health Aide
Total Degree Map Credits
2
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	2	0

Requirement Select

- HHA100 - Home Health Aide

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

CC-MED_AIDE - Certified Medication Aide, COC

Overview

Department(s)
Health Sciences

Degree Designation
Certificate of Completion

Catalog Full Description
The Certified Medication Aide program focuses on the knowledge and skills needed for safe medication administration in long-term care facilities. Graduates are eligible to take the Kansas certification examination to become certified. This program builds upon the role of a certified nurse aide (CNA) and includes accurately measuring, administering and documenting medications to residents.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Legal and Ethical Responsibilities: Understand and adhere to legal, ethical, and regulatory guidelines, including patient confidentiality and rights.

Name
Effective Communication: Communicate effectively with healthcare teams, patients, and families regarding medication regimens and patient care.

Name
Infection Control Practices: Apply standard infection control practices, such as proper hand hygiene and the use of personal protective equipment, when handling and administering medications.

Name
Understanding Medication Fundamentals: Demonstrate knowledge of basic pharmacology principles, including drug classifications, effects, side effects, and proper storage.

Name
Safe Medication Administration: Accurately measure, prepare, and administer medications in accordance with state regulations and facility policies.

Name
Recognizing Adverse Reactions: Identify and respond appropriately to adverse drug reactions, allergic reactions, and other complications.

Name
Documentation and Reporting: Maintain accurate records of medication administration and report any changes in patient condition or medication errors promptly.

Program Costs
Certified Medication Aide, COC - $947.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Certified Medication Aide, COC

Type
Completion Requirement

Certified Medication Aide Requirements

Complete ALL of the following Courses:
- CMA119 - Medication Aide - 5 Credits

Requirement Select
- CMA119 - Medication Aide

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	80
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

Entry Requirements
- Be 18 years of age or older, Successfully complete pre admission testing
- Provide documentation of a negative PPD TB skin test within the last six months or negative chest X-ray within the last three years
- Documentation of COVID vaccination or completion of the Exemption Request Document
- Possess a current Kansas Certified Nurse Aide certificate with no pending or current prohibitions against the individual's certification
- Copy of Social Security card on file

Degree Maps

Degree Map Name
Certified Medication Aide, COC
Total Degree Map Credits
5
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	5	0

CC-MGNTC_PRT - Magnetic Particle Technician, COC

Overview

Department(s)
Aviation

Degree Designation
Certificate of Completion

Catalog Full Description
The Magnetic Particle certificate prepares students for a career as a magnetic particle practitioner in varied industries to include aviation, defense, petrochemical, utilities, nuclear and maritime. Courses are aligned to meet the Level 1 and Level 2 requirements of National Aerospace Standard 410 and the American Society for Nondestructive Testing recommended practice SNT-TC-1A for organized formal training. Students completing the magnetic particle technician certificate are prepared for direct entry into employment in the magnetic particle testing method.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Demonstrate the Level I standards identified by the American Society of Nondestructive Testing for the following methods: Penetrant Inspection, Visual Magnetic Particle, Radiographic, Eddy Current and Ultrasonic

Name
Demonstrate the Level II standards identified by the American Society of Nondestructive Testing for the following methods: Penetrant Inspection, Visual Magnetic Particle, Radiographic, Eddy Current and Ultrasonic

Program Costs
Magnetic Particle Technician, COC - $2,163.00

Cost does not include online fees, books, or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Magnetic Particle Technician

Type
Completion Requirement

Magnetic Particle Technician Requirements

Complete ALL of the following Courses:
- NDT101 - Magnetic Particle Testing - 3 Credits
- NDT106 - Formulations and Calculations - 2 Credits
- NDT114 - Visual Inspection - 2 Credits

Entry Requirements
Be 18 years of age or older

Degree Maps

Degree Map Name
Magnetic Particle Technician
Total Degree Map Credits
7
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	7	0

Requirement Select
- NDT101 - Magnetic Particle Testing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	40
Clinical	-
Criticality	No

Requirement Select
- NDT106 - Formulations and Calculations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- NDT114 - Visual Inspection

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

CC-PENET_TEC - Penetrant Technician, COC

Overview

Department(s)
Aviation

Degree Designation
Certificate of Completion

Catalog Full Description
The associate degree program is a sequence of courses designed to produce a technician who understands NDTs role in the aerospace industry, has mastered the American Society for Nondestructive Testing coursework for Levels I and II certification and has the depth and breadth of knowledge which comes from general education courses. In this program students will complete Levels I and II ASNT competencies for six NDT methods including liquid penetrant, ultrasonic, eddy current, visual, radiography and magnetic particle inspection. Students will round off their educational experience by completing 20 credits of general education courses in five areas of study including humanities, mathematics, natural and social sciences, English and communications.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Demonstrate the Level I standards identified by the American Society of Nondestructive Testing for the following methods: Penetrant Inspection, Visual Magnetic Particle, Radiographic, Eddy Current and Ultrasonic

Name
Demonstrate the Level II standards identified by the American Society of Nondestructive Testing for the following methods: Penetrant Inspection, Visual Magnetic Particle, Radiographic, Eddy Current and Ultrasonic

Program Costs
Penetrant Technician, TC - $1,545.00

Cost does not include online fees, books, or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Penetrant Technician, COC

Type
Completion Requirement

Penetrant Technician Requirements

Complete ALL of the following Courses:

- NDT100 - Penetrant Inspection - 3 Credits
- NDT114 - Visual Inspection - 2 Credits

Entry Requirements

Be 18 years of age or older

Degree Maps

Degree Map Name
Penetrant Technician, COC
Total Degree Map Credits
5
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	5	0

Requirement Select

- NDT100 - Penetrant Inspection

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- NDT114 - Visual Inspection

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Total General Education Credits
0
Total Major Credits
0
Total Minor Credits
0
Total Elective Credits
0

CC-RADIO_TEC - Radiography Technician, COC

Overview

Department(s)

Aviation

Degree Designation

Certificate of Completion

Catalog Full Description

The associate degree program is a sequence of courses designed to produce a technician who understands NDTs role in the aerospace industry, has mastered the American Society for Nondestructive Testings coursework for Levels I and II certification and has the depth and breadth of knowledge which comes from general education courses. In this program students will complete Levels I and II ASNT competencies for six NDT methods including liquid penetrant, ultrasonic, eddy current, visual, radiography and magnetic particle inspection. Students will round off their educational experience by completing 20 credits of general education courses in five areas of study including humanities, mathematics, natural and social sciences, English and communications.

Program Level

Undergraduate

Effective Start Term

Fall 2026

Learning Outcomes

Name

Demonstrate the Level I standards identified by the American Society of Nondestructive Testing for the following methods: Penetrant Inspection, Visual Magnetic Particle, Radiographic, Eddy Current and Ultrasonic

Name

Demonstrate the Level II standards identified by the American Society of Nondestructive Testing for the following methods: Penetrant Inspection, Visual Magnetic Particle, Radiographic, Eddy Current and Ultrasonic

Program Costs

Radiography Technician, COC - $3,399.00

Cost does not include online fees, books, or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest combination of elective credits required.

Campus Location

WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Radiography Technician

Type
Completion Requirement

Radiography Technician Course List

Complete ALL of the following Courses:

- NDT102 - Radiation Safety - 3 Credits
- NDT103 - Radiographic Testing Level II - 3 Credits
- NDT106 - Formulations and Calculations - 2 Credits
- NDT107 - Radiographic Testing Level I - 3 Credits

Entry Requirements

Be 18 years of age or older

Degree Maps

Degree Map Name
Radiography Technician
Total Degree Map Credits
11
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	11	0

Requirement Select

- NDT102 - Radiation Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- NDT103 - Radiographic Testing Level II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- NDT106 - Formulations and Calculations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select

- NDT107 - Radiographic Testing Level I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	40
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

CC-ULTRA_TEC - Ultrasonic Technician, COC

Overview

Department(s)
Aviation

Degree Designation
Certificate of Completion

Catalog Full Description
The associate degree program is a sequence of courses designed to produce a technician who understands NDTs role in the aerospace industry, has mastered the American Society for Nondestructive Testing coursework for Levels I and II certification and has the depth and breadth of knowledge which comes from general education courses. In this program students will complete Levels I and II ASNT competencies for six NDT methods including liquid penetrant, ultrasonic, eddy current, visual, radiography and magnetic particle inspection. Students will round off their educational experience by completing 20 credits of general education courses in five areas of study including humanities, mathematics, natural and social sciences, English and communications.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Demonstrate the Level I standards identified by the American Society of Nondestructive Testing for the following methods: Penetrant Inspection, Visual Magnetic Particle, Radiographic, Eddy Current and Ultrasonic

Name
Demonstrate the Level II standards identified by the American Society of Nondestructive Testing for the following methods: Penetrant Inspection, Visual Magnetic Particle, Radiographic, Eddy Current and Ultrasonic

Program Costs
Ultrasonic Technician, COC - $4,017.00

Cost does not include online fees, books, or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Ultrasonic Technician, COC

Type
Completion Requirement

Ultrasonic Technician Requirements

Complete ALL of the following Courses:
- NDT106 - Formulations and Calculations - 2 Credits
- NDT112 - Ultrasonic Test Method Lvl I - 3 Credits
- NDT113 - Ultrasonic Test Method Lvl II - 3 Credits
- NDT123 - Adv Ultrasonic Testing Methods - 5 Credits

Entry Requirements
Be 18 years of age or older

Degree Maps

Degree Map Name
Ultrasonic Technician
Total Degree Map Credits
13
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	13	0

Requirement Select
- NDT106 - Formulations and Calculations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- NDT112 - Ultrasonic Testing Method Level I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	40
Clinical	-
Criticality	No

Requirement Select

- NDT113 - Ultrasonic Testing Method Level II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- NDT123 - Advanced Ultrasonic Testing Methods

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

CC-VET_ASST - Veterinary Assistant, COC

Overview

Department(s)
Health Sciences

Degree Designation
Certificate of Completion

Catalog Full Description
The Veterinary Nursing program prepares the student for a career as a veterinary nurse. Upon completion of the curriculum, the student is eligible to take the Veterinary Technician National Examination (VTNE) toward certification as a credentialed veterinary nurse. The curriculum includes practical and theoretical course work which prepares the student for employment in various areas of animal healthcare including veterinary hospitals, veterinary clinics, research facilities, and diagnostic laboratories. The instruction in this program consists of skills and concepts related to; patient management, patient care, clinical procedures, communication with owners, animal nursing care, animal health/ nutrition, animal handling, clinical pathology, radiology, anesthesiology, dental prophylaxis, surgical assisting, clinical laboratory procedures, office administration skills, patient and owner management, and applicable standards and regulations.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Program Costs
Veterinary Assistant, COC - $1,750.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Veterinary Assistant, COC

Type
Completion Requirement

Veterinary Assistant Requirements

Complete ALL of the following Courses:

- VET102 - Intro Vet Assisting/Animal Sci - 1 Credits
- VET116 - Lab and Diagnostic Skills - 1 Credits
- VET121 - Veterinary Assisting I - 2 Credits
- VET141 - Veterinary Assisting II - 1 Credits

Entry Requirements
Be 16 years of age or older

Documentation of high school graduation or satisfaction of high school equivalency certificate requirements, or students currently enrolled in high school or GED program and have attained junior status

Degree Maps

Degree Map Name
Veterinary Assistant, COC
Total Degree Map Credits
5
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	5	0

Requirement Select
- VET102 - Introduction to Veterinary Assisting/Animal Science

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- VET116 - Laboratory and Diagnostic Skills

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- VET121 - Veterinary Assisting I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- VET141 - Veterinary Assisting II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Total General Education Credits
0
Total Major Credits
0
Total Minor Credits
0
Total Elective Credits
0

TC-ACCT_ING - Accounting, TC

Overview

Department(s)
Professional Studies

Degree Designation
Technical Certificate

Catalog Full Description
The Associate in Applied Science in Accounting program is designed to provide students with a comprehensive foundation in accounting principles and related business skills, including data analysis. This two-year program combines theoretical knowledge with practical applications to prepare students for entry-level positions in accounting.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Apply fundamental accounting principles to analyze and record financial transactions accurately.

Name
Demonstrate understanding of financial statements by Generally Accepted Accounting Principles (GAAP).

Name
Utilize accounting software, including QuickBooks, for efficient financial management.

Name
Analyze financial data to support decision-making processes within an organizational context.

Name
Apply managerial accounting concepts for cost analysis, budgeting, and internal decisionmaking.

Name
Demonstrate a comprehensive understanding of fundamental business concepts.

Name
Apply business principles in analyzing organizational operations' economic, legal, and ethical aspects.

Name
Utilize data science tools for fundamental analysis and visualization in accounting contexts.

Name
Demonstrate an understanding of tax principles and regulations.

Name
Prepare tax documents and provide essential tax planning advice.

Name
Apply principles of personal finance to manage individual financial affairs.

Name
Provide essential financial planning advice to individuals.

Name
Apply introductory data science concepts for analysis and interpretation of data.

Name
Create visual representations of data to enhance decision-making processes.

Name
Apply data analytics tools and techniques to analyze complex datasets effectively.

Program Costs
Accounting, TC - $7,021.00

Cost does not include online fees, books or tools. Financial assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Accounting, TC

Type
Completion Requirement

Accounting Requirements

Complete ALL of the following Courses:

- ACC130 - Managerial Accounting - 3 Credits
- ACC137 - QuickBooks - 3 Credits
- ACC152 - Payroll Accounting - 3 Credits
- ACC160 - Principles of Accounting I - 3 Credits
- ACC170 - Principles of Accounting II - 3 Credits
- ACC230 - Tax Accounting - 3 Credits
- AAD110 - Data Exploration and Interpret - 3 Credits
- AAD120 - Data Visualization - 3 Credits
- BUS104 - Introduction to Business - 3 Credits
- CED115 - Computer Applications - 3 Credits
- ENG101 - Composition I - 3 Credits
- MTH108 - Contemporary Math - 3 Credits
- PHL110 - Ethics - 3 Credits
- SPH101 - Public Speaking - 3 Credits

Degree Maps

Degree Map Name
Accounting, TC
Total Degree Map Credits
42
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	12	0

Requirement Select

- ACC160 - Principles of Accounting I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- CED115 - Computer Applications

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- MTH108 - Contemporary Math

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- ACC170 - Principles of Accounting II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	12	0

Requirement Select

- ACC137 - QuickBooks

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- BUS104 - Introduction to Business

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- SPH101 - Public Speaking

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ACC152 - Payroll Accounting

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	6	0

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PHL110 - Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	12	0

Requirement Select
- ACC130 - Managerial Accounting

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ACC230 - Tax Accounting

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- AAD120 - Data Visualization

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- AAD110 - Data Exploration and Interpretation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-AER_COAT - Aerospace Coatings & Paint Technology, TC

Overview

Department(s)
Aviation

Degree Designation
Technical Certificate

Catalog Full Description
Aerospace Coatings & Paint Technology associate degree program is a sequence of courses designed to produce an aerospace technician with multiple skill sets, a well rounded understanding of the aerospace industry and the depth and breadth of knowledge which comes from general education courses. This program provides a broad based understanding of coating and paint processes within the aerospace industry. The curriculum includes comprehensive learning experiences in all aspects of the coating and paint industry including formulation, application and specialized areas.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Student will demonstrate academic, technical, and professional knowledge and skills required for job acquisition in the Aerospace Coatings & Paint Technology program

Name
Student will demonstrate surface preparation from various coating and painting applications on all interior and exterior aircraft components

Name
Student will demonstrate special application techniques

Name
Student will demonstrate various skills and techniques of advanced paint and coating which meet industry specifications

Program Costs
Aerospace Coatings & Paint Technology, TC $14,995.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Aerospace Coatings & Paint Technology, TC

Type
Completion Requirement

Aerospace Coatings & Paint Technolgy Requirements

Complete ALL of the following Courses:

- ACP100 - Intro to Coatings & Paint Tech - 3 Credits
- ACP101 - Surface Preparation & Coatings - 4 Credits
- ACP102 - Perf & Durability of Coatings - 3 Credits
- ACP103 - Color Technology - 3 Credits
- ACP104 - Specialized Coatings Processes - 3 Credits
- ACP105 - Specialized Detailing - 3 Credits
- ACP106 - Aerospace Coatings & Materials - 3 Credits
- ACP111 - Technical Co-Operative Project - 4 Credits
- ACP121 - Surface Prep & Coatings II - 3 Credits
- ACP124 - Specialized Coatings Proc II - 4 Credits
- ACP145 - Environmental Health & Safety - 2 Credits
- AVC104 - Quality Control Concepts - 1 Credits
- AVC105 - Aircraft Familiarization - 1 Credits
- AVC107 - Fundamentals for Aerospace Mfg - 1 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- AVC112 - Blueprint Reading - 2 Credits
- AVC120 - Introduction to Sealing - 1 Credits
- AVC140 - Electrical Bonding & Grounding - 1 Credits
- MCD106 - Precision Measuring - 2 Credits

Entry Requirements

- Be 16 years of age or older
- Complete college admissions documents

Degree Maps

Degree Map Name
Aerospace Coatings & Paint Technology , TC
Total Degree Map Credits
45
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	15	0

Requirement Select

- ACP100 - Introduction to Coatings & Paint Technology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- ACP145 - Environmental Health and Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select

- AVC104 - Quality Control Concepts

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- AVC105 - Aircraft Familiarization

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- AVC107 - Fundamentals for Aerospace Manufacturing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC112 - Blueprint Reading

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- AVC120 - Introduction to Sealing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC140 - Electrical Bonding & Grounding

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MCD106 - Precision Measuring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	7	0

Requirement Select
- ACP101 - Surface Preparation & Coatings

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- ACP121 - Surface Preparation & Coatings II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	3	0

Requirement Select
- ACP104 - Specialized Coatings Processes

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	10	0

Requirement Select
- ACP102 - Performance & Durability of Coatings

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ACP106 - Aerospace Coatings & Materials

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ACP124 - Specialized Coatings Processes II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	10	0

Requirement Select
- ACP103 - Color Technology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- ACP105 - Specialized Detailing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- ACP111 - Technical Co-Operative Project

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	180
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-ALT_FUEL - Alternative Fuel Vehicle Maintenance & Advanced Electronics, TC

Overview

Department(s)
Applied Technologies

Degree Designation
Technical Certificate

Catalog Full Description
The Alternative Fuel Maintenance & Advanced Electronics program will prepare students to apply technical knowledge and skills to the maintenance of alternative fuel vehicles. Instruction will include, electrical vehicles, liquefied petroleum gas (LPG) vehicles, compressed natural gas (CNG) vehicles, hybrid fuel technology, electrical and electronic systems, engine performance, diagnosis and repair, and conversion/installation. The Alternative Fuel Maintenance & Advanced Electronics program also allows students to gain skills and knowledge to accurately diagnose, repair, and service various automotive vehicles. The program includes classroom and lab instruction in safety, electrical and electronic systems, suspension and steering, engine performance, manual drive train and axles, heating and air conditioning, engine repair, and brakes. Third-Party Credentialing has become an excellent way to display the knowledge and skills acquired in a program. Students have the opportunity to earn credentials while learning to operate wheel service, wheel alignment, brake service and diagnostic equipment from several different manufacturers. Additionally, students have the opportunity to earn student ASE certifications as a part of the program.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Utilize equipment in accordance with all regulations and manufacturer requirements

Name
Demonstrate knowledge and apply practice of Government regulations and Industry safety

Name
Demonstrate proficiency in the use of industry approved diagnostic equipment to analyze and diagnose alternative fuel vehicle systems

Name
Demonstrate the ability to service and repair integrated electronic systems and components

Name
Diagnose and repair brake system components

Name
Diagnose and repair general drive train concerns

Name
Perform general transmission and transaxle diagnosis

Name
Service and repair heating and air conditioning systems associated with alternative fuel vehicles in accordance with federal, state and local guidelines

Name
Interpret and diagnose battery concerns in alternative fuel vehicles

Program Costs
Alternative Fuel Vehicle Maintenance & Advanced Electronics, TC - $12,423.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211

Requirements

Simple Requirements

Program Requirements

Alternative Fuel Vehichle Maintenance & Advanced Electronics, TC

Type
Completion Requirement

Alternative Fuel Vehicle Maintenance & Advanced Electronics Requirements

Complete ALL of the following Courses:

- AFV110 - Electrical I - 3 Credits
- AFV120 - Electrical II - 3 Credits
- AFV130 - Suspension and Steering I - 3 Credits
- AFV135 - Intro to Alternative Fuels - 3 Credits
- AFV140 - Engine Repair - 4 Credits
- AFV145 - Hybrid Systems & Maintenance - 3 Credits
- AFV150 - Electric/Fuel Cell Technology - 1 Credits
- AFV155 - High Volt Battery Tech & Mgmt - 3 Credits
- AFV160 - Brakes I - 3 Credits
- AFV165 - Introduction to CNG and LPG - 1 Credits
- AFV170 - Computer Systems for Alt Fuels - 3 Credits
- AFV175 - Automatic Transmission Repair - 4 Credits
- AFV180 - Heating & Air Conditioning - 4 Credits
- AFV206 - PowerTrain Systems - 4 Credits
- AFV225 - Electrical III - 2 Credits
- TAS160 - Transportation Industry Safety - 2 Credits

Entry Requirements

- Be 16 years of age or older
- Complete college admissions documentation

Degree Maps

Degree Map Name
Alternative Fuel Vehicle Maintenance & Advanced Electronics, TC
Total Degree Map Credits
46
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	23	0

Requirement Select
- AFV110 - Electrical I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AFV135 - Introduction to Alternative Fuels

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AFV140 - Engine Repair

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AFV160 - Brakes I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AFV180 - Heating & Air Conditioning

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AFV206 - PowerTrain Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- TAS160 - Transportation Industry Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	19	0

Requirement Select
- AFV120 - Electrical II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AFV130 - Suspension and Steering I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AFV145 - Hybrid Systems & Maintenance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AFV155 - High Voltage Battery Technology & Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AFV170 - Computer Systems for Alternative Fuels

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AFV175 - Automatic Transmission Repair

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	4	0

Requirement Select
- AFV150 - Electric/Fuel Cell Technology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- AFV165 - Introduction to CNG and LPG Conversion, Installation & Maintenance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AFV225 - Electrical III

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-AMT_GNRL - Aviation Maintenance General, TC

Overview

Department(s)
Aviation

Degree Designation
Technical Certificate

Catalog Full Description
his program meets the requirements for students to take the exam for the airframe and powerplant mechanic certificate. The certificate authorizes the holder to approve aircraft that has undergone inspection or maintenance for return to service. This curriculum is approved by the Federal Aviation Administration. Graduates from this program are in demand not only in the field of aviation but in other fields that require a high degree of mechanical knowledge.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Install safety wire on nuts, bolts, and turnbuckles.

Name
Fabricate a rigid line with a flare and a bend.

Program Costs
Aviation Maintenance General, TC - $6,975.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Aviation Maintenance General, TC

Type
Completion Requirement

Aviation Maintenance General Requirements

Complete ALL of the following Courses:
- AMT187 - General I - 4 Credits

- AMT188 - General II - 4 Credits
- AMT189 - General III - 5 Credits
- AMT190 - General IV - 5 Credits
  OR AMF191 - General - 5 Credits

Entry Requirements

- Be 16 years of age or older
- Must be able to read, write and speak the English Language .

Degree Maps

Degree Map Name
Aviation Maintenance General, TC
Total Degree Map Credits
18
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	18	0

Requirement Select
- AMT187 - General I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AMT188 - General II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AMT189 - General III

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- AMT190 - General IV
  OR
- AMF191 - General

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	75 - 105
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-AUTO_ENG - Automation Engineer Technology, CERT C

Overview

Department(s)
Automation and Advanced Tech

Degree Designation
Technical Certificate

Catalog Full Description
The Automation Engineer Technology program at WSU Tech prepares students for careers in designing, maintaining, and improving automated systems used in manufacturing and industrial environments. Students gain hands-on experience in areas such as electrical control systems, programmable logic controllers (PLCs), robotics, motor control, fluid power, and process control. The program emphasizes practical skills that allow graduates to install, troubleshoot, and optimize automation equipment across a wide range of industries. The WSU Tech Automation Engineer Technology program is aligned with the National Center for Education Statistics CIP Code 15.0406: A program that prepares individuals to apply basic engineering principles and technical skills in support of engineers and other professionals engaged in developing, installing, calibrating, modifying and maintaining automated systems. Includes instruction in computer systems; electronics and instrumentation; programmable logic controllers (PLCs); electric, hydraulic and pneumatic control systems; actuator and sensor systems; process control; robotics; applications to specific industrial tasks; and report preparation.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Apply principles of electronics, fluid power, and controls to the design, operation, and maintenance of automated systems.

Name
Apply problem solving and critical thinking skills to troubleshoot automation and controls systems.

Name
Demonstrate proper techniques and practices in the assembly, repair, installation and maintenance of automation and controls systems.

Name
Demonstrate proficiency in programming, configuring, and integrating programmable logic controllers (PLCs), robotics, and motion control systems.

Name
Analyze automated system performance data to identify inefficiencies, diagnose root causes, and recommend improvements for reliability, safety, and productivity.

Name
Apply safe and approved practices in the workplace.

Program Costs
Automation Engineer Technology, TC - $15,132.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211

Requirements

Simple Requirements

Program Requirements

Automation Engineer Technology, CERT C

Type
Completion Requirement

Automation Engineer Technology Requirements

Complete ALL of the following Courses:

- AEN105 - Industrial Robotics - 3 Credits
- AEN109 - Programmable Logic Ctrlr (PLC) - 3 Credits
- AEN111 - Foundations of Manufacturing - 2 Credits
- AEN115 - Industrial Safety - 1 Credits
- AEN116 - Fundamentals of Motor Controls - 3 Credits
- AEN117 - Variable Speed Motor Control - 3 Credits
- AEN122 - AC/DC Circuits - 4 Credits
- AEN131 - Ind Prog Logic Controls (PLC) - 3 Credits
- AEN132 - Industrial Process Control - 3 Credits
- AEN137 - Industrial Schematics - 2 Credits
- AEN143 - Electrical System Troubleshoot - 3 Credits
- AEN145 - Actuators & Sensors - 3 Credits
- AEN147 - Industrial Fluid Power - 3 Credits
- AEN150 - Manufacturing Equipment & Tool - 2 Credits
- AEN152 - Predictive Maintenance - 2 Credits
- AEN157 - Preventative Maintenance - 2 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- SPH111 - Interpersonal Communication - 3 Credits

Automation Engineer Technology Elective

Earn at least 3 credits from the following:

- AEN146 - Motion Control - 3 Credits
- ROB120 - IoT: Internet of Things - 3 Credits

General Education Requirement

Complete ANY of the following Course Sets:

- Math Elective

Entry Requirements

- Be 16 years of age
- Complete all the college admissions documents

Degree Maps

Degree Map Name
Automation Engineer Technology, CERT C
Total Degree Map Credits
52
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	16	0

Requirement Select
- AEN111 - Foundations of Manufacturing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- AEN115 - Industrial Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AEN117 - Variable Speed Motor Control

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AEN122 - AC/DC Circuits

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- AEN150 - Manufacturing Equipment and Tools

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	14	0

Requirement Select
- AEN109 - Programmable Logic Controllers (PLC)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AEN116 - Fundamentals of Motor Controls

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AEN131 - Industrial Programmable Logic Controls (PLC)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- AEN137 - Industrial Schematics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- AEN143 - Electrical System Troubleshooting

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	6	0

Requirement Select
- AEN105 - Industrial Robotics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AEN147 - Industrial Fluid Power

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	16	0

Requirement Select
- AEN132 - Industrial Process Control

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- AEN145 - Actuators & Sensors

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- AEN152 - Predictive Maintenance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- AEN157 - Preventative Maintenance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- AEN146 - Motion Control: Servos & Drives

  OR
- ROB120 - IoT Fundamentals: Introduction to the Internet of Things

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45 - 75
Clinical	-
Criticality	No

Requirement Select

- SPH111 - Interpersonal Communication

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-AUTO_TECH - Automotive Technology, TC

Overview

Department(s)
Applied Technologies

Degree Designation
Technical Certificate

Catalog Full Description
This program allows students to gain skills and knowledge to accurately diagnose, repair and service various automotive vehicles. Program includes classroom and lab instruction in safety, electrical and electronic systems, suspension and steering, engine performance, manual drive train and axles, heating and air conditioning, engine repair and brakes. The program has Automotive Service Excellence Foundation accreditation. The WSU tech Automotive Technology program is aligned with the National Center for education statistics CIP code 47.0604: Automobile/Automotive Mechanics Technology/ Technician program that prepares individuals to apply technical knowledge and skills to repair, service, and maintain all types of automobiles. Includes instruction in brake systems, electrical systems, engine performance, engine repair, suspension and steering, automatic and manual transmissions and drive trains, and heating and air condition systems.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Demonstrate the ability to service and repair integrated electronic systems and components

Name
Perform diagnosis and repair on brake system components

Name
Diagnose and repair suspension and steering systems

Name
Diagnose and repair general drive train concerns

Name
Perform general transmission and transaxle diagnosis

Name
Service and repair heating and air conditioning systems according to state, local and federal guidelines

Name
Interpret and diagnose engine concerns

Name
Verify and repair engine concerns

Name
Diagnose and repair fuel-injection and emissions system

Name
Perform preventative maintenance inspections and document vehicle condition using industry-standard tools and procedures

Name
Demonstrate safe work practices, proper tool/equipment usage, and compliance with environmental and workplace safety regulations.

Program Costs
Automotive Technology, TC - $12,423.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211

Requirements

Simple Requirements

Program Requirements

Automotive Technology, TC

Type
Completion Requirement

Automotive Technology Requirements

Complete ALL of the following Courses:

- TAS121 - Engine Repair - 4 Credits
- TAS124 - Electrical I - 3 Credits
- TAS125 - Electrical II - 3 Credits
- TAS127 - Automatic Transmission Repair - 4 Credits
- TAS128 - Heating & Air Conditioning - 4 Credits
- TAS131 - Engine Performance I - 3 Credits
- TAS132 - Engine Performance II - 3 Credits
- TAS133 - Brakes I - 3 Credits
- TAS134 - Brakes II for Automotive - 1 Credits
- TAS135 - Computer Systems for Auto - 3 Credits
- TAS136 - Suspension and Steering I - 3 Credits
- TAS137 - Suspension and Steering II - 2 Credits
- TAS150 - Specialized Training - 2 Credits

- TAS160 - Transportation Industry Safety - 2 Credits
- TAS206 - PowerTrain Systems - 4 Credits
- TAS225 - Electrical III - 2 Credits

Entry Requirements

· Be 16 years of age or older

· Complete college admissions documentation

Degree Maps

Degree Map Name
Automotive Technology, TC
Total Degree Map Credits
46
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	24	0

Requirement Select
- TAS121 - Engine Repair

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- TAS127 - Automatic Transmission Repair

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- TAS128 - Heating & Air Conditioning

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- TAS133 - Brakes I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- TAS136 - Suspension and Steering I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- TAS160 - Transportation Industry Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- TAS206 - PowerTrain Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	17	0

Requirement Select
- TAS124 - Electrical I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- TAS125 - Electrical II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- TAS131 - Engine Performance I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- TAS132 - Engine Performance II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- TAS135 - Computer Systems for Automotive

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- TAS137 - Suspension and Steering II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	5	0

Requirement Select
- TAS134 - Brakes II for Automotive

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- TAS150 - Specialized Training

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select

- TAS225 - Electrical III

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-AVIA-MFG - Aerospace Manufacturing Technology, TC

Overview

Department(s)
Aviation

Degree Designation
Technical Certificate

Catalog Full Description
Aerospace Manufacturing Technology is a sequence of courses designed to produce an assembly mechanic with a well-rounded understanding of the aerospace industry and the depth and breadth of knowledge which comes from general education courses. In this program students will complete a core set of foundational aviation courses and then move on to master the high demand skillset associated with an Aerospace Assembly Mechanic. The coursework will prepare students to complete the certification for Aerospace Core and Aerospace Assembly Mechanic endorsed by the National Association of Manufacturers (NAM).

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Measure aircraft components using appropriate precision instrumentation

Name
Install aircraft fasteners in a variety of aviation materials including sheet metal

Name
Demonstrate the appropriate safety procedures and process used in building aircraft components

Name
Utilize engineering drawings to assemble aircraft component

Name
Assemble sheetmetal aircraft components

Name
Identify the basic procedures and processes associated with aviation manufacturing

Name
Demonstrate an understanding of the role of quality assurance systems in aviation manufacturing

Name
Students will demonstrate inspection techniques utilized in aircraft systems and assemblies

Name
Demonstrate electrical bonding techniques utilized in aircraft systems and assemblies

Name
Apply knowledge of fractions, decimals, and percentages to solve real-world problems

Name
Execute proactive employability strategies to develop and manage a professional career

Program Costs
Aerospace Manufacturing Technology, TC - $9,342.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Aerospace Manufacturing Technology, TC

Type
Completion Requirement

Aerospace Manufacturing Technology Requirement

Complete ALL of the following Courses:
- AER115 - Aerostructures Assembly - 6 Credits
- AVC103 - Geometric Dimension & Toleran - 1 Credits
- AVC105 - Aircraft Familiarization - 1 Credits
- AVC107 - Fundamentals for Aerospace Mfg - 1 Credits
- AVC108 - Aircraft Systems & Components - 4 Credits
- AVC117 - Hand & Power Tools - 4 Credits
- AVC125 - Bonding and Grounding - 1 Credits
- AVC150 - Human Factors - 1 Credits
- ACP100 - Intro to Coatings & Paint Tech - 3 Credits
- CFT101 - Introduction To Composites - 2 Credits

Aerospace Manufacturing Technology Requirement

Earn at least 7 credits from the following:
- AVC102 - Precision Instruments - 1 Credits
- AVC104 - Quality Control Concepts - 1 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- AVC112 - Blueprint Reading - 2 Credits
- AVC120 - Introduction to Sealing - 1 Credits
- AVC140 - Electrical Bonding & Grounding - 1 Credits
- AVC127 - Aviation Assembly Core - 7 Credits

General Education Requirement

Complete ANY of the following Course Sets:
- Math Elective

Entry Requirements
- Be 18 years of age or older
- Complete math placement exam

Degree Maps

Degree Map Name
Aerospace Manufacturing Technology, TC
Total Degree Map Credits
31
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	16	0

Requirement Select
- AER115 - Aerostructures Assembly

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	6
Progress Credits	-
Contact Hours	165
Clinical	-
Criticality	No

Requirement Select

- AVC102 - Precision Instruments
- **AND** AVC104 - Quality Control Concepts
- **AND** AVC110 - Safety/OSHA 10
- **AND** AVC112 - Blueprint Reading
- **AND** AVC120 - Introduction to Sealing
- **AND** AVC140 - Electrical Bonding & Grounding

OR

- AVC127 - Aviation Assembly Core

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	7
Progress Credits	-
Contact Hours	105 - 120
Clinical	-
Criticality	No

Requirement Select

- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	15	0

Requirement Select

- AVC103 - Geometric Dimensioning & Tolerancing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- AVC105 - Aircraft Familiarization

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- AVC107 - Fundamentals for Aerospace Manufacturing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- AVC108 - Aircraft Systems & Components

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- AVC117 - Hand & Power Tools

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- AVC125 - Bonding and Grounding

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- AVC150 - Human Factors

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- CFT101 - Introduction To Composites

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-AVI_AIRFR - Aviation Maintenance Airframe, TC

Overview

Department(s)
Aviation

Degree Designation
Technical Certificate

Catalog Full Description
This program meets the requirements for students to take the exam for the airframe and powerplant mechanic certificate. The certificate authorizes the holder to approve aircraft that has undergone inspection or maintenance for return to service. This curriculum is approved by the Federal Aviation Administration. Graduates from this program are in demand not only in the field of aviation but in other fields that require a high degree of mechanical knowledge.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Install and repair sheet metal and non-metallic structures

Name
Inspect and install assembly and rigging components

Name
Perform an airframe inspection

Name
Inspect and service aircraft landing gear systems

Name
Inspect and repair hydraulic and pneumatic power systems

Name
Troubleshoot and service aircraft fuel systems

Name
Inspect and repair aircraft electrical systems

Program Costs

Aviation Maintenance Airframe, TC - $20,800.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location

WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Aviation Maintenance Airframe, TC

Type

Completion Requirement

Aviation Maintenance Airframe Requirements

Complete ALL of the following Courses:

- AMT187 - General I - 4 Credits
- AMT188 - General II - 4 Credits
- AMT189 - General III - 5 Credits
- AMT190 - General IV - 5 Credits
  OR AMF191 - General - 5 Credits
- AMT233 - Airframe I - 4 Credits
- AMT234 - Airframe II - 5 Credits
- AMT235 - Airframe III - 5 Credits
- AMT236 - Airframe IV - 5 Credits
- AMT237 - Airframe V - 5 Credits
- AMT238 - Airframe VI - 5 Credits
- AMT239 - Airframe VII - 5 Credits
  OR AMF240 - Airframe - 5 Credits

Entry Requirements

- Be 16 years of age or older
- Must be able to read and write the English Language.
- Must pass all courses in Aviation Maintenance General or AMF 191

Degree Maps

Degree Map Name
Aviation Maintenance Airframe, TC
Total Degree Map Credits
52
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	18	0

Requirement Select
- AMT187 - General I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AMT188 - General II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AMT189 - General III

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- AMT190 - General IV
  OR
- AMF191 - General

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	75 - 105
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	19	0

Requirement Select
- AMT233 - Airframe I

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AMT234 - Airframe II

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- AMT235 - Airframe III

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- AMT236 - Airframe IV

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	15	0

Requirement Select
- AMT237 - Airframe V

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- AMT238 - Airframe VI

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- AMT239 - Airframe VII

  OR
- AMF240 - Airframe

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	75 - 105
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-AVI_PWR - Aviation Maintenance Powerplant, TC

Overview

Department(s)
Aviation

Degree Designation
Technical Certificate

Catalog Full Description
This program meets the requirements for students to take the exam for the airframe and powerplant mechanic certificate. The certificate authorizes the holder to approve aircraft that has undergone inspection or maintenance for return to service. This curriculum is approved by the Federal Aviation Administration. Graduates from this program are in demand not only in the field of aviation but in other fields that require a high degree of mechanical knowledge.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Perform an inspection of reciprocating and/or turbine engines

Name
Inspect and repair ignition and starting systems

Name
Inspect and repair engine fuel systems

Name
Inspect and repair induction and engine airflow systems

Name
Inspect and repair engine exhaust and reversers systems

Name
Inspect and repair propellers

Name
Inspect and troubleshoot engine instrument systems

Program Costs
Aviation Maintenance Powerplant, TC - $17,650.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Aviation Maintenance Powerplant, TC

Type
Completion Requirement

Aviation Maintenance Powerplant Requirement

Complete ALL of the following Courses:

- AMT187 - General I - 4 Credits
- AMT188 - General II - 4 Credits
- AMT189 - General III - 5 Credits
- AMT190 - General IV - 5 Credits
  OR AMF191 - General - 5 Credits
- AMT253 - Powerplant I - 4 Credits
- AMT254 - Powerplant II - 5 Credits
- AMT255 - Powerplant III - 5 Credits
- AMT256 - Powerplant IV - 6 Credits
- AMT257 - Powerplant V - 5 Credits
  OR AMF258 - Powerplant - 5 Credits

Entry Requirements

- Be 16 years of age or older
- Must be able to read and write the English Language.
- Must pass all courses in Aviation Maintenance General or AMF 191

Degree Maps

Degree Map Name
Aviation Maintenance Powerplant, TC
Total Degree Map Credits
43
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	18	0

Requirement Select
- AMT187 - General I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AMT188 - General II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AMT189 - General III

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- AMT190 - General IV

OR
- AMF191 - General

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	75 - 105
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	14	0

Requirement Select
- AMT253 - Powerplant I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AMT254 - Powerplant II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- AMT255 - Powerplant III

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	11	0

Requirement Select
- AMT256 - Powerplant IV

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	6
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select

- AMT257 - Powerplant V

OR

- AMF258 - Powerplant

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	75 - 105
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-AVI_TECH - Avionics Technology, TC

Overview

Department(s)
Aviation

Degree Designation
Technical Certificate

Catalog Full Description
The Avionics Technology program prepares students to work in the field of avionics technology. Learning opportunities develop academic, technical and professional knowledge and skills required for job acquisition. The program emphasizes a combination of aircraft and avionics theory and practical application necessary for successful employment. Program graduates receive an Avionics Technology technical certificate that qualifies them as avionics technicians.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Apply FAA rules and regulations to avionics tasks

Name
Apply safety regulations to all avionics tasks

Name
Demonstrate line testing methodologies on avionics components

Name
Fabricate and repair wiring harness in accordance to FAA guidelines

Name
Analyze the operation of avionics systems

Name
Find and repair malfunctions in various avionics systems

Program Costs
Avionics Technology, TC - $12,887.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location

WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Avionics Technology, TC

Type

Completion Requirement

Avionics Technology Requirements

Complete ALL of the following Courses:

- AVT118 - Fundamentals of Flight - 3 Credits
- AVT128 - Electricity & Electronics I - 4 Credits
- AVT138 - Electricity and Electronics II - 4 Credits
- AVT146 - Avionics - 3 Credits
- AVT156 - Wiring & Cannon Plug Lab - 2 Credits
- AVT166 - Advanced Wiring - 3 Credits
- AVT175 - Troubleshooting Essentials - 3 Credits
- AVT185 - UAS Operations - 3 Credits
- AVT195 - Soldering - 2 Credits
- AVT210 - Comm, Nav & Surveillance Sys I - 5 Credits
- AVT220 - Comm, Nav & Surveillance II - 4 Credits
- AVT230 - Avionics Sys & Troubleshooting - 5 Credits
- AVT240 - Aircraft & Elec for NCATT Apps - 4 Credits

General Education Requirements

Complete ANY of the following Course Sets:

- Math Elective

Entry Requirements

- 16 years of age
- Meet the required placement score for College Algebra (ALEKS 75)
- Complete college admission documentation

Degree Maps

Degree Map Name

Avionics Technology, TC

Total Degree Map Credits

48

Degree Map Effective Catalog Year

2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	14	0

Requirement Select

- AVT118 - Fundamentals of Flight

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- AVT128 - Electricity & Electronics I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select

- AVT138 - Electricity and Electronics II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select

- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	11	0

Requirement Select
- AVT146 - Avionics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- AVT156 - Wiring & Cannon Plug Lab

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AVT166 - Advanced Wiring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AVT175 - Troubleshooting Essentials

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	5	0

Requirement Select
- AVT185 - UAS Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- AVT195 - Soldering

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	9	0

Requirement Select
- AVT210 - Communication, Navigation & Surveillance Systems I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select
- AVT220 - Communication, Navigation & Surveillance Systems II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	9	0

Requirement Select

- AVT230 - Avionics Systems & Troubleshooting

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select

- AVT240 - Aircraft and Electronics for NCATT Applications

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-BUS_OPMG - Operations Management and Supervision, TC

Overview

Department(s)
Professional Studies

Degree Designation
Technical Certificate

Catalog Full Description
The Business Administration program is designed to provide students with the skills necessary for entry-level employment or advancement within a variety of career fields within the public and private sectors. The two-year program will prepare students for career opportunities as department and division managers, product managers, production line supervisors, assistant store managers, and entry-level banking and sales representatives. Students will receive training in the areas of accounting, marketing, management, economics, and finance.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Students will demonstrate academic, technical, and professional knowledge and skills required for job acquisition in Business Administration

Name
Students will demonstrate the ability to use critical thinking skills in solving business related problems

Name
Students will demonstrate a knowledge of current United States business trends

Name
Students will demonstrate the ability to compile and interpret basic financial statements

Name
Students will demonstrate the ability to lead teams

Name
Students will demonstrate a basic knowledge of legal issues effecting United States businesses

Name
Students will demonstrate a knowledge of global economic trends and their effects on Untied States businesses

Program Costs
Operations Management and Supervision, TC - $5,331.00

Cost does not include online fees, books or tools. Financial assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Operations Management and Supervision, TC

Type
Completion Requirement

Operations Management and Supervision Requirements

Complete ALL of the following Courses:
- OPM105 - Op Mgmt for Org Success - 3 Credits
- OPM115 - Introduction to Project Mgmt - 3 Credits
- ACC160 - Principles of Accounting I - 3 Credits
- ACC170 - Principles of Accounting II - 3 Credits
- BUS104 - Introduction to Business - 3 Credits
- BUS125 - Business Law - 3 Credits
- BUS200 - Principles of Management - 3 Credits
- LEN100 - Lean for Operations - 3 Credits
- LGM101 - Principles Logistics & Supply - 3 Credits
- SPH101 - Public Speaking - 3 Credits

General Education Requirement

Complete ANY of the following Course Sets:
- Humanities Elective

Degree Maps

Degree Map Name
Operations Management and Supervision, TC
Total Degree Map Credits
33
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	12	0

Requirement Select
- BUS104 - Introduction to Business

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- BUS200 - Principles of Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- LGM101 - Principles of Logistics and Supply Chain Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- SPH101 - Public Speaking

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	12	0

Requirement Select
- OPM105 - Operations Management for Organizational Success

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ACC160 - Principles of Accounting I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- BUS125 - Business Law

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ACC170 - Principles of Accounting II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	9	0

Requirement Select
- OPM115 - Introduction to Project Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- LEN100 - Lean for Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-CARPENTRY - Construction Technology Level 1, TC

Overview

Department(s)
Applied Technologies

Degree Designation
Technical Certificate

Catalog Full Description
The Construction Technology program prepares students in the basic skills necessary for all occupations in construction. Students begin their studies in nine modules, which include; safety, math materials, hand and power tools, construction drawings, basic rigging, communication and employability skills. Student then advance to courses with provide hands- on application of technical knowledge and skills. In these courses students apply all aspects of carpentry and will receive instruction in technical mathematics, framing construction materials and selection; job estimating; blueprint reading, foundations and roughing -in, finish carpentry techniques and applicable codes and standards. The WSU Tech Construction Technology program is aligned with the National Center for Education Statistics CIP code 46.0201: Carpentry/Carpenter prepares individuals to apply technical knowledge and skills to lay out, cut, fabricate, erect, install, and repair wooden structures and fixtures, using hand and power tools. Includes instruction in technical mathematics, framing, construction materials and selection, job estimating, blueprint reading, foundations and roughing-in, finish carpentry techniques, and applicable codes and standards.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Identify various types of building materials and describe their uses

Name
List safety precautions associated with building materials.

Name
Describe the proper method of handling and storing building materials.

Name
Explain how to calculate the quantities of lumber, panel, and concrete products using industry-standard methods.

Name
Describe the fasteners, anchors, and adhesives used in construction and explain their uses.

Name
Identify the career and entrepreneurial opportunities within the carpentry trade.

Name
Identify the skills, responsibilities, and characteristics needed to be a successful carpenter

Name
Summarize how to be connected to the industry through an organization like SkillsUSA.

Name
Explain the importance of safety in the construction industry, and describe the obligations of the contractor, subcontractors, and you to ensure a safe work environment.

Program Costs
Construction Technology Level 1, TC - $4,407.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211, CTEC + WSU Tech – 1301 E. 27th Terrace, Pittsburg, KS 66762

Requirements

Simple Requirements

Program Requirements

Construction Technology Level 1, TC

Type
Completion Requirement

Construction Technology Level 1 Requirement

Complete ALL of the following Courses:

- CCP100 - Introductory Craft Skills - 3 Credits
- CCP108 - Construction Basics - 2 Credits
- CCP112 - Carpentry I - 3 Credits
- CCP122 - Carpentry II - 4 Credits
- CCP134 - Intro to Concrete Construction - 3 Credits
- SAF101 - Safety Orientation/OSHA 10 - 1 Credits

Entry Requirements

- Be 16 years of age or older
- Meet entrance exam requirements for general education requirements
- Complete college admissions documentation

Degree Maps

Degree Map Name
Construction Technology Level 1, TC
Total Degree Map Credits
16
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	16	0

Requirement Select
- CCP100 - Introductory Craft Skills

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CCP108 - Construction Basics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- CCP112 - Carpentry I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- CCP122 - Carpentry II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- CCP134 - Introduction to Concrete Construction

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- SAF101 - Safety Orientation/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Total General Education Credits
0
Total Major Credits
0
Total Minor Credits
0
Total Elective Credits
0

TC-CLD_COMP - Cloud Computing/Cloud Application Development, Cert C

Overview

Department(s)
Information Technology

Degree Designation
Technical Certificate

Catalog Full Description
Cloud based operations provide industries with enhanced up time and security as well as the ability to manage maintenance costs and scalability. In short, it is far more competitive to run applications on the cloud. In this hands-on learning path, students will start with the basic fundamental concepts of object-oriented programming, continuous integration continuous delivery, test-driven development, HTML/CSS/Web-Application development, cloud fundamentals, and multi-cloud development services. With these essential skills in place students will learn how to build a full-stack React web-application on Amazon Web Services (AWS); React is supported and maintained by Facebook for Facebook. With step-by-step guidance through the frontend and the backend students will cover all the different aspects of building their first full-stack React app on the cloud that will be accessible from any internet-facing device - including mobile devices. At the end of this learning path, students will convert their Reach application into a fully automated full-stack serverless cloud application that will be highly available, globally scalable, and on par with Facebook, Netflix, YouTube, or any other performant cloud application to date.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Demonstrate a proficiency in the fundamental concepts of computer programming.

Name
Demonstrate an understanding of the Software Development Life Cycle (SDLC).

Name
Exhibit an ability to develop a web application.

Name
Display an ability to design and develop cloud applications.

Program Costs
Cloud Computing/Cloud Application Development, TC - $12,310.00

Cost does not include online fees, books, or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Cloud Computing/Cloud Application Development

Type
Completion Requirement

Cloud Computing/Cloud Application Development Requirements

Complete ALL of the following Courses:

- CLD113 - Introduction to Python - 3 Credits
- CLD118 - Cloud Fundamentals - 3 Credits
- CLD121 - OOP (JavaScript) - 3 Credits
- CLD122 - Intro to Web Development - 3 Credits
- CLD126 - Test Driven Dvlmt (JavaScript) - 3 Credits
- CLD138 - OOP (Python) - 3 Credits
- CLD143 - Web App Dev I (HTML/CSS) - 3 Credits
- CLD152 - Web App Dev II (REACT) - 3 Credits
- CLD166 - Cloud App Dev I (REACT on AWS) - 3 Credits
- CLD168 - AWS Cloud Practitioner - 3 Credits
- CLD170 - Cloud App Dev II (Serverless) - 3 Credits
- CLD174 - Cloud Capstone - 3 Credits
  OR CLD175 - Info Technology Internship - 3 Credits

Cloud Computing/Cloud Application Development Elective

Earn at least 12 credits from the following:

- CLD129 - Progrm Foundations (Swift iOS) - 3 Credits
- CLD137 - C# Programming Language - 3 Credits
- CLD141 - Test Driven Develop (Python) - 3 Credits
- CLD147 - Website Production & Mgmt - 3 Credits
- CLD158 - Multi-Cloud Develop Services - 3 Credits
- CLD169 - Machine Learning and AI Fdn - 3 Credits
- INF105 - CompTIA A+ Core 1 - 3 Credits
- INF112 - Network Essentials - 3 Credits

Degree Maps

Degree Map Name
Cloud Computing/Cloud Application Development, TC
Total Degree Map Credits
48
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	12	0

Requirement Select
- CLD113 - Introduction to Python

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- CLD118 - Cloud Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CLD138 - Object-Oriented Programming (Python)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- CLD168 - AWS Cloud Practitioner

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	12	0

Requirement Select
- CLD121 - Object-Oriented Programming (JavaScript)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CLD126 - Test Driven Development (JavaScript)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Cloud Computing Electives

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Cloud Computing Electives

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	6	0

Requirement Select

- CLD122 - Introduction to Web Development

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- Cloud Computing Electives

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	12	0

Requirement Select

- CLD143 - Web Application Development I (HTML/CSS)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- CLD152 - Web Application Development II (REACT)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- CLD166 - Cloud Application Development I (REACT on AWS)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- CLD170 - Cloud Application Development II (Serverless REACT on AWS)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	6	0

Requirement Select

- CLD174 - Cloud Capstone
  OR
- CLD175 - Information Technology Internship

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90 - 135
Clinical	-
Criticality	No

Requirement Select

- Cloud Computing Electives

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**

0	0

TC-CLD_PROG - Cloud Programming/Cloud Application Development, TC

Overview

Department(s)
Information Technology

Degree Designation
Technical Certificate

Catalog Full Description
Cloud based operations provide industries with enhanced up time and security as well as the ability to manage maintenance costs and scalability. In short, it is far more competitive to run applications on the cloud. In this hands-on learning path, students will start with the basic fundamental concepts of object-oriented programming, continuous integration continuous delivery, test-driven development, HTML/CSS/Web-Application development, cloud fundamentals, and multi-cloud development services. With these essential skills in place students will learn how to build a full-stack React web-application on Amazon Web Services (AWS); React is supported and maintained by Facebook for Facebook. With step-by-step guidance through the frontend and the backend students will cover all the different aspects of building their first full-stack React app on the cloud that will be accessible from any internet-facing device - including mobile devices. At the end of this learning path, students will convert their Reach application into a fully automated full-stack serverless cloud application that will be highly available, globally scalable, and on par with Facebook, Netflix, YouTube, or any other performant cloud application to date.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Demonstrate a proficiency in the fundamental concepts of computer programming.

Name
Demonstrate an understanding of the Software Development Life Cycle (SDLC).

Name
Exhibit an ability to develop a web application.

Name
Display an ability to design and develop cloud applications.

Program Costs
Cloud Programming/ Cloud Application Development, TC - $4,577.00

Cost does not include online fees, books, or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Cloud Programming/Cloud Application Development, TC

Type
Completion Requirement

Cloud Computing/Cloud Application Development Requirement

Complete ALL of the following Courses:

- CLD113 - Introduction to Python - 3 Credits
- CLD121 - OOP (JavaScript) - 3 Credits
- CLD126 - Test Driven Dvlmt (JavaScript) - 3 Credits
- CLD137 - C# Programming Language - 3 Credits
- CLD138 - OOP (Python) - 3 Credits
- CLD141 - Test Driven Develop (Python) - 3 Credits

Degree Maps

Degree Map Name
Cloud Programming/Cloud Application Development, TC
Total Degree Map Credits
18
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	9	0

Requirement Select
- CLD113 - Introduction to Python

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- CLD137 - C# Programming Language

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CLD138 - Object-Oriented Programming (Python)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	9	0

Requirement Select
- CLD121 - Object-Oriented Programming (JavaScript)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CLD126 - Test Driven Development (JavaScript)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CLD141 - Test Driven Development (Python)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-CLIM_ECT - Climate & Energy Control (HVAC) , Cert B

Overview

Department(s)
Applied Technologies

Degree Designation
Technical Certificate

Catalog Full Description
The Climate and Energy Control (HVAC) program prepares students for careers in both residential and commercial HVAC markets by offering technical training in electricity, heating, refrigeration, sheet metal fabrication, direct digital controls (DDC), and advanced HVAC applications. The program also includes an opportunity to obtain specialized skills in building automation. Designed for students who want to build on their existing Climate and Energy Control (HVAC) degree, Certificate C focuses on advanced building automation skills, including automation controls, building management systems, and data analytics for building performance. This program equips graduates with the technical expertise and industry-recognized credentials needed to succeed in an evolving and sustainable HVAC marketplace. The WSU Tech Climate and Energy Control (HVAC) program is aligned with the National Center for Education Statistics CIP code 47.0201: Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician prepares individuals to apply technical knowledge and skills to repair, install, service and maintain the operating condition of heating, air conditioning, and refrigeration systems. Includes instruction in diagnostic techniques, the use of testing equipment and the principles of mechanics, electricity, and electronics as they relate to the repair of heating, air conditioning and refrigeration systems.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Apply electrical theory to various electrical circuits

Name
Demonstrate knowledge of electrical components in various HVAC systems.

Name
Assess heating load and duct design

Name
Demonstrate proper brazing practices

Name
Apply control theory

Name
Troubleshoot and diagnose electrical circuits as they apply to HVAC/R Systsems

Name
Apply Knowledge of refrigeration theory and proper EPA practices

Program Costs
Climate & Energy Control (HVAC) , CERT B - $12,161.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211

Requirements

Simple Requirements

Program Requirements

Climate & Energy Control (HVAC), Cert B

Type
Completion Requirement

Climate & Energy Control (HVAC) Requirements

Complete ALL of the following Courses:

- ACR112 - HVAC Fundamentals - 4 Credits
- ACR113 - Electrical Fundamentals - 4 Credits
- ACR116 - Workplace Skills - 1 Credits
- ACR117 - Intro Mechanical Refrigeration - 4 Credits
- ACR118 - Electrical Fundamentals II - 3 Credits
- ACR121 - Heating System Fundamentals - 3 Credits
- ACR122 - Heating System Fundamentals II - 3 Credits
- ACR123 - Heat Loads and Duct Sizing - 2 Credits
- ACR124 - Advanced Heating Systems - 3 Credits
- ACR126 - EPA 608 - 1 Credits
- ACR127 - Heat Pumps - 4 Credits
- ACR128 - Commercial HVAC - 4 Credits
- ACR129 - Commercial HVAC Lab - 4 Credits
- ACR140 - Sheet Metal Fabrication I - 3 Credits
- SAF101 - Safety Orientation/OSHA 10 - 1 Credits

Entry Requirements

- Be 16 years of age or older
- Complete college admissions documentation

Degree Maps

Degree Map Name
Climate & Energy Control (HVAC), CERT B
Total Degree Map Credits
44
Degree Map Effective Catalog Year

2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	21	0

Requirement Select
- ACR112 - HVAC Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- ACR113 - Electrical Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- ACR116 - Workplace Skills

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- ACR117 - Intro to Mechanical Refrigeration

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- ACR121 - Heating System Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- ACR126 - EPA 608

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- ACR140 - Sheet Metal Fabrication I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- SAF101 - Safety Orientation/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	23	0

Requirement Select
- ACR118 - Electrical Fundamentals II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- ACR122 - Heating System Fundamentals II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ACR123 - Heat Loads and Duct Sizing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ACR124 - Advanced Heating Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- ACR127 - Heat Pumps

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- ACR128 - Commercial HVAC

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ACR129 - Commercial HVAC Lab

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-CLIM_HVC - Climate & Energy Control (HVAC), CERT C

Overview

Department(s)
Applied Technologies

Degree Designation
Technical Certificate

Catalog Full Description
The Climate and Energy Control (HVAC) program prepares students for careers in both residential and commercial HVAC markets by offering technical training in electricity, heating, refrigeration, sheet metal fabrication, direct digital controls (DDC), and advanced HVAC applications. The program also includes an opportunity to obtain specialized skills in building automation. Designed for students who want to build on their existing Climate and Energy Control (HVAC) degree, Certificate C focuses on advanced building automation skills, including automation controls, building management systems, and data analytics for building performance. This program equips graduates with the technical expertise and industry-recognized credentials needed to succeed in an evolving and sustainable HVAC marketplace.he WSU Tech Climate and Energy Control (HVAC) program is aligned with the National Center for Education Statistics CIP code 47.0201: Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician prepares individuals to apply technical knowledge and skills to repair, install, service and maintain the operating condition of heating, air conditioning, and refrigeration systems. Includes instruction in diagnostic techniques, the use of testing equipment and the principles of mechanics, electricity, and electronics as they relate to the repair of heating, air conditioning and refrigeration systems.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Apply electrical theory to various electrical circuits

Name
Demonstrate knowledge of electrical components in various HVAC systems.

Name
Assess heating load and duct design

Name
Demonstrate proper brazing practices

Name
Apply control theory

Name
Troubleshoot and diagnose electrical circuits as they apply to HVAC/R Systsems

Name
Apply Knowledge of refrigeration theory and proper EPA practices

Program Costs
Climate & Energy Control (HVAC), CERT C - $13,709.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211

Requirements

Simple Requirements

Program Requirements

Climate & Energy Control (HVAC), CERT C

Type
Completion Requirement

Climate & Energy Control (HVAC) Requirements

Complete ALL of the following Courses:

- ACR112 - HVAC Fundamentals - 4 Credits
- ACR113 - Electrical Fundamentals - 4 Credits
- ACR116 - Workplace Skills - 1 Credits
- ACR117 - Intro Mechanical Refrigeration - 4 Credits
- ACR118 - Electrical Fundamentals II - 3 Credits
- ACR119 - Adv Electrical Theory for HVAC - 2 Credits
- ACR121 - Heating System Fundamentals - 3 Credits
- ACR122 - Heating System Fundamentals II - 3 Credits
- ACR124 - Advanced Heating Systems - 3 Credits
- ACR126 - EPA 608 - 1 Credits
- ACR127 - Heat Pumps - 4 Credits
- ACR128 - Commercial HVAC - 4 Credits
- ACR129 - Commercial HVAC Lab - 4 Credits
- ACR210 - Automation Controls & Sensors - 3 Credits
- ACR220 - Building Mgmt Systems (BMS) - 3 Credits
- ACR230 - Data Analytics Building Perf - 3 Credits
- SAF101 - Safety Orientation/OSHA 10 - 1 Credits

Entry Requirements

- Be 16 years of age or older
- Complete college admissions documentation

Degree Maps

Degree Map Name
Climate & Energy Control (HVAC), CERT C
Total Degree Map Credits

50

Degree Map Effective Catalog Year

2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	21	0

Requirement Select

- ACR112 - HVAC Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select

- ACR113 - Electrical Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select

- ACR116 - Workplace Skills

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- ACR117 - Intro to Mechanical Refrigeration

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select

- ACR121 - Heating System Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- ACR126 - EPA 608

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- ACR210 - Automation Controls & Sensors

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- SAF101 - Safety Orientation/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	24	0

Requirement Select
- ACR118 - Electrical Fundamentals II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- ACR122 - Heating System Fundamentals II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ACR124 - Advanced Heating Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- ACR127 - Heat Pumps

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- ACR128 - Commercial HVAC

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ACR129 - Commercial HVAC Lab

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select
- ACR220 - Building Management Systems (BMS)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	5	0

Requirement Select
- ACR119 - Advanced Electrical Theory for HVAC

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- ACR230 - Data Analytics for Building Performance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-CNC_OPER - CNC Operator (Machining & Manufacturing Technology), TC

Overview

Department(s)
Manufacturing

Degree Designation
Technical Certificate

Catalog Full Description
This program gives the students the opportunity to gain skills, knowledge, and abilities in various machining processes and procedures. A significant emphasis is placed on CNC machining, including 3, 4, and 5-axis milling and CNC lathe. Classroom and laboratory instruction in safety, precision measuring, geometric dimension and tolerancing, and metrology is available. Students will enhance their competencies by gaining multi-machine setup and operations skills and robotic collaborative assist technologies, including machine tending and automatic part movement. Students will also gain advanced machining experience that includes hardened or exotic materials. Students will round out their experience by completing 15 credits of general education courses. The WSU Tech Machining Technology (Machining & Manufacturing Technology)program is aligned with the National Center for Education Statistics CIP code 48.0501: Machine Tool Technology/Machinist prepares individuals to apply technical knowledge and skills to plan, manufacture, assemble, test, and repair parts, mechanisms, machines, and structures in which materials are cast, formed, shaped, molded, heat treated, cut, twisted, pressed, fused, stamped or worked.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Operate machine tool equipment commonly found in industry including manual and computer-controlled lathes, milling machines, drill presses and cutting machines

Name
Manufacture parts from various materials in accordance with specifications from blueprints, electronic drawings and shop sketches

Name
Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking

Name
Apply safety principles in a work environment to minimize hazards and prevent losses to productivity

Name
Demonstrate employability skills needed to obtain and retain employment in machine tool and related fields

Name
Use CAD and CAM programs to design parts and program manufacturing machines

Program Costs
CNC Operator (Machining & Manufacturing Technology), TC - $4,959.00

Cost does not include online fees, books or tools. Financial assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

CNC Operator (Machining & Manufacturing Technology),TC

Type
Completion Requirement

CNC Operator (Machining & Manufacturing Technology) Requirements

Complete ALL of the following Courses:

- MMG113 - Print Reading - 2 Credits
- MMG116 - Quality Control & Inspection - 1 Credits
- MMG131 - Metallurgy - 1 Credits
- MMG135 - Machining Fundamentals - 3 Credits
- MMG155 - CNC Lathe - 3 Credits
- MMG156 - CNC Operations - 3 Credits
- MMG160 - CNC Milling I - 3 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- PDV115 - Work Ethics - 2 Credits

Entry Requirements
Be 16 years of age or older

Degree Maps

Degree Map Name
CNC Operator (Machining & Manufacturing Technology), TC
Total Degree Map Credits
19
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	19	0

Requirement Select
- MMG113 - Print Reading

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MMG116 - Quality Control & Inspection

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MMG131 - Metallurgy

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MMG135 - Machining Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MMG155 - CNC Lathe

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- MMG156 - CNC Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MMG160 - CNC Milling I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- PDV115 - Work Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-COMP_FAB - Composite Technology Fabrication, TC

Overview

Department(s)
Aviation

Degree Designation
Technical Certificate

Catalog Full Description
This program prepares students to be successful in todays highly competitive world of aviation composite technologies. Supported by a solid background in composite theory, students will apply their knowledge in a state of the art composite laboratory at the National Center for Aviation Training. A well-rounded curriculum allows students hands-on experience in all the stages of the aircrafts life from design to production and repair. Coursework in the program includes CATIA, composite fabrication, composite repair and lean manufacturing.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Students will be able to compare and contrast the materials and processes associated with the composites industry

Name
Students will be able to Fabricate composite components using the materials and processes associated with the composites industry.

Name
Students will be able to Repair composite components using the materials and processes associated with the composites industry

Name
Students will be able to perform basic NDI assessments on composite components using the equipment and processes associated with the NDI/ Composites industry

Program Costs
Composite Technology Fabrication, TC - $6,409.00

Composite Technology Fabrication CBE, TC - $6,409.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Composite Technology Fabrication, TC

Type
Completion Requirement

Composite Technology Fabrication Requirements

Complete ALL of the following Courses:

- CFT101 - Introduction To Composites - 2 Credits
- CFT106 - Composite Finish Trim - 2 Credits
- CFT107 - Composite Assembly - 2 Credits
- CFT130 - Composite Fab Methods/Applicat - 2 Credits
- AVC102 - Precision Instruments - 1 Credits
- AVC104 - Quality Control Concepts - 1 Credits
- AVC105 - Aircraft Familiarization - 1 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- AVC112 - Blueprint Reading - 2 Credits
- AVC117 - Hand & Power Tools - 4 Credits
- AVC120 - Introduction to Sealing - 1 Credits
- AVC140 - Electrical Bonding & Grounding - 1 Credits

Entry Requirements

- Be 18 years of age or older

Degree Maps

Degree Map Name
Composite Technology Fabrication, TC
Total Degree Map Credits
20
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	18	0

Requirement Select

- CFT101 - Introduction To Composites

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CFT106 - Composite Finish Trim

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CFT107 - Composite Assembly

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CFT130 - Composite Fabrication Methods/Applications

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- AVC102 - Precision Instruments

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC112 - Blueprint Reading

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- AVC117 - Hand & Power Tools

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AVC120 - Introduction to Sealing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC140 - Electrical Bonding & Grounding

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	2	0

Requirement Select
- AVC104 - Quality Control Concepts

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC105 - Aircraft Familiarization

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

Degree Map Name
Composite Technology - Fabrication CBE
Total Degree Map Credits
20
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	18	0

Requirement Select
- CFT101 - Introduction To Composites

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CFT106 - Composite Finish Trim

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CFT107 - Composite Assembly

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CFT130 - Composite Fabrication Methods/Applications

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- AVC102 - Precision Instruments

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC112 - Blueprint Reading

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- AVC117 - Hand & Power Tools

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AVC120 - Introduction to Sealing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC140 - Electrical Bonding & Grounding

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	2	0

Requirement Select
- AVC104 - Quality Control Concepts

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC105 - Aircraft Familiarization

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-COMP_REP - Composite Technology Repair, TC

Overview

Department(s)
Aviation

Degree Designation
Technical Certificate

Catalog Full Description
This program prepares students to be successful in todays highly competitive world of aviation composite technologies. Supported by a solid background in composite theory, students will apply their knowledge in a state of the art composite laboratory at the National Center for Aviation Training. A well-rounded curriculum allows students hands-on experience in all the stages of the aircrafts life from design to production and repair. Coursework in the program includes CATIA, composite fabrication, composite repair and lean manufacturing.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Students will be able to perform basic NDI assessments on composite components using the equipment and processes associated with the NDI/ Composites industry

Name
Students will be able to Fabricate composite components using the materials and processes associated with the composites industry.

Name
Students will be able to Repair composite components using the materials and processes associated with the composites industry

Name
Students will be able to perform basic NDI assessments on composite components using the equipment and processes associated with the NDI/ Composites industry

Program Costs
Composite Technology Repair, TC - $13,934.00

Cost does not include online fees, books or tools. Financial assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Composite Technology Repair, TC

Type
Completion Requirement

Composite Technology Repair Requirements

Complete ALL of the following Courses:

- CFT101 - Introduction To Composites - 2 Credits
- CFT106 - Composite Finish Trim - 2 Credits
- CFT107 - Composite Assembly - 2 Credits
- CFT130 - Composite Fab Methods/Applicat - 2 Credits
- CFT140 - Composite Inspection - 2 Credits
- CFT141 - Disassemble & Damage Removal - 3 Credits
- CFT142 - Composite Repair - 4 Credits
- CFT143 - Complex Composite Repairs - 3 Credits
- CFT144 - Electrical Bonding Repair - 1 Credits
- AVC102 - Precision Instruments - 1 Credits
- AVC104 - Quality Control Concepts - 1 Credits
- AVC105 - Aircraft Familiarization - 1 Credits
- AVC107 - Fundamentals for Aerospace Mfg - 1 Credits
- AVC108 - Aircraft Systems & Components - 4 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- AVC112 - Blueprint Reading - 2 Credits
- AVC117 - Hand & Power Tools - 4 Credits
- AVC120 - Introduction to Sealing - 1 Credits
- AVC125 - Bonding and Grounding - 1 Credits
- AVC140 - Electrical Bonding & Grounding - 1 Credits

General Education Requirement

Earn at least 3 credits from the following:

- Communication Elective

General Education Requirement

Earn at least 3 credits from the following:

- Humanities Elective

Entry Requirements

- Be 18 years of age or older

Degree Maps

Degree Map Name
Composite Technology Repair, TC
Total Degree Map Credits
45
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	19	0

Requirement Select
- CFT101 - Introduction To Composites

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CFT106 - Composite Finish Trim

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CFT107 - Composite Assembly

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CFT130 - Composite Fabrication Methods/Applications

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- AVC102 - Precision Instruments

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC112 - Blueprint Reading

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- AVC117 - Hand & Power Tools

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AVC120 - Introduction to Sealing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC125 - Bonding and Grounding

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC140 - Electrical Bonding & Grounding

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	10	0

Requirement Select
- AVC104 - Quality Control Concepts

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC105 - Aircraft Familiarization

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC107 - Fundamentals for Aerospace Manufacturing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC108 - Aircraft Systems & Components

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	16	0

Requirement Select
- CFT140 - Composite Inspection

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- CFT141 - Disassemble & Damage Removal Techniques

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CFT142 - Composite Repair

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select
- CFT143 - Complex Composite Repairs

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CFT144 - Electrical Bonding Repair

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-CON_SCI - Construction Technology Level 3, TC

Overview

Department(s)
Applied Technologies

Degree Designation
Technical Certificate

Catalog Full Description
The Construction Technology program prepares students in the basic skills necessary for all occupations in construction. Students begin their studies in nine modules, which include; safety, math materials, hand and power tools, construction drawings, basic rigging, communication and employability skills. Student then advance to courses with provide hands- on application of technical knowledge and skills. In these courses students apply all aspects of carpentry and will receive instruction in technical mathematics, framing construction materials and selection; job estimating; blueprint reading, foundations and roughing -in, finish carpentry techniques and applicable codes and standards. The WSU Tech Construction Technology program is aligned with the National Center for Education Statistics CIP code 46.0201: Carpentry/Carpenter prepares individuals to apply technical knowledge and skills to lay out, cut, fabricate, erect, install, and repair wooden structures and fixtures, using hand and power tools. Includes instruction in technical mathematics, framing, construction materials and selection, job estimating, blueprint reading, foundations and roughing-in, finish carpentry techniques, and applicable codes and standards.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Identify various types of building materials and describe their uses

Name
List safety precautions associated with building materials.

Name
Describe the proper method of handling and storing building materials.

Name
Explain how to calculate the quantities of lumber, panel, and concrete products using industry-standard methods.

Name
Describe the fasteners, anchors, and adhesives used in construction and explain their uses.

Name
Identify the career and entrepreneurial opportunities within the carpentry trade

Name
Identify the skills, responsibilities, and characteristics needed to be a successful carpenter

Name
Summarize how to be connected to the industry through an organization like SkillsUSA.

Name
Explain the importance of safety in the construction industry, and describe the obligations of the contractor, subcontractors, and you to ensure a safe work environment.

Name
Read and interpret specifications and drawings to determine floor system requirements.

Name
Identify the different types of framing systems.

Name
Identify floor system components.

Name
Estimate the amount of material needed for a floor assembly.

Name
Identify the components of a wall system.

Name
Describe the procedure for laying out a wood frame wall, including plates, corner posts, door and window openings, partition Ts, bracing, and fire-stops.

Name
Describe the correct procedure to estimate the materials required to frame walls.

Name
Describe the correct procedure to estimate the materials required to frame walls. 17 Identify alternative wall systems.

Program Costs
Construction Technology Level 3 - $12,206.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211, CTEC + WSU Tech – 1301 E. 27th Terrace, Pittsburg, KS 66762

Requirements

Simple Requirements

Program Requirements

Construction Technology Level 3, TC

Type
Completion Requirement

Construction Technology Level 3 Requirement

Complete ALL of the following Courses:
- SAF101 - Safety Orientation/OSHA 10 - 1 Credits
- CCP100 - Introductory Craft Skills - 3 Credits
- CCP108 - Construction Basics - 2 Credits
- CCP112 - Carpentry I - 3 Credits
- CCP122 - Carpentry II - 4 Credits
- CCP128 - Interior Systems - 3 Credits
- CCP124 - Exterior Envelope - 3 Credits
- CCP134 - Intro to Concrete Construction - 3 Credits
- CCP172 - Fundamentals Crew Leadership - 2 Credits
- CCP138 - Advanced Framing - 4 Credits
- CCP144 - Advanced Finish and Trim - 4 Credits
- CCP155 - FEMA Doors & Hardware - 2 Credits
- CCP180 - Cabinet Installation - 2 Credits

Construction Technology Level 3 Elective

Complete a 9-credit elective block.

Earn at least 9 credits from the following:
- CCP148 - Vertical & Horizontal Formwork - 3 Credits
- CCP154 - Finishing Concrete - 3 Credits
- CCP185 - Carpentry Internship I - 3 Credits
- CCP187 - Carpentry Internship II - 3 Credits
- CCP168 - Equipment Operation - 3 Credits

Entry Requirements
- Be 16 years of age or older
- Complete college admissions documentation

Degree Maps

Degree Map Name
Construction Technology Level 3, TC

Total Degree Map Credits
45

Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	19	0

Requirement Select
- CCP100 - Introductory Craft Skills

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CCP108 - Construction Basics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- CCP112 - Carpentry I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- CCP122 - Carpentry II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- CCP124 - Exterior Envelope

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CCP134 - Introduction to Concrete Construction

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- SAF101 - Safety Orientation/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	18	0

Requirement Select
- CCP128 - Interior Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- CCP138 - Advanced Framing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CCP144 - Advanced Finish and Trim

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CCP155 - FEMA Doors & Hardware

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CCP180 - Cabinet Installation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Construction Technology Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	8	0

Requirement Select
- Construction Technology Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Construction Technology Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- CCP172 - Fundamentals of Crew Leadership

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-CRM_JUST - Criminal Justice, TC

Overview

Department(s)
Professional Studies

Degree Designation
Technical Certificate

Catalog Full Description
This program is uniquely designed to prepare students for a successful career in law enforcement with a special focus on urban policing, diversity and criminal justice in the 21st century. The criminal justice field affords a multitude of career possibilities with graduates having the capability to serve as law enforcement officers, probation and parole officers, correctional officers, and other specialties at all levels of government. The WSU Tech Criminal Justice program is aligned with the National Center for Education Statistics CIP code 43.0107: Criminal Justice/Police Science prepares individuals to perform the duties of police and public security officers, including patrol and investigative activities, traffic control, crowd control and public relations, witness interviewing, evidence collection and management, basic crime prevention methods, weapon and equipment operation and maintenance, report preparation and other routine law enforcement responsibilities.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Possess an ethical foundation for policing modern society.

Name
Comprehend contemporary theories of policing.

Name
Understand the historical development of the police.

Name
Develop technical skills in investigating and documenting crimes.

Name
Articulate the relationship between the police and the community they serve.

Program Costs
Criminal Justice, TC - $7,179.00

Cost does not include online fees, books or tools. Financial assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Criminal Justice, TC

Type
Completion Requirement

Criminal Justice Technical Requirements

Complete ALL of the following Courses:
- CRJ101 - Intro to Criminal Justice - 3 Credits
- CRJ105 - Criminal Investigation - 3 Credits
- CRJ110 - Criminal Law - 3 Credits
- CRJ115 - Agency Administration - 3 Credits
- CRJ120 - Juvenile Delinquency & Justice - 3 Credits
- CRJ125 - Law Enforcement Ops & Proc - 3 Credits
- CRJ130 - Criminal Procedures - 3 Credits
- CRJ135 - Criminal Just Interview & Rpt - 3 Credits
- CRJ140 - Prof Responsibility Crim Just - 3 Credits
- CRJ145 - Corrections - 3 Credits
- CRJ155 - Policing Diverse Cultures - 3 Credits
- CRJ160 - Internship in Criminal Justice - 3 Credits
- CPR001 - CPR For Healthcare Providers - 1 Credits
- ENG101 - Composition I - 3 Credits

General Education Requirement

Complete ANY of the following Course Sets:
- Communication Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Humanities Elective

Entry Requirements
Complete the Accuplacer entry exams with minimum scores of 244 in Reading and Writing and Accuplacer QAS of 230 or higher. Or students can complete ACT entry exam with a minimum score of 18+ in Reading and English. ACT score of 19+ is required in math.

Degree Maps

Degree Map Name
Criminal Justice, TC
Total Degree Map Credits
46
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	12	0

Requirement Select
- CRJ101 - Introduction to Criminal Justice

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ110 - Criminal Law

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ140 - Professional Responsibility in Criminal Justice

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	12	0

Requirement Select
- CRJ105 - Criminal Investigation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ115 - Agency Administration

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ130 - Criminal Procedures

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ120 - Juvenile Delinquency and Justice

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ145 - Corrections

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CRJ125 - Law Enforcement Operations and Procedures

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CPR001 - CPR For Healthcare Providers

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	10	0

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	12	0

Requirement Select

- CRJ135 - Criminal Justice Interview and Report Writing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- CRJ155 - Policing Diverse Cultures

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- CRJ160 - Internship in Criminal Justice

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-CUL_ARTS - Culinary Arts, TC

Overview

Department(s)
Hospitality & Culinary Arts

Degree Designation
Technical Certificate

Catalog Full Description
The Culinary Arts program offers a comprehensive degree intended to provide students the knowledge and practical skills for success in the Culinary Industry. In the first half of the program, students will complete a core set of courses designed to provide a solid foundation of industry skills. Course topics include sanitation and safety, fundamental skills in culinary basics including rudimentary cooking, baking and knife skills as well as culinary nutrition and modern banquet cookery. In the second half of the program, the student builds upon this foundation with intermediate and advanced culinary courses. These courses include knowledge acquisition and skill development for innovation and sustainability in the culinary industry as well as a broad selection of elective courses for students to gain comprehensive instruction and experience in preparing, tasting, serving and evaluating traditional and regional dishes of the world. Course work also includes topics in Advanced Baking including Chocolate and Confectionary Techniques, Breads and Rolls, Cakes and Desserts. Students enrolled in the program will participate in a Bistro Practicum course which allows them to apply classroom and lab experiences in the real world.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
The student will identify the fundamental components and the current and future trends of the culinary industry.

Name
The student will demonstrate professional and ethical conduct and work practices to comply with industry standards.

Name
The student will demonstrate the proper use of kitchen vocabulary common to the culinary industry.

Name
The student will demonstrate the proper use of kitchen ingredients common to the culinary industry.

Name
The student will demonstrate knowledge and associated preparatory skills of the cuisines and cultures of the world, their common ingredients and cooking techniques.

Name
The student will apply interpersonal skills and problem-solving skills designed to enhance the guest experience.

Name
The student will demonstrate the critical skills associated with food and beverage management.

Program Costs
Culinary Arts, TC - $7,761.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech National Institute for Culinary and Hospitality Education (NICHE) – 124 S. Broadway, Wichita, KS 67202

Requirements

Simple Requirements

Program Requirements

Culinary Arts, TC

Type
Completion Requirement

Culinary Arts Requirements

Complete ALL of the following Courses:
- CUL105 - Culinary Fundamentals - 3 Credits
- CUL115 - Culinary Nutrition - 3 Credits
- CUL120 - Modern Banquet Cookery - 3 Credits
- CUL125 - Baking & Pastry Skill Dvlpmnt - 3 Credits
- BIS133 - Bistro Practicum I - 3 Credits
- HEM105 - Sanitation and Safety - 1 Credits
- HEM115 - Intro to Hospitality Industry - 3 Credits
- SPH111 - Interpersonal Communication - 3 Credits

General Education Requirement

Complete ALL of the following Course Sets:
- Math Elective

Entry Requirements
- Complete entrance exam for general education courses

Degree Maps

Degree Map Name
Culinary Arts, TC
Total Degree Map Credits
25
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	16	0

Requirement Select
- CUL105 - Culinary Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CUL115 - Culinary Nutrition

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CUL120 - Modern Banquet Cookery

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- HEM105 - Sanitation and Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- SPH111 - Interpersonal Communication

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	9	0

Requirement Select
- CUL125 - Baking & Pastry Skill Development

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- BIS133 - Bistro Practicum I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- HEM115 - Introduction to the Hospitality Industry

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-DES_ARCH - Architectural Design Technology, TC

Overview

Department(s)
Manufacturing

Degree Designation
Technical Certificate

Catalog Full Description
Architectural Design Technology is an interdisciplinary curriculum which prepares graduates to for careers in commercial and/or residential architectural fields. In a state of the art computer lab at the National Center for Aviation Training (NCAT) students will solve the real world architectural problems they will encounter in the field. Students will complete a core set of courses which include hands on application in the latest computer aided drafting software as well as CATIA. Additional course topics include Machine Drafting and Design and Materials and Processes. Students will round off their educational experience by completing 15 credits of general education courses in five areas of study including mathematics, humanities, social sciences, English and communications

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Apply architectural drafting and design principles using industry-standard software such as AutoCAD, Revit, and SketchUp.

Name
Interpret and produce construction drawings, blueprints, and technical documents.

Name
Develop 2D and 3D visualizations, renderings, and models to communicate design concepts effectively.

Name
Utilize Building Information Modeling (BIM) to enhance design accuracy and collaboration.

Name
Identify and select appropriate construction materials based on project specifications.

Name
Analyze architectural challenges and develop creative, functional solutions.

Name
Apply engineering and design principles to optimize space, structure, and aesthetics.

Program Costs
Architectural Design Technology, TC - $11,131.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Architectural Design Technology, TC

Type
Completion Requirement

Architecturl Design Technology Requirement

Complete ALL of the following Courses:
- MCD101 - Introduction to CAD I - 3 Credits
- MCD102 - Introduction to CAD II - 2 Credits
- MCD104 - Blueprint Reading for Drafting - 2 Credits
- MCD106 - Precision Measuring - 2 Credits
- MCD112 - Industrial Mat & Processes - 2 Credits
- MCD114 - Arch Drafting & Design - 3 Credits
- MCD115 - Machine Drafting & Design - 3 Credits
- MCD121 - Descriptive Geometry - 3 Credits
- MCD124 - Advanced AutoCAD - 4 Credits
- MCD132 - Basic Chief Arch/Arch Desktop - 3 Credits
- MCD134 - Adv Chief Arch/Arch Desktop - 3 Credits
- MCD164 - Residential Dsgn Autodesk Rev - 4 Credits
- PDV115 - Work Ethics - 2 Credits

General Education Requirement

Complete ANY of the following Course Sets:
- Communication Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Humanities Elective

General Education Requirement

Complete ANY of the following Course Sets:
- Math Elective

Entry Requirements
- Be 16 years of age or older
- Completed admissions documents

Degree Maps

Degree Map Name
Architectural Design Technology, TC
Total Degree Map Credits
45
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	12	0

Requirement Select
- MCD101 - Introduction to CAD I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MCD102 - Introduction to CAD II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- MCD104 - Blueprint Reading for Drafting

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MCD106 - Precision Measuring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MCD121 - Descriptive Geometry

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	12	0

Requirement Select
- MCD112 - Industrial Materials & Processes

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- MCD115 - Machine Drafting & Design

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MCD124 - Advanced AutoCAD

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	12	0

Requirement Select
- MCD114 - Architectural Drafting & Design

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MCD164 - Residential Design Using Autodesk Revit

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- PDV115 - Work Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	9	0

Requirement Select
- MCD132 - Basic Chief Architect/Architectural Desktop

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MCD134 - Advanced Chief Architect/Architectural Desktop

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-DIG_MRKT - Digital Marketing, TC

Overview

Department(s)
Professional Studies

Degree Designation
Technical Certificate

Catalog Full Description
The Digital Marketing Program provides graduates with the skills necessary to succeed in the specialized realm of digital commerce. The program coursework combines traditional marketing skills with the specialized technical skills required to develop first-class digital marketing content. In scenario-based coursework students will create and apply digital marketing strategies that reflect real-world situations. Topics will include digital strategy, web development, and analytics as well as digital marketing, multimedia, SEO, and SEM techniques. All students will graduate with a professional portfolio.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
The student will be able to produce a digital portfolio highlighting skills associated with digital marketing

Name
The student will be able demonstrate familiarity with digital media tools and social media marketing platforms

Name
The student will be able to link classroom experiences with real work projects

Name
The student will measure and evaluate digital marketing efforts

Name
The Student will demonstrate the skills associated with web site development and management

Name
The Student will demonstrate the necessary skills to effectively participate in the Google Analytics Certification Exam

Program Costs
Digital Marketing, TC - $9,085.00

Cost does not include online fees, books or tools. Financial assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location

WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Digital Marketing, TC

Type

Completion Requirement

Digital Marketing Requirements

Complete ALL of the following Courses:

- DMK110 - Introduction to Media Arts - 3 Credits
- DMK120 - Basic Digital Editing - 3 Credits
- DMK125 - Community Building and Mgmt - 3 Credits
- DMK135 - Social Media Marketing & Mgmt - 3 Credits
- DMK140 - Intro to Audio/Visual Prod - 3 Credits
- DMK150 - Search Optimization & Market - 3 Credits
- DMK155 - Photography Fundamentals - 2 Credits
- DMK160 - Introduction to Analytics - 3 Credits
- DMK163 - Intro to Digital Advertising - 3 Credits
- CLD122 - Intro to Web Development - 3 Credits
- CLD147 - Website Production & Mgmt - 3 Credits
- BUS140 - Principles of Marketing - 3 Credits
- ENG101 - Composition I - 3 Credits
- ENG120 - Composition II - 3 Credits

Entry Requirements

- Completion of application and related procedures,
- Meet entrance exams assessments: Accuplacer Reading & Accuplacer Writing at 237 and ALEKS PPL math at 30.

Degree Maps

Degree Map Name
Digital Marketing, TC
Total Degree Map Credits
41
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	9	0

Requirement Select
- DMK110 - Introduction to Media Arts

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- DMK120 - Basic Digital Editing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	12	0

Requirement Select
- DMK125 - Community Building and Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- DMK140 - Introduction to Audio/Visual Production

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- BUS140 - Principles of Marketing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ENG120 - Composition II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	12	0

Requirement Select
- DMK135 - Social Media Marketing and Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- DMK150 - Search Engine Optimization & Marketing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- DMK163 - Introduction to Digital Advertising

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CLD122 - Introduction to Web Development

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	8	0

Requirement Select
- DMK155 - Photography Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- DMK160 - Introduction to Analytics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- CLD147 - Website Production & Management (Word Press)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-ELEC_TEC - Electrical Technology, TC

Overview

Department(s)
Applied Technologies

Degree Designation
Technical Certificate

Catalog Full Description
The Electrical Technology program offers a comprehensive curriculum designed to prepare graduates to take the Journeyman Electrician licensure exam. This program prepares students to apply technical knowledge and skills in the installation, operation, maintenance, and repair of electric apparatus and systems. Students will gain a solid foundation in electronics, electrical systems, wiring methods, power transmission, safety practices, and applicable codes and standards. The program encompasses a wide range of courses that cover essential topics in the field of electrical technology. Students will develop a strong understanding of AC/DC circuits, print reading, residential and commercial wiring, motor controls, low voltage wiring, programmable logic controllers, and fire alarm, emergency, and health care systems. They will also explore the emerging fields of solar and wind power generation. The WSU Tech Electrical Technology program is aligned with the National Center for Education Statistics CIP code 46.0302: Electrician prepares individuals to apply technical knowledge and skills to install, operate, maintain, and repair electric apparatus and systems such as residential, commercial, and industrial electric-power wiring; and DC and AC motors, controls, and electrical distribution panels. Includes instruction in the principles of electronics and electrical systems, wiring, power transmission, safety, industrial and household appliances, job estimation, electrical testing and inspection, and applicable codes and standards.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Apply Technical Knowledge and Skills: Graduates will possess the technical knowledge and skills necessary to install, operate, maintain, and repair various electric apparatus and systems. They will demonstrate proficiency in electrical power wiring, DC and AC motors, controls, electrical distribution panels, and low voltage wiring.

Name
Interpret Electrical Diagrams: Students will be able to read and interpret electrical diagrams, schematics, and blueprints accurately. They will understand symbols, labels, and annotations commonly used in electrical drawings, enabling them to effectively plan and execute electrical installations and repairs

Name
Execute Residential and Commercial Wiring: Graduates will demonstrate competence in residential and commercial wiring methods. They will be able to select and install appropriate wiring materials, adhere to safety regulations, and apply the National Electrical Code (NEC) requirements in wiring residential and commercial buildings

Name
Comprehend the National Electrical Code: Students will gain a comprehensive understanding of the National Electrical Code (NEC) and its practical application in electrical installations. They will be able to identify and interpret NEC requirements, ensuring compliance with safety standards and industry best practices.

Name
Implement Motor Control Systems: Graduates will possess the knowledge and skills to install, operate, and troubleshoot motor control systems. They will understand motor control diagrams, wire motor control circuits, and employ appropriate testing and troubleshooting techniques to ensure optimal performance.

Name
Perform Low Voltage Wiring: Students will learn to install and maintain low voltage wiring systems commonly found in residential, commercial, and industrial settings. They will be able to work with data, voice, and video cabling, security systems, and other low voltage applications.

Program Costs
Electrical Technology, TC - $11,475.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211

Requirements

Simple Requirements

Program Requirements

Electrical Technology, TC

Type
Completion Requirement

Electrical Technology Requirements

Complete ALL of the following Courses:

- ELE110 - Print Reading - 2 Credits
- ELE120 - AC/DC Circuits - 4 Credits
- ELE130 - Commercial Wiring I - 4 Credits
- ELE132 - Commercial Wiring Lab - 4 Credits
- ELE135 - Low Voltage Wiring - 2 Credits
- ELE140 - Motor Controls - 2 Credits
- ELE150 - National Electrical Code I - 4 Credits
- ELE160 - National Electrical Code II - 4 Credits
- ELE180 - Residential Wiring I - 4 Credits
- ELE182 - Residential Wiring Lab - 4 Credits
- SAF135 - Safety/OSHA 30 - 3 Credits

Entry Requirements
- Be 16 years of age or older
- Complete college admissions documentation

Degree Maps

Degree Map Name
Electrical Technology, TC
Total Degree Map Credits
37
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	21	0

Requirement Select
- ELE110 - Print Reading

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- ELE120 - AC/DC Circuits

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ELE150 - National Electrical Code I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ELE180 - Residential Wiring I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ELE182 - Residential Wiring Lab

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select
- SAF135 - Safety/OSHA 30

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	16	0

Requirement Select
- ELE130 - Commercial Wiring I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- ELE132 - Commercial Wiring Lab

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select
- ELE135 - Low Voltage Wiring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- ELE140 - Motor Controls

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- ELE160 - National Electrical Code II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-EM_MEDSRV - Emergency Medical Services, TC

Overview

Department(s)
Health Sciences

Degree Designation
Technical Certificate

Catalog Full Description
The goal of the Emergency Medical Services- EMT program is to produce competent, entry level Emergency Medical Technicians to serve in career positions in the community. This program is designed to equip students with the highest level of pre-hospital care. The program consists of four components of instruction: didactic instruction, skills laboratory, clinical experience and field internship. Students are prepared to care for the sick and injured in emergency medical settings. The program prepares students to develop quick reactions and competent care practices to respond to emergency calls, perform medical services and transport patients to medical facilities. This program establishes a student's EMT- Basic certification.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Scene Size-Up and Management: Perform an initial scene size-up to identify hazards, determine the need for additional resources, ensure scene safety, and initiate appropriate scene and patient management strategies.

Name
Mass Casualty Incident and Triage Management: Identify multiple-casualty incidents (MCIs) and apply local triage and incident command systems to effectively prioritize and manage patient care.

Name
Professional Communication: Communicate clearly and accurately with dispatch centers, medical control, other responders, and receiving healthcare personnel, including the use of prehospital care reports and radio communication.

Name
Infection Control and Patient Handling: Demonstrate the use of appropriate personal protective equipment (PPE) and infection control procedures and move patients safely using proper body mechanics and appropriate lifting/moving techniques—with and without assistive devices.

Name
Patient Assessment and Vital Signs: Perform comprehensive patient assessments (primary, secondary, and ongoing) including measurement and interpretation of vital signs (e.g., blood pressure, respiratory rate, heart rate, oxygen saturation), mental status, skin condition, and other key indicators to guide treatment decisions.

Name
Bleeding Control and Shock Management: Control external bleeding using appropriate techniques such as direct pressure, tourniquets, pressure dressings, and elevation, while recognizing and managing signs of shock in trauma and medical patients.

Name
Spinal Motion Restriction and Immobilization: Perform spinal motion restriction using cervical collars, full-body immobilization devices, and assist higher-level providers with immobilization procedures as indicated by patient condition and mechanism of injury.

Name
Basic and Advanced Airway Management: Maintain airway patency using manual maneuvers, suctioning techniques, and basic adjuncts (OPA, NPA), and—at the appropriate level—insert supraglottic airways (excluding laryngeal mask airways) to support ventilation.

Name
Oxygen Administration and Ventilatory Support: Administer oxygen using a variety of delivery devices (e.g., nasal cannula, non-rebreather, simple mask, venturi mask), and support ventilation using devices such as bag-valve-mask (BVM), manually triggered ventilators, and automatic transport ventilators.

Name
Respiratory Monitoring and Support Techniques: Monitor and assess respiratory effectiveness using tools such as pulse oximetry, auscultation of breath sounds, capnography, and colorimetric CO_2 detection, and perform gastric decompression as indicated using nasogastric or orogastric tubes within scope.

Name
Cardiac Arrest Recognition and Resuscitation: Recognize and respond to cardiac arrest, respiratory arrest, and airway obstruction emergencies by performing high-quality CPR (manual or mechanical), applying cardiac monitoring electrodes, and delivering post-resuscitative care, including airway and ventilatory support.

Name
Medication Administration and Medical Protocols: Administer medications in accordance with the Kansas Board of EMS "Approved Medication List," following medical protocols and standing orders, including delivery via routes appropriate to EMR, EMT, or AEMT certification levels.

Program Costs
Emergency Medical Services, TC - $5,054.00

Emergency Medical Services (High School), TC - $4,779.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Emergency Medical Services

Type
Completion Requirement

Emergency Medical Services Requirements

Complete ALL of the following Courses:
- EMS105 - Emergency Medical Technician - 12 Credits
- EMS115 - Tactical Medicine - 3 Credits
- CPR001 - CPR For Healthcare Providers - 1 Credits

Emergency Medical Services (High School)

Type
Completion Requirement

Complete ALL of the following Courses:
- EMS103 - EMT 1 - 6 Credits
- EMS104 - EMT 2 - 6 Credits
- EMS115 - Tactical Medicine - 3 Credits
- CPR001 - CPR For Healthcare Providers - 1 Credits

Entry Requirements
Documentation of high school graduation or satisfaction of high school equivalency certificate requirements, or students currently enrolled in high school or GED program and have attained junior status and the student must be at least 17 years of age by the end of the semester, Documented negative PPD TB skin test within the last year or negative chest X - Ray within the last three years, Completion of application and related procedures

Degree Maps

Degree Map Name
Emergency Medical Services, TC
Total Degree Map Credits
16
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	16	0

Requirement Select
- EMS105 - Emergency Medical Technician

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	12
Progress Credits	-
Contact Hours	225
Clinical	-
Criticality	No

Requirement Select
- EMS115 - Tactical Medicine

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CPR001 - CPR For Healthcare Providers

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

Degree Map Name
Emergency Medical Services (High School)
Total Degree Map Credits
16
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	16	0

Requirement Select
- EMS103 - EMT 1

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	6
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- EMS104 - EMT 2

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	6
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select
- EMS115 - Tactical Medicine

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CPR001 - CPR For Healthcare Providers

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-HEAVY_EQP - Heavy Equipment Operations, TC

Overview

Department(s)
Applied Technologies

Degree Designation
Technical Certificate

Catalog Full Description
The Heavy Equipment Operations program prepares students with the technical knowledge and hands-on skills required to operate and maintain a wide range of construction and earthmoving equipment used in the heavy civil and infrastructure industries. Students gain practical experience on industry-standard machines such as loaders, dozers, excavators, motor graders, scrapers, and dump trucks while applying principles of earthmoving, grading, and compaction.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Inspect, maintain, and operate heavy equipment safely and efficiently in accordance with manufacturer and regulatory standards.

Name
Apply earthmoving, grading, and compaction principles to perform sitework operations within design tolerances.

Name
Interpret civil drawings, grade stakes, and layout data to establish grades and excavation limits.

Name
Operate multiple types of heavy equipment—including loaders, dozers, excavators, and graders—to perform coordinated site preparation activities.

Name
Demonstrate safe work practices, communication, and traffic control within active construction sites.

Name
Evaluate soil types, equipment capabilities, and site conditions to determine the most effective operational approach.

Name
Collaborate with a team to complete field-based projects simulating real-world jobsite operations.

Program Costs
Heavy Equipment Operation, TC - $11,316.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
CTEC + WSU Tech – 1301 E. 27th Terrace, Pittsburg, KS 66762

Requirements

Simple Requirements

(No Requirement Levels)

Heavy Equipment Operation, TC

Type
Completion Requirement

Required Courses

Complete ALL of the following Courses:

- SAF101 - Safety Orientation/OSHA 10 - 1 Credits
- HEO105 - Construction Industry - 3 Credits
- HEO110 - Construction Tools/Rigging/Emp - 3 Credits
- HEO120 - Equipment Operations & Safety - 4 Credits
- HEO125 - Earthmoving and Grading Operat - 5 Credits
- HEO130 - Equipment Inspection and Oper - 5 Credits
- HEO135 - Sitework Layout & Soil Analysi - 4 Credits
- HEO140 - Earthmoving Equipment Operatio - 5 Credits
- HEO145 - Advanced Grading and Excavatio - 5 Credits

Entry Requirements
- 16 years of age
- Complete college application documents

Degree Maps

Degree Map Name
Heavy Equipment Operations, TC
Total Degree Map Credits
35
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	16	0

Requirement Select
- SAF101 - Safety Orientation/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- HEO105 - Construction Industry

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- HEO110 - Construction Tools, Rigging, & Employability Skills

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- HEO120 - Heavy Equipment Operations and Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- HEO125 - Earthmoving and Grading Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	9	0

Requirement Select

- HEO130 - Equipment Inspection and Operational Readiness

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select

- HEO135 - Sitework Layout and Soil Analysis

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	5	0

Requirement Select

- HEO140 - Earthmoving Equipment Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	5	0

Requirement Select

- HEO145 - Advanced Grading and Excavation Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-HSP_EVNT - Hospitality and Events Management, TC

Overview

Department(s)
Hospitality & Culinary Arts

Degree Designation
Technical Certificate

Catalog Full Description
The Hospitality and Events Management program offers a multi-disciplinary degree intended to provide students with the knowledge and practical skills for success in the Hospitality Industry. In the first half of the programs, students will complete a core set of courses designed to provide a solid foundation of industry skills. The program offers two distinct tracks including Food and Beverage Management and Food Business Management. Course work varies depending on the selected track but includes topics such as Wine Fundamentals, Culinary Fundamentals, Introduction to Entrepreneurship, Event Catering Strategies. Students in each track will participate in an internship course which allows them to apply classroom and lab experiences in the real world.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
The student will identify the fundamental components and the current and future trends of the hospitality industry

Name
The student will demonstrate professional and ethical conduct and work practices to comply with industry standards.

Name
The student will demonstrate the financial skills common to the hospitality industry

Name
The Student will apply customer service skills and problem solving skills designed to enhance the guest experience

Name
The student will demonstrate the critical skills associated with food and beverage management

Name
The student will demonstrate the critical skills in events management

Name
The student will demonstrate the critical skills in lodging management.

Name
The student will broaden their career perspectives and enhance personal and professional development opportunities for a successful career in the hospitality industry

Program Costs
Food Business Management, TC $12,817.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech National Institute for Culinary and Hospitality Education (NICHE) – 124 S. Broadway, Wichita, KS 67202

Requirements

Simple Requirements

Program Requirements

Food Business Management, TC

Type
Completion Requirement

Food Business Management Requirements

Complete ALL of the following Courses:

- HEM105 - Sanitation and Safety - 1 Credits
- HEM110 - Hospitality Math - 3 Credits
- HEM115 - Intro to Hospitality Industry - 3 Credits
- HEM140 - Hospitality Financial Mgmt - 3 Credits
- HEM143 - Intro to Food Business Mgmt - 5 Credits
- HEM233 - Restaurant Incubator - 3 Credits
- HEM235 - Hospitality Management Intern - 3 Credits
- BUS104 - Introduction to Business - 3 Credits
- BUS140 - Principles of Marketing - 3 Credits
- CUL105 - Culinary Fundamentals - 3 Credits
- CUL115 - Culinary Nutrition - 3 Credits
- CUL120 - Modern Banquet Cookery - 3 Credits
- CUL125 - Baking & Pastry Skill Dvlpmnt - 3 Credits
- BIS133 - Bistro Practicum I - 3 Credits
- ENT110 - Intro to Entrepreneurship - 3 Credits

Entry Requirements
Be 16 years of age or older, Documentation of high school graduation or satisfaction of high school equivalency certificate requirements, or students currently enrolled in high school or GED program and have attained junior status, Students enrolled in the Food and Beverage track of the Hospitality and Events Management program must be 21 years of age before enrolling in the 200 level courses, Completion of application and related procedures

Degree Maps

Degree Map Name

Food Business Management, TC

Total Degree Map Credits

45

Degree Map Effective Catalog Year

2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	10	0

Requirement Select

- HEM105 - Sanitation and Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- CUL105 - Culinary Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- CUL115 - Culinary Nutrition

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- CUL120 - Modern Banquet Cookery

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	15	0

Requirement Select

- HEM110 - Hospitality Math

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- HEM115 - Introduction to the Hospitality Industry

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- BUS104 - Introduction to Business

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- CUL125 - Baking & Pastry Skill Development

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- BIS133 - Bistro Practicum I

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	6	0

Requirement Select
- HEM140 - Hospitality Financial Management

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- HEM235 - Hospitality Management Internship

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	135
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	8	0

Requirement Select
- BUS140 - Principles of Marketing

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- HEM143 - Introduction to Food Business Management

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	6	0

Requirement Select
- HEM233 - Restaurant Incubator

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- ENT110 - Introduction to Entrepreneurship

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-IND_AUTO - Industrial Machine/ Maintenance Technology (Cert C), TC

Overview

Department(s)
Automation and Advanced Tech

Degree Designation
Technical Certificate

Catalog Full Description
Industrial Machine/Maintenance Technology program provides the solid foundational knowledge and skills necessary to succeed in the mechanical and automated manufacturing environment. Graduates will learn to analyze, troubleshoot, and align mechanical and automated industrial machinery. Program course work includes electronics, industrial wiring, motor controls, programmable logic controls, instrumentation, industrial fluid power, manufacturing automation concepts, and robotics. Students will round off their educational experience by completing general education courses in five areas of study including mathematics, humanities, and social sciences, English, and communications. The WSU Tech Industrial Machine/ Maintenance Technology program is aligned with the National Center for Education Statistics CIP code 47.0303: Industrial Mechanics and Maintenance Technology/Technician prepares individuals to apply technical knowledge and skills to repair and maintain industrial machinery and equipment such as cranes, pumps, engines and motors, pneumatic tools, conveyor systems, production machinery, marine deck machinery, and steam propulsion, refinery, and pipeline-distribution systems.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Demonstrate proper techniques and practices in the repair, installation and maintenance of industrial equipment and systems.

Name
Demonstrate the ability to program and operate automated manufacturing equipment.

Name
Apply problem solving and critical thinking skills to troubleshoot hydraulic, pneumatic and electrical industrial systems.

Name
Apply safe and approved practices in the workplace

Name
Demonstrate the ability to use a Snap-On 575 Digital Multimeter.

Program Costs
Industrial Machine/Maintenance Technology (Cert C), TC - $14,993.00

Cost does not include online fees, books or tools. Financial assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211

Requirements

Simple Requirements

Program Requirements

Industrial Machine/Maintenance Technology (Cert C), TC

Type
Completion Requirement

Industrial Machine/Maintenance Technology (CERT C) Requirements

Complete ALL of the following Courses:

- IND109 - Programmable Logic Ctrlr (PLC) - 3 Credits
- IND111 - Foundations of Manufacturing - 2 Credits
- IND115 - Industrial Safety - 1 Credits
- IND116 - Advanced Motor Controls - 3 Credits
- IND117 - Variable Speed Motor Control - 3 Credits
- IND121 - Mechanical Systems Reliability - 3 Credits
- IND122 - AC/DC Circuits - 4 Credits
- IND130 - Mechanical Systems - 3 Credits
- IND131 - Industrial Prog Logic Controls - 3 Credits
- IND132 - Industrial Process Control - 3 Credits
- IND137 - Industrial Schematics - 2 Credits
- IND143 - Electrical System Troubleshoot - 3 Credits
- IND147 - Fluid Power I - 3 Credits
- IND150 - Manufacturing Equipment & Tool - 2 Credits
- IND152 - Predictive Maintenance - 2 Credits
- IND157 - Preventative Maintenance - 2 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- PDV115 - Work Ethics - 2 Credits

Industrial Machine/Maintenance Technology (CERT C) Requirements

Earn at least 3 credits from the following:

- IND139 - CNC Operation for Maintenance - 3 Credits
- IND160 - Fluid Power II - 3 Credits
- IND165 - Industrial Process Control II - 3 Credits
- IND170 - CNC Installation - 2 Credits
- IND175 - Advanced CNC Maintenance App - 4 Credits
- ROB100 - Introduction to Robotics - 3 Credits

General Education Requirement

Complete ANY of the following Course Sets:

- Math Elective

Entry Requirements
Be 16 years of age or older

Degree Maps

Degree Map Name

Industrial Machine /Maintenance Technology, Cert C

Total Degree Map Credits

51

Degree Map Effective Catalog Year

2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	18	0

Requirement Select

- IND111 - Foundations of Manufacturing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- IND115 - Industrial Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- IND117 - Variable Speed Motor Control

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- IND122 - AC/DC Circuits

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select

- IND150 - Manufacturing Equipment and Tools

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- PDV115 - Work Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select

- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	14	0

Requirement Select
- IND109 - Programmable Logic Controllers (PLC)

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- IND116 - Advanced Motor Controls

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- IND131 - Industrial Programmable Logic Controls (PLC)

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- IND137 - Industrial Schematics

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- IND143 - Electrical System Troubleshooting

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	6	0

Requirement Select
- IND147 - Fluid Power I

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- Industrial Machine/Maintenance Technology Elective

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	13	0

Requirement Select
- IND121 - Mechanical Systems Reliability

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- IND130 - Mechanical Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- IND132 - Industrial Process Control

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- IND152 - Predictive Maintenance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- IND157 - Preventative Maintenance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-IND_IMTA - Industrial Machine/ Maintenance Technology (CERT A), TC

Overview

Department(s)
Automation and Advanced Tech

Degree Designation
Technical Certificate

Catalog Full Description
Industrial Machine/Maintenance Technology program provides the solid foundational knowledge and skills necessary to succeed in the mechanical and automated manufacturing environment. Graduates will learn to analyze, troubleshoot, and align mechanical and automated industrial machinery. Program course work includes electronics, industrial wiring, motor controls, programmable logic controls, instrumentation, industrial fluid power, manufacturing automation concepts, and robotics. Students will round off their educational experience by completing general education courses in five areas of study including mathematics, humanities, and social sciences, English, and communications. The WSU Tech Industrial Machine/ Maintenance Technology program is aligned with the National Center for Education Statistics CIP code 47.0303: Industrial Mechanics and Maintenance Technology/Technician prepares individuals to apply technical knowledge and skills to repair and maintain industrial machinery and equipment such as cranes, pumps, engines and motors, pneumatic tools, conveyor systems, production machinery, marine deck machinery, and steam propulsion, refinery, and pipeline-distribution systems.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Demonstrate proper techniques and practices in the repair, installation and maintenance of industrial equipment and systems.

Name
Demonstrate the ability to program and operate automated manufacturing equipment.

Name
Apply problem solving and critical thinking skills to troubleshoot hydraulic, pneumatic and electrical industrial systems.

Name
Apply safe and approved practices in the workplace.

Name
Demonstrate the ability to use a Snap-On 575 Digital Multimeter.

Program Costs

Industrial Machine/Maintenance Technology, (CERT A), TC - $7,886.00

Cost does not include online fees, books or tools. Financial assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location

WSU Tech City Center – 301 S. Grove, Wichita, KS 67211

Requirements

Simple Requirements

Program Requirements

Industrial Machine/Maintenance Technology, (CERT A), TC

Type

Completion Requirement

Industrial Machine/Maintenance Technology (CERT A) Requirement

Complete ALL of the following Courses:

- IND109 - Programmable Logic Ctrlr (PLC) - 3 Credits
- IND115 - Industrial Safety - 1 Credits
- IND121 - Mechanical Systems Reliability - 3 Credits
- IND122 - AC/DC Circuits - 4 Credits
- IND130 - Mechanical Systems - 3 Credits
- IND147 - Fluid Power I - 3 Credits
- IND150 - Manufacturing Equipment & Tool - 2 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- PDV115 - Work Ethics - 2 Credits

Industrial Machine/Maintenance Technology Elective

Earn at least 3 credits from the following:

- IND111 - Foundations of Manufacturing - 2 Credits
- IND139 - CNC Operation for Maintenance - 3 Credits
- IND160 - Fluid Power II - 3 Credits
- IND165 - Industrial Process Control II - 3 Credits
- IND170 - CNC Installation - 2 Credits
- IND175 - Advanced CNC Maintenance App - 4 Credits
- ROB100 - Introduction to Robotics - 3 Credits

General Education Requirement

Complete ANY of the following Course Sets:

- Math Elective

Entry Requirements

Be 16 years of age or older

Degree Maps

Degree Map Name

Industrial Machine/Maintenance Technology, (CERT A), TC

Total Degree Map Credits

28

Degree Map Effective Catalog Year

2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	25	0

Requirement Select

- IND109 - Programmable Logic Controllers (PLC)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- IND115 - Industrial Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- IND121 - Mechanical Systems Reliability

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- IND122 - AC/DC Circuits

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- IND130 - Mechanical Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- IND147 - Fluid Power I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- IND150 - Manufacturing Equipment and Tools

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- PDV115 - Work Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	3	0

Requirement Select
- Industrial Machine Maintenance Technology (CERT A) Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-IND_IMTB - Industrial Machine/ Maintenance Technology (CERT B), TC

Overview

Department(s)
Automation and Advanced Tech

Degree Designation
Technical Certificate

Catalog Full Description
Industrial Machine/Maintenance Technology program provides the solid foundational knowledge and skills necessary to succeed in the mechanical and automated manufacturing environment. Graduates will learn to analyze, troubleshoot, and align mechanical and automated industrial machinery. Program course work includes electronics, industrial wiring, motor controls, programmable logic controls, instrumentation, industrial fluid power, manufacturing automation concepts, and robotics. Students will round off their educational experience by completing general education courses in five areas of study including mathematics, humanities, and social sciences, English, and communications. The WSU Tech Industrial Machine/ Maintenance Technology program is aligned with the National Center for Education Statistics CIP code 47.0303: Industrial Mechanics and Maintenance Technology/Technician prepares individuals to apply technical knowledge and skills to repair and maintain industrial machinery and equipment such as cranes, pumps, engines and motors, pneumatic tools, conveyor systems, production machinery, marine deck machinery, and steam propulsion, refinery, and pipeline-distribution systems.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Demonstrate proper techniques and practices in the repair, installation and maintenance of industrial equipment and systems.

Name
Demonstrate the ability to program and operate automated manufacturing equipment.

Name
Apply problem solving and critical thinking skills to troubleshoot hydraulic, pneumatic and electrical industrial systems.

Name
Apply safe and approved practices in the workplace.

Name
Demonstrate the ability to use a Snap-On 575 Digital Multimeter.

Program Costs
Industrial Machine/Maintenance Technology (CERT B), TC - $12,830.00

Cost does not include online fees, books or tools. Financial assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211

Requirements

Simple Requirements

Program Requirements

Industrial Machine Maintenance Technology (CERT B), TC

Type
Completion Requirement

Industrial Maching/Maintenance Technology (CERT B) Requirement

Complete ALL of the following Courses:
- IND109 - Programmable Logic Ctrlr (PLC) - 3 Credits
- IND111 - Foundations of Manufacturing - 2 Credits
- IND115 - Industrial Safety - 1 Credits
- IND116 - Advanced Motor Controls - 3 Credits
- IND117 - Variable Speed Motor Control - 3 Credits
- IND121 - Mechanical Systems Reliability - 3 Credits
- IND122 - AC/DC Circuits - 4 Credits
- IND130 - Mechanical Systems - 3 Credits
- IND131 - Industrial Prog Logic Controls - 3 Credits
- IND137 - Industrial Schematics - 2 Credits
- IND143 - Electrical System Troubleshoot - 3 Credits
- IND147 - Fluid Power I - 3 Credits
- IND150 - Manufacturing Equipment & Tool - 2 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- PDV115 - Work Ethics - 2 Credits

Industrial Machine/Maintenance Technology (Cert B) Elective

Earn at least 3 credits from the following:
- IND139 - CNC Operation for Maintenance - 3 Credits
- IND160 - Fluid Power II - 3 Credits
- IND165 - Industrial Process Control II - 3 Credits
- IND170 - CNC Installation - 2 Credits
- IND175 - Advanced CNC Maintenance App - 4 Credits
- ROB100 - Introduction to Robotics - 3 Credits

General Education Requirement

Complete ANY of the following Course Sets:
- Math Elective

Entry Requirements
Be 16 years of age or older

Degree Maps

Degree Map Name
Industrial Machine Maintenance Technology (CERTB), TC
Total Degree Map Credits
44

Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	25	0

Requirement Select
- IND109 - Programmable Logic Controllers (PLC)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- IND115 - Industrial Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- IND121 - Mechanical Systems Reliability

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- IND122 - AC/DC Circuits

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- IND130 - Mechanical Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- IND147 - Fluid Power I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- IND150 - Manufacturing Equipment and Tools

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- PDV115 - Work Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- Math Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	19	0

Requirement Select
- IND111 - Foundations of Manufacturing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- IND116 - Advanced Motor Controls

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- IND117 - Variable Speed Motor Control

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- IND131 - Industrial Programmable Logic Controls (PLC)

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- IND137 - Industrial Schematics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- IND143 - Electrical System Troubleshooting

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- Industrial Machine/Maintenance Technology Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-INF_TECH - Computer Support Specialist (Cert B), TC

Overview

Department(s)
Information Technology

Degree Designation
Technical Certificate

Catalog Full Description
The Computer Support Specialist technical certificate program prepares individuals to provide technical assistance, support, and advice to computer users to troubleshoot software, hardware and networking problems. The program includes instruction in computer concepts, information systems, networking, security, operating systems, the Internet, software applications, help desk concepts, effective written and verbal communication skills, team management, project management, customer service and problem solving skills. Students are prepared to enter the workforce as a Computer User Support Specialist, Help Desk Technician, Technical Support Specialist or IT Support Representative. The WSU Tech Computer Support Specialist program is aligned with the National Center for Education Statistics CIP code 11.1006: Computer Support Specialist prepares individuals to provide technical assistance, support, and advice to computer users to help troubleshoot software and hardware problems. Includes instruction in computer concepts, information systems, networking, operating systems, computer hardware, the Internet, software applications, help desk concepts and problem solving, and principles of customer service.

The Computer Support Specialist with Emphasis in Cyber Security technical certificate program prepares students to work in the field of Cyber Security. Learning opportunities develop academic, technical and professional knowledge and skills required for job acquisition. The program is comprised of a set of core courses in information technology fundamentals and advanced courses focused on Cyber law/ethics, server security, digital forensics, and advanced network security. Program electives provide students with the opportunity to concentrate on additional IT technical skills. Program graduates may also receive a Computer Support Specialist Emphasis in Cyber Security technical certificate. The WSU Tech Computer Support Specialist program is aligned with the National Center for Education Statistics CIP code 11.1006: Computer Support Specialist prepares individuals to provide technical assistance, support, and advice to computer users to help troubleshoot software and hardware problems. Includes instruction in computer concepts, information systems, networking, operating systems, computer hardware, the Internet, software applications, help desk concepts and problem solving, and principles of customer service.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Utilize standard software tools , information security tools and devices common to the industry

Name
Use incident response models and forensic techniques to investigate security incidents

Name
Perform information gathering and volnerability scanning activities

Name
Identify and present indicators of a network security breach while preserving the integrity of digital evidence

Name
Explore the legal, social and ethical cybersecurity concerns related to industry

Name
The student will demonstrate the ability to manage, troubleshoot and repair information technology hardware.

Name
The student will demonstrate an understanding of various operating systems.

Name
The student will be able to analyze the status of computer networks, support computer networks, and manage a network implementation project.

Name
The student will demonstrate the ability to provide end-user support.

Name
The student will demonstrate the ability to solve information technology problems.

Name
The student will demonstrate the necessary customer service skills as an IT professional.

Name
Student will demonstrate the knowledge of how to work at the command line level.

Program Costs
Computer Support Specialist, TC - $10,589.00

Computer Support Specialist with Emphasis in Cyber Security, TC - $10,559.00

Cost does not include online fees, books or tools. Financial assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Computer Support Specialist, TC

Type
Completion Requirement

Computer Support Specialist, TC

Complete ALL of the following Courses:

- INF105 - CompTIA A+ Core 1 - 3 Credits
- INF110 - CompTIA A+ Core 2 - 3 Credits
- INF112 - Network Essentials - 3 Credits
- INF115 - Network+ Part I - 3 Credits
- INF116 - Network+ Part II - 3 Credits
- INF120 - Security+ - 3 Credits
- INF134 - Server + - 3 Credits
- INF139 - Cybersecurity Essentials - 3 Credits
- INF142 - Cloud+ - 3 Credits
- INF144 - Virtualization - 3 Credits
- INF164 - Switching, Routing, & Wireless - 3 Credits
- INF167 - Enterprise Network, Sec & Auto - 3 Credits
- INF172 - Multi-Cloud Networking - 3 Credits
- INF174 - Info Technology Capstone - 3 Credits
  OR INF175 - Info Technology Internship - 3 Credits

Computer Support Specialist with Emphasis in Cyber Security, TC

Type
Completion Requirement

Computer Support Specialist with Empahsis In Cyber Security Requirements

Complete ALL of the following Courses:

- INF105 - CompTIA A+ Core 1 - 3 Credits
- INF110 - CompTIA A+ Core 2 - 3 Credits
- INF112 - Network Essentials - 3 Credits
- INF113 - Introduction to Programming - 3 Credits
- INF115 - Network+ Part I - 3 Credits
- INF116 - Network+ Part II - 3 Credits
- INF120 - Security+ - 3 Credits
- INF134 - Server + - 3 Credits
- INF136 - Introduction to PowerShell - 3 Credits
- INF139 - Cybersecurity Essentials - 3 Credits
- INF154 - Ethical Hacker - 3 Credits
- INF160 - Server Security - 3 Credits
- INF165 - Advanced Cyber Security - 3 Credits
- INF174 - Info Technology Capstone - 3 Credits
  OR INF175 - Info Technology Internship - 3 Credits

Entry Requirements

- Be 16 years of age or older

- Completion of application and related procedures

Degree Maps

Degree Map Name
Computer Support Specialist with Emphasis in Cyber Security
Total Degree Map Credits
42
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	12	0

Requirement Select
- INF105 - CompTIA A+ Core 1

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- INF110 - CompTIA A+ Core 2

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF112 - Network Essentials

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF139 - Cybersecurity Essentials

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	12	0

Requirement Select
- INF115 - Network+ Part I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF116 - Network+ Part II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF120 - Security+

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF134 - Server +

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	9	0

Requirement Select
- INF160 - Server Security

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF165 - Advanced Cyber Security

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF174 - Information Technology Capstone

OR
- INF175 - Information Technology Internship

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	135
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	9	0

Requirement Select
- INF113 - Introduction to Programming

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF136 - Introduction to PowerShell

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- INF154 - Ethical Hacker

Course Requirement Group

Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Total General Education Credits
0
Total Major Credits
0
Total Minor Credits
0
Total Elective Credits
0

Degree Map Name
Computer Support Specialist, TC
Total Degree Map Credits
42
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	12	0

Requirement Select
- INF105 - CompTIA A+ Core 1

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- INF110 - CompTIA A+ Core 2

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF112 - Network Essentials

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF139 - Cybersecurity Essentials

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	12	0

Requirement Select
- INF115 - Network+ Part I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF116 - Network+ Part II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF120 - Security+

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF134 - Server +

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	9	0

Requirement Select

- INF164 - Switching, Routing, and Wireless Essentials

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- INF167 - Enterprise Networking, Security, and Automation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- INF174 - Information Technology Capstone

  OR
- INF175 - Information Technology Internship

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	135
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	9	0

Requirement Select

- INF142 - Cloud+

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- INF144 - Virtualization

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- INF172 - Multi-Cloud Networking

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-IT_ESSENT - Computer Support Specialist (Cert A), TC

Overview

Department(s)
Information Technology

Degree Designation
Technical Certificate

Catalog Full Description
The Computer Support Specialist technical certificate program prepares individuals to provide technical assistance, support, and advice to computer users to troubleshoot software, hardware and networking problems. The program includes instruction in computer concepts, information systems, networking, security, operating systems, the Internet, software applications, help desk concepts, effective written and verbal communication skills, team management, project management, customer service and problem-solving skills. Students are prepared to enter the workforce as a Computer User Support Specialist, Help Desk Technician, Technical Support Specialist or IT Support Representative. The WSU Tech Computer Support Specialist program is aligned with the National Center for Education Statistics CIP code 11.1006: Computer Support Specialist prepares individuals to provide technical assistance, support, and advice to computer users to help troubleshoot software and hardware problems. Includes instruction in computer concepts, information systems, networking, operating systems, computer hardware, the Internet, software applications, help desk concepts and problem solving, and principles of customer service.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Program Costs
Computer Support Specialist, Cert A - $4,961.00

Cost does not include online fees, books or tools. Financial assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Computer Support Specialist (Cert A), TC

Type
Completion Requirement

Computer Support Specialist (Cert A), TC

Complete ALL of the following Courses:

- INF105 - CompTIA A+ Core 1 - 3 Credits
- INF110 - CompTIA A+ Core 2 - 3 Credits
- INF112 - Network Essentials - 3 Credits
- INF115 - Network+ Part I - 3 Credits
- INF116 - Network+ Part II - 3 Credits
- INF139 - Cybersecurity Essentials - 3 Credits

Entry Requirements

- Be 16 years of age or older
- Completion of application and related procedures

Degree Maps

Degree Map Name
Computer Support Specialist (Cert A), TC
Total Degree Map Credits
18
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	9	0

Requirement Select

- INF105 - CompTIA A+ Core 1

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- INF110 - CompTIA A+ Core 2

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- INF112 - Network Essentials

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	9	0

Requirement Select
- INF115 - Network+ Part I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF116 - Network+ Part II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- INF139 - Cybersecurity Essentials

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-LSC_MGMT - Logistics and Supply Chain Management, TC

Overview

Department(s)
Professional Studies

Degree Designation
Technical Certificate

Catalog Full Description
In this program students learn the fundamental principles of logistic and transportation. Students study the procurement, movement, storage and processing of materials and information across the entire supply chain. Students will study the process from the acquisition of raw materials and components through manufacturing to delivery of finished products to end users. Special attention is given to the roles of technology and customer service in the supply chain. Additional courses in project and business management, ethics and 15 credits of general education will provide student with the depth and breadth of knowledge needed to succeed in this growing field.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Describe contemporary logistics management and examine its increased global importance.

Name
Differentiate logistics and supply chain management functions within a firm.

Name
Illustrate potential barriers to supply chain management implementation and identify current supply chain integration complexities.

Name
Examine technology issues for effective and efficient utilization of information in logistics management.

Name
Explain various financial tools to measure logistics contract performance, manage losses & recovery.

Name
Interpret the concept of logistics social responsibility in relation to operational sustainability and ethics.

Name
Explain demand forecasting models for order and inventory management purposes.

Name
Examine the strategic importance of the warehouse management process and performance.

Name
Compare transportation infrastructures and identify different modes of transportation.

Name
Discuss how logistical services are procured and rates are determined in relation to service provider selection.

Name
Interpret international logistics and explain operational details of global logistical activities.

Name
Explain documentation as well as terms of sale and methods of payment for international shipments.

Program Costs
Logistics and Supply Management, TC - $7,443.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated is based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Logistics and Supply Chain Managment, TC

Type
Completion Requirement

Complete ALL of the following Courses:
- LGM101 - Principles Logistics & Supply - 3 Credits
- LGM102 - Inventory Control - 3 Credits
- LGM105 - Warehouse Management - 3 Credits
- LGM108 - International Logistics - 3 Credits
- LGM109 - Applications and ERP Systems - 3 Credits
- LGM110 - Logistics Safety/OSHA 10 - 2 Credits
- LGM111 - Purchasing, Contracts, Freight - 3 Credits
- LGM150 - Supply Chain Analytics - 3 Credits
- LGM196 - Capstone Experience in LGM - 4 Credits
- ENG101 - Composition I - 3 Credits
- MTH108 - Contemporary Math - 3 Credits

Entry Requirements
- Be 16 years of age or older
- Completion of application and related procedures

Degree Maps

Degree Map Name
Logistics and Supply Chain Management, TC
Total Degree Map Credits
33
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	15	0

Requirement Select
- LGM101 - Principles of Logistics and Supply Chain Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- LGM102 - Inventory Control

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- LGM105 - Warehouse Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ENG101 - Composition I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- MTH108 - Contemporary Math

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	14	0

Requirement Select
- LGM108 - International Logistics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- LGM109 - Applications and ERP Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- LGM110 - Logistics Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- LGM111 - Purchasing, Contracts, and Freight Claims

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- LGM150 - Supply Chain Analytics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	4	0

Requirement Select

- LGM196 - Capstone Experience in Logistics & Supply Chain Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-MACH_TECH - Machining Technology (Machining & Manufacturing Technology), TC

Overview

Department(s)
Manufacturing

Degree Designation
Technical Certificate

Catalog Full Description
This program gives the students the opportunity to gain skills, knowledge, and abilities in various machining processes and procedures. A significant emphasis is placed on CNC machining, including 3, 4, and 5-axis milling and CNC lathe. Classroom and laboratory instruction in safety, precision measuring, geometric dimension and tolerancing, and metrology is available. Students will enhance their competencies by gaining multi-machine setup and operations skills and robotic collaborative assist technologies, including machine tending and automatic part movement. Students will also gain advanced machining experience that includes hardened or exotic materials. Students will round out their experience by completing 15 credits of general education courses. The WSU Tech Machining Technology (Machining & Manufacturing Technology)program is aligned with the National Center for Education Statistics CIP code 48.0501: Machine Tool Technology/Machinist prepares individuals to apply technical knowledge and skills to plan, manufacture, assemble, test, and repair parts, mechanisms, machines, and structures in which materials are cast, formed, shaped, molded, heat treated, cut, twisted, pressed, fused, stamped or worked.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Operate machine tool equipment commonly found in industry including manual and computer-controlled lathes, milling machines, drill presses and cutting machines

Name
Manufacture parts from various materials in accordance with specifications from blueprints, electronic drawings and shop sketches

Name
Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking

Name
Apply safety principles in a work environment to minimize hazards and prevent losses to productivity

Name
Demonstrate employability skills needed to obtain and retain employment in machine tool and related fields

Name
Use CAD and CAM programs to design parts and program manufacturing machines

Program Costs
Machining Technology (Machining & Manufacturing Technology), TC - $9,029.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Machining Technology (Machining & Manufacturing Technology), TC

Type
Completion Requirement

Machining Technology (Machining & Manufacturing Technology) Requirements

Complete ALL of the following Courses:

- MMG113 - Print Reading - 2 Credits
- MMG116 - Quality Control & Inspection - 1 Credits
- MMG130 - Bench Work - 1 Credits
- MMG131 - Metallurgy - 1 Credits
- MMG135 - Machining Fundamentals - 3 Credits
- MMG140 - Metrology - 4 Credits
- MMG155 - CNC Lathe - 3 Credits
- MMG156 - CNC Operations - 3 Credits
- MMG160 - CNC Milling I - 3 Credits
- MMG170 - Mastercam Mill 2 Axis - 4 Credits
- MMG184 - Multi-Axis Milling - 4 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- MCD106 - Precision Measuring - 2 Credits
- PDV115 - Work Ethics - 2 Credits

Entry Requirements
Be 16 years of age or older

Degree Maps

Degree Map Name
Machining Technology (Machining & Manufacturing Technology), TC
Total Degree Map Credits
34
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	19	0

Requirement Select
- MMG113 - Print Reading

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MMG116 - Quality Control & Inspection

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MMG131 - Metallurgy

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MMG135 - Machining Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MMG155 - CNC Lathe

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- MMG156 - CNC Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MMG160 - CNC Milling I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- PDV115 - Work Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	15	0

Requirement Select
- MMG130 - Bench Work

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MMG140 - Metrology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- MMG170 - Mastercam Mill 2 Axis

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select

- MMG184 - Multi-Axis Milling

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select

- MCD106 - Precision Measuring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-MECH_ENGR - Engineering Design Technology, TC

Overview

Department(s)
Manufacturing

Degree Designation
Technical Certificate

Catalog Full Description
The Engineering Design Technology program prepares students for careers in engineering, manufacturing, and product development by equipping them with the technical skills needed to create and analyze engineering designs. Students learn to develop detailed technical drawings, 3D models, and prototypes using industry-standard software such as AutoCAD, SolidWorks, and CATIA. The curriculum covers fundamental engineering principles, materials science, and manufacturing processes. Emphasis is placed on problem-solving, innovation, and collaboration, enabling students to work effectively with engineers, manufacturers, and designers. Additionally, students gain experience in rapid prototyping, 3D printing, and computer-aided design (CAD), ensuring they are prepared for the latest advancements in the industry. Graduates of the Engineering Design Technology program are well-prepared for careers as engineering technicians, CAD designers, mechanical drafters, and product development specialists in industries such as aerospace, automotive, manufacturing, and consumer products. Students will round off their educational experience by completing 3 credits of general education courses in communications.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Develop detailed engineering drawings and 3D models using CAD software such as SolidWorks, AutoCAD, and CATIA.

Name
Interpret and create technical blueprints and schematics according to industry standards.

Name
Apply fundamental engineering principles to design and analyze mechanical components and systems.

Name
Use mathematical and scientific concepts to evaluate design feasibility and functionality.

Name
Develop innovative solutions to engineering design challenges using creative problem-solving techniques.

Name
Utilize design thinking and prototyping to enhance product development.

Name
Apply ANSI, ISO, and GD&T (Geometric Dimensioning & Tolerancing) standards to ensure precision and compliance in design.

Program Costs

Engineering Design Technology, TC - $13,456.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location

WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

No Requirements

Entry Requirements

- Be 16 years of age or older
- Complete all admission documents

Degree Maps

Degree Map Name
Engineering Design Technology, TC
Total Degree Map Credits
45
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	12	0

Requirement Select
- MCD101 - Introduction to CAD I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MCD102 - Introduction to CAD II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- MCD104 - Blueprint Reading for Drafting

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MCD106 - Precision Measuring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MCD121 - Descriptive Geometry

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	14	0

Requirement Select
- MCD115 - Machine Drafting & Design

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MCD124 - Advanced AutoCAD

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- MCD137 - Introduction to 3D Printing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Engineering Design Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- PDV115 - Work Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	11	0

Requirement Select
- CAT101 - CATIA Part Design & Sketcher

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- CAT105 - CATIA Assembly Design

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- Communication Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	8	0

Requirement Select

- CAT103 - CATIA 3D Tolerancing & Annotations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select

- CAT110 - CATIA Wireframe & Surfaces

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-MECH_PNTR - Process Mechanic Painter, TC

Overview

Department(s)
Aviation

Degree Designation
Technical Certificate

Catalog Full Description
Aerospace Coatings & Paint Technology associate degree program is a sequence of courses designed to produce an aerospace technician with multiple skill sets, a well-rounded understanding of the aerospace industry and the depth and breadth of knowledge which comes from general education courses. This program provides a broad-based understanding of coating and paint processes within the aerospace industry. The curriculum includes comprehensive learning experiences in all aspects of the coating and paint industry including formulation, application and specialized areas.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Student will demonstrate academic, technical, and professional knowledge and skills required for job acquisition in the Aerospace Coatings & Paint Technology program

Name
Student will demonstrate surface preparation from various coating and painting applications on all interior and exterior aircraft components

Name
Student will demonstrate special application techniques

Name
Student will demonstrate various skills and techniques of advanced paint and coating which meet industry specifications

Program Costs
Process Mechanic Painter, TC $5,337.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Process Mechanic Painter, TC

Type
Completion Requirement

Process Mechanic Painter Course Requirement

Complete ALL of the following Courses:

- ACP100 - Intro to Coatings & Paint Tech - 3 Credits
- ACP101 - Surface Preparation & Coatings - 4 Credits
- ACP104 - Specialized Coatings Processes - 3 Credits
- ACP145 - Environmental Health & Safety - 2 Credits
- AVC105 - Aircraft Familiarization - 1 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- AVC112 - Blueprint Reading - 2 Credits

Entry Requirements

- Be 16 years of age or older
- Complete College Admissions documents

Degree Maps

Degree Map Name
Process Mechanic Painter, TC
Total Degree Map Credits
16
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	16	0

Requirement Select

- ACP100 - Introduction to Coatings & Paint Technology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- ACP101 - Surface Preparation & Coatings

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select

- ACP104 - Specialized Coatings Processes

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select

- ACP145 - Environmental Health and Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select

- AVC105 - Aircraft Familiarization

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- AVC112 - Blueprint Reading

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-MED_CARE - Patient Care Technology, TC

Overview

Department(s)
Health Sciences

Degree Designation
Technical Certificate

Catalog Full Description
The Patient Care Technician Program prepares graduates to assist doctors, nurses and other healthcare professionals in providing patient care in a variety of healthcare environments. The classroom and clinical experiences support industry's need for healthcare professionals who are proficient in a variety of direct patient care areas. As a result, graduates of the program have the opportunity to take certification exams in multiple direct patient care areas including Certified Nurse Aide, EKG Technician, Phlebotomy technician and Patient Care Technician.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Utilizes critical thinking to facilitate clinical decision making in assisting diverse populations to function at their optimal level of wellness across the lifespan.

Name
Utilizes a knowledge base from the biopsychosocial sciences to promote and facilitate informed decision-making, achieve positive outcomes, and support self-care activities in structured outpatient settings.

Name
Maintains effective communication with patients, family members and interdisciplinary team members in the planning and delivery of health care.

Name
Acknowledges the necessity for continued learning as a part of personal and professional growth.

Name
Performs as a member of the health care team as a caring, ethical, responsible, and accountable member of the health care team

Program Costs
Patient Care Technician, TC - $4,516.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated is based on the lowest cost combination of elective credits required.

Campus Location

WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Patient Care Technician, (CERT A)

Type

Completion Requirement

Patient Care Technician Requirements

Complete ALL of the following Courses:

- PCT100 - EKG for Healthcare Providers - 4 Credits
- PCT110 - Phlebotomy and Lab Procedures - 4 Credits
- PCT130 - PCT Concepts and Tech Skills - 3 Credits
- ALH101 - Medical Terminology - 3 Credits
- CPR001 - CPR For Healthcare Providers - 1 Credits
- CNA101 - Certified Nurse Aide - 5 Credits

Entry Requirements

- Attainment of 16 or more years of age to enter the program .
- Documentation of high school graduation or satisfaction of high school equivalency certificate requirements, or students currently enrolled in high school or GED program and have attained junior status
- Documented negative PPD TB skin test within the last year or negative chest X-Ray within the last three years
- US Social Security Card
- Completion of application

Degree Maps

Degree Map Name
Patient Care Technician, TC
Total Degree Map Credits
20
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	11	0

Requirement Select
- PCT100 - EKG for Healthcare Providers

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- PCT110 - Phlebotomy and Laboratory Procedures

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- ALH101 - Medical Terminology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	9	0

Requirement Select
- PCT130 - Patient Care Concepts and Technical Skills

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- CPR001 - CPR For Healthcare Providers

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- CNA101 - Certified Nurse Aide

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-MNF_CORE - Manufacturing Assembly Basics, TC

Overview

Department(s)
Manufacturing

Degree Designation
Technical Certificate

Catalog Full Description
This program provides graduates with a well-rounded education in basic manufacturing processes and progresses them through multiple manufacturing concepts to more advanced automation skills including industry specific skills of assembly and production for a variety of manufacturing sectors. All students will experience a core curriculum focused on the foundational skills in manufacturing processes including precision measuring, blueprint reading quality control, and basic design concepts. Different pathways allow for students to learn on state-of-the-art industrial trainers and systems to match industry skills in assembly, operations, fabrication, maintenance, and CNC operators. Onsite networks allow the building of virtual factories, buildings, and other smart components. Students will create integration scenarios, troubleshooting activities, root-cause analysis, and other real-world scenarios.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Identify the basic procedures and processes associated with manufacturing

Name
Identify the basic metallurgical principles as they relate to manufacturing

Name
Demonstrate advanced systems technology skills as they relate to manufacturing

Name
Apply safe and approved practices in the workplace

Name
Analyze, interpret, modify and prepare drawings used in the manufacturing process

Name
Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking

Name
Apply appropriate mathematical skills to solve real-world problems

Name
Demonstrate the ability to utilize tools and equipment used in the manufacturing environment

Name
Demonstrate the ability to safely operate manufacturing joining, cutting, and bending

Program Costs
Manufacturing Assembly Basics, Technical Certificate A - $7,639.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226, FUTURE READY CENTER - 1403 North Waco, Wichita, KS 67203

Requirements

Simple Requirements

Program Requirements

Manufacturing Assembly Basics, TC

Type
Completion Requirement

Manufacturing Assembly Basics Requirement

Complete ALL of the following Courses:

- MNF110 - CNC Basics - 2 Credits
- MNF113 - Blueprint Basics Manufacturing - 2 Credits
- MNF115 - Forklift Operations - 1 Credits
- MNF120 - Processes & Production I - 3 Credits
- MNF125 - Maintenance Training - 4 Credits
- MNF130 - Processes & Production II - 3 Credits
- MNF163 - Production Assembly - 3 Credits
- AVC104 - Quality Control Concepts - 1 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- AVC135 - Hand Tools - 1 Credits
- AVC145 - Power Island - 1 Credits
- MCD106 - Precision Measuring - 2 Credits
- MCD137 - Introduction to 3D Printing - 2 Credits
- MMG131 - Metallurgy - 1 Credits
- PDV115 - Work Ethics - 2 Credits

Entry Requirements
Attainment of 16 or more years of age

Degree Maps

Degree Map Name
Manufacturing Assembly Basics, TC
Total Degree Map Credits
29
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	11	0

Requirement Select
- MNF113 - Blueprint Basics For Manufacturing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MNF115 - Forklift Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MNF120 - Manufacturing Processes & Production I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AVC104 - Quality Control Concepts

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC135 - Hand Tools

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC145 - Power Island

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MMG131 - Metallurgy

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	18	0

Requirement Select
- MNF110 - CNC Basics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- MNF125 - Maintenance Training

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- MNF130 - Manufacturing Processes & Production II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MNF163 - Production Assembly

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- MCD106 - Precision Measuring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MCD137 - Introduction to 3D Printing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PDV115 - Work Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-MNF_MAINT - Manufacturing Technology, TC

Overview

Department(s)
Manufacturing

Degree Designation
Technical Certificate

Catalog Full Description
This program provides graduates with a well-rounded education in basic manufacturing processes and progresses them through multiple manufacturing concepts to more advanced automation skills including industry specific skills of assembly and production for a variety of manufacturing sectors. All students will experience a core curriculum focused on the foundational skills in manufacturing processes including precision measuring, blueprint reading quality control, and basic design concepts. Different pathways allow for students to learn on state-of-the-art industrial trainers and systems to match industry skills in assembly, operations, fabrication, maintenance, and CNC operators. Onsite networks allow the building of virtual factories, buildings, and other smart components. Students will create integration scenarios, troubleshooting activities, root-cause analysis, and other real-world scenarios

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Identify the basic procedures and processes associated with manufacturing

Name
Identify the basic metallurgical principles as they relate to manufacturing

Name
Demonstrate advanced systems technology skills as they relate to manufacturing

Name
Apply safe and approved practices in the workplace

Name
Analyze, interpret, modify and prepare drawings used in the manufacturing process

Name
Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking

Name
Apply appropriate mathematical skills to solve real-world problems

Name
Demonstrate the ability to utilize tools and equipment used in the manufacturing environment

Name
Demonstrate the ability to safely operate manufacturing joining, cutting, and bending

Name
Perform assembly tasks utilized in a wide range of manufacturing processes

Name
Identify potential maintenance issues with basic production systems.

Name
Demonstrate the basics of electrical wiring and AC/DC principles

Name
Identify potential fluid system issues which will require maintenance personnel to correct

Name
Perform basic PLC programming

Name
Analyze and solve manufacturing production issues utilizing machine automation solutions

Program Costs
Manufacturing Technology, TC - $12,443.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226, FUTURE READY CENTER - 1403 North Waco, Wichita, KS 67203

Requirements

Simple Requirements

Program Requirements

Manufacturing Technology, TC

Type
Completion Requirement

Manufacturing Technology Requirement

Complete ALL of the following Courses:

- MNF110 - CNC Basics - 2 Credits
- MNF113 - Blueprint Basics Manufacturing - 2 Credits
- MNF115 - Forklift Operations - 1 Credits
- MNF120 - Processes & Production I - 3 Credits
- MNF125 - Maintenance Training - 4 Credits
- MNF130 - Processes & Production II - 3 Credits
- MNF163 - Production Assembly - 3 Credits
- AVC104 - Quality Control Concepts - 1 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- AVC135 - Hand Tools - 1 Credits
- AVC145 - Power Island - 1 Credits
- MCD106 - Precision Measuring - 2 Credits
- MCD137 - Introduction to 3D Printing - 2 Credits
- MMG131 - Metallurgy - 1 Credits
- PDV115 - Work Ethics - 2 Credits

Manufacturing Technology Elective

Earn at least 16 credits from the following:

- Manufacturing Technology Electives

Entry Requirements
Attainment of 16 or more years of age

Degree Maps

Degree Map Name
Manufacturing Technology, TC
Total Degree Map Credits
45
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	11	0

Requirement Select

- MNF113 - Blueprint Basics For Manufacturing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MNF115 - Forklift Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MNF120 - Manufacturing Processes & Production I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AVC104 - Quality Control Concepts

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC135 - Hand Tools

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC145 - Power Island

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MMG131 - Metallurgy

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	18	0

Requirement Select
- MNF110 - CNC Basics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- MNF125 - Maintenance Training

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- MNF130 - Manufacturing Processes & Production II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MNF163 - Production Assembly

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- MCD106 - Precision Measuring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MCD137 - Introduction to 3D Printing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PDV115 - Work Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	16	0

Requirement Select
- Manufacturing Technology Electives

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	8
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Manufacturing Technology Electives

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	8
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-MNF_PROD - Manufacturing Assembly, TC

Overview

Department(s)
Manufacturing

Degree Designation
Technical Certificate

Catalog Full Description
This program provides graduates with a well-rounded education in basic manufacturing processes and progresses them through multiple manufacturing concepts to more advanced automation skills including industry specific skills of assembly and production for a variety of manufacturing sectors. All students will experience a core curriculum focused on the foundational skills in manufacturing processes including precision measuring, blueprint reading quality control, and basic design concepts. Different pathways allow for students to learn on state-of-the-art industrial trainers and systems to match industry skills in assembly, operations, fabrication, maintenance, and CNC operators. Onsite networks allow the building of virtual factories, buildings, and other smart components. Students will create integration scenarios, troubleshooting activities, root-cause analysis, and other real-world scenarios

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Identify the basic procedures and processes associated with manufacturing

Name
Identify the basic metallurgical principles as they relate to manufacturing

Name
Demonstrate advanced systems technology skills as they relate to manufacturing

Name
Apply safe and approved practices in the workplace

Name
Analyze, interpret, modify and prepare drawings used in the manufacturing process

Name
Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking

Name
Apply appropriate mathematical skills to solve real-world problems

Name
Demonstrate the ability to utilize tools and equipment used in the manufacturing environment

Name
Demonstrate the ability to safely operate manufacturing joining, cutting, and bending

Name
Perform assembly tasks utilized in a wide range of manufacturing processes

Name
Identify potential maintenance issues with basic production systems.

Name
Demonstrate the basics of electrical wiring and AC/DC principles

Name
Identify potential fluid system issues which will require maintenance personnel to correct

Name
Perform basic PLC programming

Name
Analyze and solve manufacturing production issues utilizing machine automation solutions

Program Costs
Manufacturing Assembly, TC - $10,041.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226, FUTURE READY CENTER - 1403 North Waco, Wichita, KS 67203

Requirements

No Requirements

Entry Requirements

Attainment of 16 or more years of age

Degree Maps

Degree Map Name
Manufacturing Assembly, TC
Total Degree Map Credits
37
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	11	0

Requirement Select
- MNF113 - Blueprint Basics For Manufacturing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MNF115 - Forklift Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MNF120 - Manufacturing Processes & Production I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AVC104 - Quality Control Concepts

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC135 - Hand Tools

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC145 - Power Island

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MMG131 - Metallurgy

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	18	0

Requirement Select
- MNF110 - CNC Basics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- MNF125 - Maintenance Training

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- MNF130 - Manufacturing Processes & Production II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MNF163 - Production Assembly

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- MCD106 - Precision Measuring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MCD137 - Introduction to 3D Printing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PDV115 - Work Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	8	0

Requirement Select

- Manufacturing Assembly

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	8
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-MNT_HLTH - Mental Health Technician, TC

Overview

Department(s)
Nursing

Degree Designation
Technical Certificate

Catalog Full Description
The Mental Health Technician program integrates core mental health courses with general education. Students engage in hands-on learning, developing technical proficiency in nursing skills, emergency procedures, and advanced techniques. The curriculum emphasizes mental health competence, covering the causes and treatment of mental illness, resilience, and effective communication. The program also focuses on pharmacology and drug administration skills and insights into behavioral science factors impacting mental health. Graduates emerge with a well-rounded skill set to provide compassionate care in mental and physical health settings and are prepared to take the Licensed Mental Health Technician exam.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Apply basic nursing skills for health maintenance and promotion, including proficiency in bed making, personal hygiene, activities of daily living (ADL), infection prevention, vital signs, and safety measures.

Name
Demonstrate competence in emergency procedures, such as fire and disaster response, CPR, First Aid, and assisting with emergency oxygen and suctioning equipment.

Name
Acquire and integrate advanced nursing skills related to infection control, ostomy care, catheterization care, oxygen administration, suctioning, and care of clients receiving intravenous infusion therapy.

Name
Understand the concepts of mental health and mental illness, including causes, symptoms, and treatment. Demonstrate knowledge of diagnostic criteria for major mental illnesses.

Name
Develop and apply basic observation skills, communication skills, and reporting responsibilities necessary for the mental health technician role.

Name
Demonstrate an understanding of psychiatric/mental health concepts and the role of a Mental Health Technician in working with clients. Develop therapeutic communication skills and apply safety measures in a mental health setting.

Name
Integrate knowledge of mental disorders with therapeutic nursing principles, treatment, and rehabilitation interventions. Demonstrate the ability to apply technical skills in the treatment and rehabilitation of clients with both mental and physical illnesses.

Name
Understand basic concepts of drug administration and the pharmacological effects of drugs. Demonstrate proficiency in safe and accurate drug administration through various routes

Name
Recognize the impact of social, economic, and cultural factors in the development of mental illness. Understand group and family dynamics and their relationship to mental illness, emphasizing the effects of serious and persistent mental illness on daily functioning, interpersonal relationships, and quality of life.

Name
Develop cultural competence and sensitivity to address the diverse needs of individuals from various backgrounds, recognizing the influence of cultural factors on mental health.

Program Costs
Mental Health Technician, TC - $11,071.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Mental Health Technician, TC

Type
Completion Requirement

Mental Health Technician Requirements

Complete ALL of the following Courses:
- MNT120 - Understanding Mental Illness - 2 Credits
- MNT140 - Technical Health Skills I - 5 Credits
- MNT130 - Behavioral Science - 3 Credits
- MNT170 - Pharmacology & Drug Admin - 8 Credits
- MNT180 - Technical Health Skills II - 5 Credits
- MNT190 - Therapeutic Communication - 2 Credits
- MNT200 - Psychiatric Interventions - 8 Credits
- PSY101 - General Psychology - 3 Credits
- PSY120 - Developmental Psychology - 3 Credits

Entry Requirements
Be 18 years of age or older to participate in clinicals, Documentation of high school graduation or satisfaction of high school equivalency certificate requirements, or students currently enrolled in high school or GED program and have attained junior status, Completion of application and related procedures

Degree Maps

Degree Map Name
Mental Health Technician, TC
Total Degree Map Credits
39
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	16	0

Requirement Select
- MNT120 - Understanding Mental Illness

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MNT130 - Behavioral Science

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- MNT140 - Technical Health Skills I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	135
Clinical	-
Criticality	No

Requirement Select
- PSY101 - General Psychology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PSY120 - Developmental Psychology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	23	0

Requirement Select
- MNT170 - Pharmacology & Drug Administration

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	8
Progress Credits	-
Contact Hours	165
Clinical	-
Criticality	No

Requirement Select
- MNT180 - Technical Health Skills II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	135
Clinical	-
Criticality	No

Requirement Select
- MNT190 - Therapeutic Communication

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MNT200 - Psychiatric Interventions

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	8
Progress Credits	-
Contact Hours	210
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-MOB_EQPM - Mobile Equipment Technology, TC

Overview

Department(s)
Applied Technologies

Degree Designation
Technical Certificate

Catalog Full Description
The Mobile Equipment Technology program prepares students to service, maintain, repair, and operate a variety of diesel-powered mobile equipment. Students develop a strong understanding of engine systems, hydraulics, electrical systems, powertrains, and other critical sub-systems. Through hands-on training, students learn to diagnose component failures, perform timely and accurate repairs, conduct preventive maintenance, and safely operate heavy equipment used across multiple industries. Graduates are prepared for employment in industries such as construction, agriculture, transportation, energy, and heavy equipment services.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Prioritize safety and regulatory compliance in all aspects of mobile equipment repair and maintenance, ensuring adherence to industry standards and regulations.

Name
Value strong communication skills, enabling them to effectively interact with colleagues, clients, and supervisors in a professional manner.

Name
Demonstrate proficiency in repairing and maintaining diesel engines, fuel and exhaust systems, and machine-specific systems commonly found in mobile equipment.

Name
Obtain advanced diagnostic skills, utilizing diagnostic tests to identify issues in mobile equipment systems effectively.

Name
Exhibit competence in diagnosing and repairing powertrain systems, including engines, transmissions, and drivetrains, to ensure optimal performance and efficiency

Name
Demonstrate mastery in fluid power principles and applications, enabling them to troubleshoot, repair, and maintain hydraulic systems in mobile equipment effectively

Name
Show awareness in diagnosing and repairing electrical systems in mobile equipment, including wiring, circuits, and components, to ensure safe and reliable operation

Name
Diagnose and repair heating and air conditioning systems in mobile equipment, ensuring operator comfort and efficiency in various environmental conditions.

Name
Optimize engine performance in mobile equipment, improving fuel efficiency, power output, and overall reliability

Name
Diagnose and repair braking, suspension, and steering systems in mobile equipment, ensuring safe operation and stability

Name
Acquaint self in fundamentals of dealership operations within the mobile equipment industry, including customer service, sales, and employer core values

Name
Diagnose and repair equipment specific systems, such as heating and air conditioning, suspension systems, steering, air brakes, data links, voltage regulation, or transfer switches, based on specialized area of interest.

Program Costs
Mobile Equipment Technology, TC - $14,372.00

Cost does not include online fees, books or tools. Financial assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211

Requirements

Simple Requirements

Program Requirements

Mobile Equipment Technology, TC

Type
Completion Requirement

Mobile Equipment Technology Requirements

Complete ALL of the following Courses:

- EQP119 - Internship I - 2 Credits
- EQP121 - Diesel Engine Repair - 3 Credits
- EQP124 - Electrical Systems - 3 Credits
- EQP125 - Machine Electronics - 3 Credits
- EQP128 - Mobile Air Conditioning - 2 Credits
- EQP129 - Internship II - 2 Credits
- EQP131 - Diesel Engine Performance - 3 Credits
- EQP132 - Engine Fuel Systems - 3 Credits
- EQP134 - Machine Specific Systems - 2 Credits
- EQP135 - Mobile Equipment Diagnostics - 3 Credits
- EQP139 - Internship III - 2 Credits
- EQP149 - Internship IV - 2 Credits
- EQP180 - Fluid Power - 3 Credits
- EQP206 - Powertrain Systems - 3 Credits
- EQP207 - Powertrain Systems II - 3 Credits
- EQP210 - Dealership Service Operations - 2 Credits
- EQP220 - Advanced Fluid Power - 3 Credits
- TAS160 - Transportation Industry Safety - 2 Credits

Entry Requirements

· Be 16 years of age or older

· Complete college admissions documentation

Degree Maps

Degree Map Name
Mobile Equipment Technology, TC
Total Degree Map Credits
46
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	21	0

Requirement Select

- EQP119 - Internship I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select

- EQP121 - Diesel Engine Repair

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select

- EQP124 - Electrical Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- EQP128 - Mobile Air Conditioning

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- EQP180 - Fluid Power

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- EQP206 - Powertrain Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- EQP220 - Advanced Fluid Power

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- TAS160 - Transportation Industry Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	17	0

Requirement Select
- EQP125 - Machine Electronics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- EQP129 - Internship II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- EQP131 - Diesel Engine Performance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- EQP132 - Engine Fuel Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- EQP135 - Mobile Equipment Diagnostics Test

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- EQP207 - Powertrain Systems II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	8	0

Requirement Select
- EQP134 - Machine Specific Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- EQP139 - Internship III

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- EQP149 - Internship IV

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- EQP210 - Dealership Service Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-MSNR_CONS - Masonry Construction, TC

Overview

Department(s)
Applied Technologies

Degree Designation
Technical Certificate

Catalog Full Description
The Masonry Technology program prepares students for careers in the construction industry as skilled brickmasons and blockmasons. Students gain hands-on experience in the layout, construction, and repair of structures using brick, block, and stone materials, while learning to read blueprints, mix and apply mortar, and safely operate industry-standard tools and equipment.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Apply safety standards and jobsite procedures to maintain compliance with OSHA and industry expectations in all phases of masonry work.

Name
Interpret construction drawings, specifications, and codes to plan and execute masonry projects accurately.

Name
Select, prepare, and maintain masonry tools, materials, and equipment for proper and efficient use in the field.

Name
Mix, test, and apply mortar, grout, and reinforcement materials to achieve required strength and finish quality.

Name
Lay and align masonry units using appropriate bonding, leveling, and spacing techniques for structural and decorative applications.

Name
Construct structural and specialty masonry systems such as walls, arches, openings, and veneers according to trade standards.

Name
Perform inspection and quality assurance checks to ensure dimensional accuracy, surface finish, and code compliance.

Name
Estimate material quantities and labor requirements for residential and commercial masonry projects.

Name
Demonstrate teamwork, time management, and communication skills required to contribute effectively on a construction crew.

Program Costs
Masonry Construction, TC - $10,276.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
CTEC + WSU Tech – 1301 E. 27th Terrace, Pittsburg, KS 66762

Requirements

Simple Requirements

Program Requirements

Masonry Construction, TC

Type
Completion Requirement

Complete ALL of the following Courses:

- SAF101 - Safety Orientation/OSHA 10 - 1 Credits
- CCP100 - Introductory Craft Skills - 3 Credits
- CCP108 - Construction Basics - 2 Credits
- MAS123 - Masonry Materials and Methods - 5 Credits
- MAS133 - Masonry Installation Practices - 5 Credits
- MAS143 - Masonry Layout & Bonding Tech - 6 Credits
- MAS159 - Structural Masonry Application - 5 Credits
- MAS169 - Masonry Finishes and Specialty - 5 Credits
- MAS179 - Adv Masonry Laying Techniques - 6 Credits

Entry Requirements

- 16 Years of Age
- Completed college admission documents

Degree Maps

Degree Map Name
Masonry Construction, TC
Total Degree Map Credits
38
Degree Map Effective Catalog Year

2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	11	0

Requirement Select
- SAF101 - Safety Orientation/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MAS123 - Masonry Materials and Methods

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- MAS133 - Masonry Installation Practices

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	10	0

Requirement Select
- MAS159 - Structural Masonry Applications

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- MAS169 - Masonry Finishes and Specialty Systems

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	135
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	11	0

Requirement Select
- CCP100 - Introductory Craft Skills

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CCP108 - Construction Basics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MAS143 - Masonry Layout and Bonding Techniques

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	6
Progress Credits	-
Contact Hours	165
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	6	0

Requirement Select

- MAS179 - Advanced Masonry Laying Techniques

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	6
Progress Credits	-
Contact Hours	165
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-MULTI_AXS - Multi Axis Machining (Machining & Manufacturing Technology), TC

Overview

Department(s)
Manufacturing

Degree Designation
Technical Certificate

Catalog Full Description
This program gives the students the opportunity to gain skills, knowledge, and abilities in various machining processes and procedures. A significant emphasis is placed on CNC machining, including 3, 4, and 5-axis milling and CNC lathe. Classroom and laboratory instruction in safety, precision measuring, geometric dimension and tolerancing, and metrology is available. Students will enhance their competencies by gaining multi-machine setup and operations skills and robotic collaborative assist technologies, including machine tending and automatic part movement. Students will also gain advanced machining experience that includes hardened or exotic materials. The WSU Tech Machining Technology (Machining & Manufacturing Technology)program is aligned with the National Center for Education Statistics CIP code 48.0501: Machine Tool Technology/Machinist prepares individuals to apply technical knowledge and skills to plan, manufacture, assemble, test, and repair parts, mechanisms, machines, and structures in which materials are cast, formed, shaped, molded, heat treated, cut, twisted, pressed, fused, stamped or worked.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Operate machine tool equipment commonly found in industry including manual and computer-controlled lathes, milling machines, drill presses and cutting machines

Name
Manufacture parts from various materials in accordance with specifications from blueprints, electronic drawings and shop sketches

Name
Solve quality problems using process planning, technical knowledge, teamwork, mathematics, and critical thinking

Name
Apply safety principles in a work environment to minimize hazards and prevent losses to productivity

Name
Demonstrate employability skills needed to obtain and retain employment in machine tool and related fields

Name
Use CAD and CAM programs to design parts and program manufacturing machines

Program Costs
Multi Axis Machining (Machining & Manufacturing Technology), TC - $12,245.00

Cost does not include online fees, books or tools. Financial assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Multi Axis Machining (Machining & Manufacturing Technology), TC

Type
Completion Requirement

Multi Axis Machining (Machining & Manufacturing Technology) Requirements

Complete ALL of the following Courses:

- MMG113 - Print Reading - 2 Credits
- MMG116 - Quality Control & Inspection - 1 Credits
- MMG130 - Bench Work - 1 Credits
- MMG131 - Metallurgy - 1 Credits
- MMG132 - Machine Tool Processes - 1 Credits
- MMG135 - Machining Fundamentals - 3 Credits
- MMG140 - Metrology - 4 Credits
- MMG155 - CNC Lathe - 3 Credits
- MMG156 - CNC Operations - 3 Credits
- MMG160 - CNC Milling I - 3 Credits
- MMG164 - Advanced Machining Processes - 4 Credits
- MMG170 - Mastercam Mill 2 Axis - 4 Credits
- MMG173 - G D & T for Machining - 3 Credits
- MMG180 - Mastercam 4 & 5 Axis Mill - 4 Credits
- MMG184 - Multi-Axis Milling - 4 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- MCD106 - Precision Measuring - 2 Credits
- PDV115 - Work Ethics - 2 Credits

Entry Requirements

- Be 16 years of age or older
- Complete all the college admission documents

Degree Maps

Degree Map Name
Multi Axis Machining (Machining & Manufacturing Technology), TC
Total Degree Map Credits
46
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	19	0

Requirement Select

- MMG113 - Print Reading

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select

- MMG116 - Quality Control & Inspection

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- MMG131 - Metallurgy

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MMG135 - Machining Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MMG155 - CNC Lathe

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- MMG156 - CNC Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MMG160 - CNC Milling I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- PDV115 - Work Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	15	0

Requirement Select
- MMG130 - Bench Work

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MMG140 - Metrology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- MMG170 - Mastercam Mill 2 Axis

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- MMG184 - Multi-Axis Milling

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- MCD106 - Precision Measuring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	12	0

Requirement Select
- MMG132 - Machine Tool Processes

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- MMG164 - Advanced Machining Processes

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- MMG173 - G D & T for Machining

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- MMG180 - Mastercam 4 & 5 Axis Mill

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-NDT - Nondestructive Testing, TC

Overview

Department(s)
Aviation

Degree Designation
Technical Certificate

Catalog Full Description
The Nondestructive Testing Certificate program prepares students for a career as an NDT practitioner in varied industries to include aviation, defense, petrochemical, nuclear and maritime. Courses are aligned to meet the Level 1 and Level 2 requirements of National Aerospace Standard 410 and the American Society for Nondestructive Testing recommended practice SNT-TC-1A for organized formal training. The NDT certificate prepares students for employment in six NDT methods including liquid penetrant, ultrasonic, eddy current, visual, radiography and magnetic particle inspection as well as radiation safety.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Demonstrate the Level I standards identified by the American Society of Nondestructive Testing for the following methods: Penetrant Inspection, Visual Magnetic Particle, Radiographic, Eddy Current and Ultrasonic

Name
Demonstrate the Level II standards identified by the American Society of Nondestructive Testing for the following methods: Penetrant Inspection, Visual Magnetic Particle, Radiographic, Eddy Current and Ultrasonic

Name
Integrate and apply aerospace structures and composite material fabrication concepts into the NDT curriculum

Name
Apply NDT concepts to the Aerospace Assemblies

Program Costs
Nondestructive Testing, TC - $12,924.00

Cost does not include online fees, books, or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest combination of elective credits required.

Campus Location
WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Nondestructive Testing, TC

Type
Completion Requirement

Nondestructive Testing Requirements

Complete ALL of the following Courses:

- NDT100 - Penetrant Inspection - 3 Credits
- NDT101 - Magnetic Particle Testing - 3 Credits
- NDT102 - Radiation Safety - 3 Credits
- NDT103 - Radiographic Testing Level II - 3 Credits
- NDT106 - Formulations and Calculations - 2 Credits
- NDT107 - Radiographic Testing Level I - 3 Credits
- NDT110 - Eddy Current Level I - 3 Credits
- NDT111 - Eddy Current Level II - 3 Credits
- NDT112 - Ultrasonic Test Method Lvl I - 3 Credits
- NDT113 - Ultrasonic Test Method Lvl II - 3 Credits
- NDT114 - Visual Inspection - 2 Credits
- NDT123 - Adv Ultrasonic Testing Methods - 5 Credits
- AVC102 - Precision Instruments - 1 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- CFT101 - Introduction To Composites - 2 Credits

General Education Requirement

Complete ANY of the following Course Sets:

- Humanities Elective

Entry Requirements
Be 18 years of age or older

Degree Maps

Degree Map Name
Nondestructive Testing, TC
Total Degree Map Credits
43
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	19	0

Requirement Select

- NDT100 - Penetrant Inspection

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- NDT101 - Magnetic Particle Testing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	40
Clinical	-
Criticality	No

Requirement Select
- NDT106 - Formulations and Calculations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- NDT110 - Eddy Current Level I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	40
Clinical	-
Criticality	No

Requirement Select
- NDT111 - Eddy Current Level II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- NDT112 - Ultrasonic Testing Method Level I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	40
Clinical	-
Criticality	No

Requirement Select
- NDT114 - Visual Inspection

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	17	0

Requirement Select
- NDT102 - Radiation Safety

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- NDT103 - Radiographic Testing Level II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- NDT107 - Radiographic Testing Level I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	40
Clinical	-
Criticality	No

Requirement Select
- NDT113 - Ultrasonic Testing Method Level II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- NDT123 - Advanced Ultrasonic Testing Methods

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	7	0

Requirement Select
- AVC102 - Precision Instruments

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- CFT101 - Introduction To Composites

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Humanities Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-PRAC_NRS - Practical Nursing, TC

Overview

Department(s)
Nursing

Degree Designation
Technical Certificate

Catalog Full Description
The Practical Nursing program provides the common body of knowledge and skills essential for the practical nurses entry into practice. The curriculum fulfills the educational requirements for licensure as a licensed practical nurse (LPN). Upon completion of the program, graduates are eligible to take the NCLEX-PN examination. This program does not offer credit for experiential learning. There are pathways for articulation to degree nursing programs. Students continuing their education for an ADN or BSN should consult a counselor regarding transfer of credit for all courses. The WSU Tech Practical Nurse program is aligned with the National Center for Education Statistics CIP code 51.3901: Licensed Practical/Vocational Nurse Training: prepares individuals to assist in providing general nursing care under the direction of a registered nurse, physician or dentist. Includes instruction in taking patient vital signs, applying sterile dressings, patient health education, and assistance with examinations and treatment.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Relationship -Centered Care: Provide nursing care that is relationship-centered, caring, culturally sensitive and based on the physiological, psychosocial and spiritual needs of clients with commonly occurring health alterations that have predictable outcomes.

Name
Teamwork and Collaboration: Collaborate with the client and members of the interprofessional health care team to promote continuity of client care and shared decision making.

Name
Evidence based Practice: Use current evidence as a basis for nursing practice

Name
Informatics: Use information and client care technology to support the delivery of safe, quality client care.

Name
Quality Improvement: Participate in quality improvement activities assessing their effect on client outcomes.

Name
Safety: Provide an environment that is safe and reduces risk of harm for clients, self, and others.

Name
Professionalism: Demonstrate accountability for client care that incorporates legal and ethical principles, regulatory guidelines, and standards of nursing practice

Name
Leadership: Use leadership skills that support the provision and coordination of client care

Program Costs
Practical Nursing, TC - $14,147.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech South – 3821 E. Harry, Wichita, KS 67218

Requirements

Simple Requirements

Program Requirements

Practical Nursing, TC

Type
Completion Requirement

Practical Nursing Requirements

Complete ALL of the following Courses:

- PNR119 - KSPN Pharm and Safe Med Admin - 2 Credits
- PNR120 - KSPN Foundations of Nursing - 4 Credits
- PNR121 - KSPN Foundations Nrsng Clin - 2 Credits
- PNR128 - KSPN Nursing Care of Adults I - 5 Credits
- PNR129 - KSPN Care of Adults I Clinical - 3 Credits
- PNR130 - KSPN Maternal Child Nursing - 2 Credits
- PNR131 - KSPN Mtrnl Child Nrs Clinical - 1 Credits
- PNR135 - KSPN Mental Health Nursing - 2 Credits
- PNR138 - KSPN Nursing Care of Adults II - 5 Credits
- PNR139 - KSPN Care of Adults II Clin - 2 Credits
- PNR141 - KSPN Care of Aging Adults - 2 Credits
- PNR166 - KSPN Leadership, Roles & Issue - 2 Credits
- BIO110 - Principles of Biology - 5 Credits
  OR CHM110 - General Chemistry - 5 Credits
- BIO150 - Human Anatomy & Physiology - 5 Credits

- PSY101 - General Psychology - 3 Credits
- PSY120 - Developmental Psychology - 3 Credits

Entry Requirements

- Composite NLN NEX Score of 138 or higher
- Verbal NLN NEX Score of 70 or higher

List additional Program Admission Requirements

Program Admissions Prerequisites

- Principles of Biology Or General Chemistry - BIO 110 requires Minimum Score of "C" within 5 years of completion date
- Anatomy and Physiology - Minimum Score of "B" within 5 years of completion date
- General Psychology - Minimum Score of "C"
- Developmental Psychology - Minimum Score of "C"
- ORI 015 PN Information Session

Upon Admission to the Program

- Pay for and pass a criminal background check and drug screen test at an agency designated by WSU Tech.
- Complete required health examinations and immunizations at their own expense, including COVID-19
- A minimum cumulative GPA of 2.5 in all prerequisite courses is also required for program acceptance.

Degree Maps

Degree Map Name
Practical Nursing, TC
Total Degree Map Credits
48
Degree Map Effective Catalog Year
2027 - 2027

Degree Map Narrative

The following courses must be completed prior to acceptance to the Practical Nursing program: BIO 110 or CHM 110, BIO 150, PSY 110 and PSY 120.

Year	Semester	Actual Credits	Progress Credits
-	-	16	0

Requirement Select
- BIO110 - Principles of Biology
  OR
- CHM110 - General Chemistry

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- BIO150 - Human Anatomy & Physiology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- PSY101 - General Psychology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PSY120 - Developmental Psychology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	16	0

Requirement Select
- PNR119 - KSPN Fundamentals of Pharmacology and Safe Medication Administration

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PNR120 - KSPN Foundations of Nursing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- PNR121 - KSPN Foundations of Nursing Clinicals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- PNR128 - KSPN Nursing Care of Adults I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- PNR129 - KSPN Nursing Care of Adults I Clinical

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	135
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	16	0

Requirement Select
- PNR130 - KSPN Maternal Child Nursing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- PNR131 - KSPN Maternal Child Nursing Clinical

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- PNR135 - KSPN Mental Health Nursing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- PNR138 - KSPN Nursing Care of Adults II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- PNR139 - KSPN Nursing Care of Adults II Clinical

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- PNR141 - KSPN Care of Aging Adults

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- PNR166 - KSPN Leadership, Roles, and Issues

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-QUAL_INS - Quality Assurance Inspection, TC

Overview

Department(s)
Manufacturing

Degree Designation
Technical Certificate

Catalog Full Description
The Quality Assurance Inspection program offers students the foundational skills to excel in various manufacturing environments. This program is designed for individuals aiming to ensure that products meet industry standards and customer expectations, focusing on quality control and inspection techniques. Through courses such as Quality Documentation, students will learn the importance of meticulous record-keeping in maintaining quality assurance standards. The Material Testing and Analysis course introduces students to various testing methods to assess material properties and detect potential defects. Additionally, the Root Cause Analysis course empowers students to investigate failures and implement effective solutions to improve manufacturing processes. Students will delve into essential topics such as Traceability, ensuring every component can be traced throughout its lifecycle, and Precision Measuring, which is critical for verifying product specifications. Understanding Human Factors helps students recognize the influence of human behavior on quality outcomes, while Metrology teaches them the principles of measurement necessary for quality control. This program incorporates two applied learning opportunities, providing students with hands-on experience in real manufacturing settings. By the end of the program, graduates will possess the skills to carry out thorough inspections, conduct tests, and ensure products are produced to the highest quality standards, ready to support diverse manufacturing sectors.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Identify safety hazards and proper work processes to ensure a safe working environment and company success.

Name
Apply proper quality management tools and Techniques to real world situations.

Name
Understand integrity of document control, including version control, approval processes, and distribution.

Name
Use variety of measurement techniques to ensure quality of manufacturing and or assembly applications.

Name

Interpret blueprint and specification documents for identification of proper application to inspection and procedures.

Program Costs

Quality Assurance Inspection, TC - $6,264.00

Cost does not include online fees, books or tools. Financial assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location

WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Quality Assurance Inspection, TC

Type

Completion Requirement

Quality Assurance Inspection Requirements

Complete ALL of the following Courses:

- QAI135 - Quality Assurance Orientation - 1 Credits
- QAI145 - Quality Management - 3 Credits
- QAI155 - Quality Doc and Traceability - 3 Credits
- QAI201 - Geo Dimensioning & Tolerance - 3 Credits
- QAI215 - Human Factors in Manufacturing - 3 Credits
- TFF120 - Metrology - 4 Credits
  OR MMG140 - Metrology - 4 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- AVC112 - Blueprint Reading - 2 Credits
- MCD106 - Precision Measuring - 2 Credits
- PDV115 - Work Ethics - 2 Credits

Entry Requirements

- Be 16 years of age or older
- Completion of application and related procedures

Degree Maps

Degree Map Name
Quality Assurance Inspection, TC
Total Degree Map Credits
24
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	11	0

Requirement Select

- QAI135 - Quality Assurance Orientation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- QAI201 - Geometric Dimensioning & Tolerance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- AVC112 - Blueprint Reading

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- MCD106 - Precision Measuring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- PDV115 - Work Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	13	0

Requirement Select
- QAI145 - Quality Management

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- QAI155 - Quality Documentation and Traceability

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- QAI215 - Human Factors in Manufacturing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- Quality Assurance Inspection Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-ROBOTICS - Robotics, TC

Overview

Department(s)
Automation and Advanced Tech

Degree Designation
Technical Certificate

Catalog Full Description
The WSU Tech Robotics program provides graduates with industry aligned courses designed to prepare them for entry into the highly technical field of Industrial and Collaborative Robotics. The program is a joint effort between WSU Tech and Wichita State Universitys National Institute for Aviation Research (NIAR). All students will experience a core curriculum focused on the foundational skills of robotics including usage, programming, design for application and implementation of robotic equipment and automated equipment to support manufacturing automation in areas such as welding, advanced coatings, and material handling. Working with industry recognized visual programming environments and a state-of-the-art robotics laboratory, students will apply cutting edge robotics research and electronic and mechanical systems to support the Industrial Internet of Things (IIoT). Students will gain the skills that support the design, build, implementation and data collection of IIoT using electronic sensors, small computer hardware and applications to collect, translate and deliver data to analytical business systems. Students will learn to program Programable Logic Controllers (PLC's), communicate between PLC's and robots, set up HMI's (human machine interface) to control and monitor the process, and even explore new advancements in Smart Factory environments such as machine learning and AI.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
At the end of this program students will be able to demonstrate through laboratory and classroom work the ability to apply proper techniques and practices in the assembly, repair, installation and maintenance of robotic equipment.

Name
At the end of this program students will be able to demonstrate through laboratory and classroom work the ability program and operate robotic equipment.

Name
At the end of this program students will be able to apply problem solving and critical thinking skills to troubleshoot robotic equipment.

Name
At the end of this program students will be able to demonstrate through laboratory and classroom work the ability to apply proper techniques and practices in identification, assembly, and interfacing of IoT components.

Name
At the end of this program students will be able to apply problem solving and critical thinking skills to survey robotic equipment.

Name
Demonstrate basic robotic programming skills.

Name
Demonstrate, through laboratory and classroom work, the ability to apply proper techniques and practices in virtual robot simulation and directly operate robotic equipment.

Name
Demonstrate basic and advanced programming skills for basic robotic equipment.

Name
Demonstrate problem solving and critical thinking skills to troubleshoot robotic equipment.

Name
Demonstrate the ability to program and manage Programmable Logic Controls for robotic manufacturing processes and advanced work cell integration.

Name
Demonstrate maintenance and support techniques for robotics equipment.

Name
Demonstrate electronic sensor selection, ability to apply proper techniques to interface and integrate IoT (Internet of Things) components and software.

Name
Demonstrate sensor data collection of IoT and sensor data delivery to BIG Data Analytics or BI (Business Intelligence Systems).

Name
Demonstrate advanced robot programming with Machine Learning.

Program Costs
Robotics, TC - $12,420.00

Cost does not include online fees, books or tools. Financial assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location

WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Robotics, TC

Type
Completion Requirement

Robotics Requirements

Complete ALL of the following Courses:

- ROB100 - Introduction to Robotics - 3 Credits
- ROB103 - Applied Robotics Lab I - 4 Credits
- ROB104 - Robotics Simulation - 2 Credits
- ROB106 - Robotics Controller Maint - 1 Credits
- ROB115 - Intro to Programming Robots - 4 Credits
- ROB118 - Basic Circuits - 3 Credits
- ROB120 - IoT: Internet of Things - 3 Credits
- ROB124 - Robotic Navigation - 2 Credits
- ROB128 - Basic PLC - 3 Credits
- ROB130 - IoT: Connected Things - 3 Credits
- ROB134 - Robotic Perception & Manipulat - 4 Credits
- ROB138 - Advanced PLC - 3 Credits
- ROB140 - IoT: Big Data Analytics - 3 Credits
- ROB145 - Applied Robotics Lab II - 2 Credits

Entry Requirements

Be 16 year of age or older

Degree Maps

Degree Map Name
Robotics, TC
Total Degree Map Credits
40
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	9	0

Requirement Select

- ROB100 - Introduction to Robotics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- ROB118 - Basic Circuits

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- ROB128 - Basic PLC

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	9	0

Requirement Select

- ROB115 - Introduction to Programming Robots in ROS

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select

- ROB124 - Robotic Navigation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ROB138 - Advanced PLC

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	6	0

Requirement Select
- ROB120 - IoT Fundamentals: Introduction to the Internet of Things

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ROB130 - IoT Fundamentals: Connected Things

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	12	0

Requirement Select
- ROB103 - Applied Robotics Lab I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- ROB104 - Robotics Simulation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- ROB106 - Robotics Controller Maintenance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- ROB140 - IoT Fundamentals: Big Data Analytics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- ROB145 - Applied Robotics Lab II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	4	0

Requirement Select

- ROB134 - Robotic Perception and Manipulation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-SHMTL_ASM - Aviation Sheetmetal Assembly, TC

Overview

Department(s)
Aviation

Degree Designation
Technical Certificate

Catalog Full Description
Aerospace Manufacturing Technology associate degree program is a sequence of courses designed to produce an assembly mechanic with a well-rounded understanding of the aerospace industry and the depth and breadth of knowledge which comes from general education courses. In this program students will complete a core set of foundational aviation courses and then move on to master the high demand skillset associated with an Aerospace Assembly Mechanic. The coursework will prepare students to complete the certification for Aerospace Core and Aerospace Assembly Mechanic endorsed by the National Association of Manufacturers (NAM).

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Measure aircraft components using appropriate precision instrumentation

Name
Install aircraft fasteners in a variety of aviation materials including sheet metal

Name
Demonstrate the appropriate safety procedures and process used in building aircraft components

Name
Utilize engineering drawings to assemble aircraft component

Name
Assemble sheetmetal aircraft components

Name
Identify the basic procedures and processes associated with aviation manufacturing

Name
Demonstrate an understanding of the role of quality assurance systems in aviation manufacturing

Name
Students will demonstrate inspection techniques utilized in aircraft systems and assemblies

Name
Demonstrate electrical bonding techniques utilized in aircraft systems and assemblies

Name
Apply knowledge of fractions, decimals, and percentages to solve real-world problems

Name
Execute proactive employability strategies to develop and manage a professional career

Program Costs

Aviation Sheetmetal Assembly, TC - $4,889.00

Aviation Sheetmetal Assembly, CBE - $4,889.00

Cost does not include online fees, books or tools. Financial assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location

WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Aviation Sheetmetal Assembly CBE

Type
Completion Requirement

Aviation Sheetmetal Assembly Requirements

Complete ALL of the following Courses:

- AER150 - Assembly Overview I - 3 Credits
- AER157 - Advanced Assembly - 3 Credits
- AVC102 - Precision Instruments - 1 Credits
- AVC104 - Quality Control Concepts - 1 Credits
- AVC105 - Aircraft Familiarization - 1 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- AVC112 - Blueprint Reading - 2 Credits
- AVC117 - Hand & Power Tools - 4 Credits
- AVC120 - Introduction to Sealing - 1 Credits
- AVC140 - Electrical Bonding & Grounding - 1 Credits

Aviation Sheetmetal Assembly

Type
Completion Requirement

Aviation Sheetmetal Assembly Requirements

Complete ALL of the following Courses:

- AER115 - Aerostructures Assembly - 6 Credits
- AVC105 - Aircraft Familiarization - 1 Credits
- AVC117 - Hand & Power Tools - 4 Credits
- AVC127 - Aviation Assembly Core - 7 Credits

Entry Requirements

- 16 years of Age
- Complete college admission documents

Degree Maps

Degree Map Name
Aviation Sheetmetal Assembly CBE, TC
Total Degree Map Credits
18
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	18	0

Requirement Select

- AER150 - Assembly Overview I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select

- AER157 - Advanced Assembly

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- AVC102 - Precision Instruments

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC104 - Quality Control Concepts

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC105 - Aircraft Familiarization

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC112 - Blueprint Reading

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- AVC117 - Hand & Power Tools

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AVC120 - Introduction to Sealing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC140 - Electrical Bonding & Grounding

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

Degree Map Name
Aviation Sheetmetal Assembly, TC
Total Degree Map Credits

18

Degree Map Effective Catalog Year

2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	18	0

Requirement Select

- AER115 - Aerostructures Assembly

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	6
Progress Credits	-
Contact Hours	165
Clinical	-
Criticality	No

Requirement Select

- AVC105 - Aircraft Familiarization

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- AVC117 - Hand & Power Tools

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- AVC127 - Aviation Assembly Core

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	7
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-TOOL_FIX - Tooling and Fixture Fabrication, TC

Overview

Department(s)

Aviation

Degree Designation

Technical Certificate

Catalog Full Description

The Tooling and Fixture Fabrication Program offers a multidisciplinary degree providing students with the knowledge and practical skills to become a tool and jig builder in multiple manufacturing environments. This program follows an apprenticeship model which blends theory-based classroom/lab instruction with on the job experience. Each week the students will have the opportunity to apply what they learn in the state-of-the-art labs and classrooms at the National Center for Aviation Training to manufacture aircraft at local aerospace organizations. The technical courses will include mechanical design, aviation/aerospace manufacturing, welding, machining, and electronics.

Program Level

Undergraduate

Effective Start Term

Fall 2026

Learning Outcomes

Name

Obtain general industry OSHA 10 card and apply safety principles in a work environment to minimize hazards and prevent losses to productivity.

Name

Learn and apply skills and knowledge from multidisciplinary technical courses in mechanical design, aviation/aerospace manufacturing, welding, machining, and electronics toward the construction and fabrication of tools, jigs, and fixtures.

Name

Build and fabricate tools, jigs, and fixtures from various materials in accordance with specifications and quality standards from blueprints, electronic drawings, and shop sketches for various applications in multiple manufacturing and related environments

Name

Analyze, through various methodologies, the quality and functionality of built tools, jigs, and fixtures to meet specifications, tolerances, and standards appropriate to their application.

Program Costs

Tooling and Fixture Fabrication, TC - $14,493.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location

WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Tooling and Fixture Fabrication, TC

Type

Completion Requirement

Tooling and Fixture Fabrication Requirements

Complete ALL of the following Courses:

- TFF108 - Welding Safety & Orientation - 1 Credits
- TFF110 - Tap and Die - 1 Credits
- TFF112 - Print Reading - 3 Credits
- TFF114 - Introduction to CAD I - 3 Credits
- TFF115 - Hand and Power Tools - 1 Credits
- TFF117 - Precision Measuring - 2 Credits
- TFF118 - Welding Applications - 4 Credits
- TFF120 - Metrology - 4 Credits
- TFF125 - Tooling Capstone - 4 Credits
- TFF130 - Machining I - 3 Credits
- TFF135 - Direct & Alternating Current - 4 Credits
- TFF140 - Machining II - 3 Credits
- TFF150 - Fixture Construction - 5 Credits
  OR TFF155 - Tool and Fixture Fab Capstone - 5 Credits
- AER106 - Aerospace Mfg Tooling Orientat - 1 Credits
- AER150 - Assembly Overview I - 3 Credits
- AVC103 - Geometric Dimension & Toleran - 1 Credits
- AVC104 - Quality Control Concepts - 1 Credits
- AVC107 - Fundamentals for Aerospace Mfg - 1 Credits
- AVC110 - Safety/OSHA 10 - 1 Credits
- AVC150 - Human Factors - 1 Credits
- AVC170 - Conflict Resolution - 1 Credits
- CAT101 - CATIA Part Design & Sketcher - 4 Credits

Entry Requirements

- Be 16 years of age or older
- Complete all admissions documents

Degree Maps

Degree Map Name

Tooling and Fixture Fabrication, TC

Total Degree Map Credits

54

Degree Map Effective Catalog Year

2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	15	0

Requirement Select

- TFF110 - Tap and Die

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select

- TFF112 - Print Reading

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- TFF115 - Hand and Power Tools for Aerospace Tooling

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select

- TFF117 - Precision Measuring

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- ACP106 - Aerospace Coatings & Materials

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- AVC104 - Quality Control Concepts

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC107 - Fundamentals for Aerospace Manufacturing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC110 - Safety/OSHA 10

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC150 - Human Factors

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- AVC170 - Conflict Resolution

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	6	0

Requirement Select
- TFF130 - Machining I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- TFF140 - Machining II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Summer	5	0

Requirement Select
- TFF108 - Welding Safety & Orientation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- TFF118 - Welding Applications

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	8	0

Requirement Select
- TFF114 - Introduction to CAD I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- AVC103 - Geometric Dimensioning & Tolerancing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- CAT101 - CATIA Part Design & Sketcher

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Spring	20	0

Requirement Select
- TFF120 - Metrology

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- TFF125 - Tooling Capstone

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	120
Clinical	-
Criticality	No

Requirement Select
- TFF135 - Direct & Alternating Current

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select

- TFF150 - Fixture Construction

OR

- TFF155 - Tooling and Fixture Fabrication Capstone

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	225
Clinical	-
Criticality	No

Requirement Select

- AER150 - Assembly Overview I

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-UMAA_NND - Unmanned Aircraft Systems, Cert A

Overview

Department(s)
Aviation

Degree Designation
Technical Certificate

Catalog Full Description
Unmanned Aircraft Systems (Drones) are revolutionizing data collection operations in multi sectors of the US economy including commercial industries, scientific research and local/state and Federal government entities. In this program students will learn the skills and knowledge to design, program and operate an effective UAS mission. Students will obtain a Part 107 license and rating while developing a safety - oriented mindset through risk management and situational awareness. Topics include GIS, Multirotor, UAS Ground School, Beyond Line of Site (BLoS) drone preparation, and FixedWing Flight.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Design and program an effective drone flight plan based on mission parameters

Name
Compare and contrast the various types of UAS hardware and software

Name
Describe the challenges of effectively, ethically and safely integrating a UAS into the National Airspace

Name
Demonstrate skills in Drone communications, navigation

Name
Demonstrate skills in photogrammetry

Name
Demonstrate skills in communicating data collection in ArcGIS systems and maps.

Program Costs
Unmanned Aircraft Systems, Technical Certificate A - $7,282.00

Cost does not include online fees, books, or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest combination of elective credits required.

Campus Location

WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Unmanned Aircraft Systems, Technical Certificate A

Type

Completion Requirement

Unmanned Aircraft Systems, Technical Certificate A Course List

Complete ALL of the following Courses:

- UAS180 - Ground School - 4 Credits
- UAS185 - Multi-Rotor Flight - 4 Credits
- UAS190 - Videography - 4 Credits
- UAS220 - UAS Multi-Rotor Maintenance - 5 Credits
- UAS225 - Post-Processing - 3 Credits
- UAS235 - Small Business Fundamentals - 3 Credits

Entry Requirements

Be 16 years of age or older

Degree Maps

Degree Map Name

Unmanned Aircraft Systems, Technical Certificate A

Total Degree Map Credits

23

Degree Map Effective Catalog Year

2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	23	0

Requirement Select

- UAS180 - Ground School

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- UAS185 - Multi-Rotor Flight

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- UAS190 - Videography

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- UAS220 - UAS Multi-Rotor Maintenance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select

- UAS225 - Post-Processing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select

- UAS235 - UAS Small Business Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-UNMA_NED - Unmanned Aircraft System, TC (CERT C)

Overview

Department(s)
Aviation

Degree Designation
Technical Certificate

Catalog Full Description
Unmanned Aircraft Systems (Drones) are revolutionizing data collection operations in multi sectors of the US economy including commercial industries, scientific research and local/state and Federal government entities. In this program students will learn the skills and knowledge to design, program and operate an effective UAS mission. Students will obtain a Part 107 license and rating while developing a safety - oriented mindset through risk management and situational awareness. Topics include GIS, Multirotor, UAS Ground School, Beyond Line of Site (BLoS) drone preparation, and FixedWing Flight.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Design and program an effective drone flight plan based on mission parameters

Name
Compare and contrast the various types of UAS hardware and software

Name
Describe the challenges of effectively, ethically and safely integrating a UAS into the National Airspace

Name
Demonstrate skills in Drone communications, navigation

Name
Demonstrate skills in photogrammetry

Name
Demonstrate skills in communicating data collection in ArcGIS systems and maps.

Program Costs
Unmanned Aircraft Systems Technical Certificate C - $15,625.00

Cost does not include online fees, books, or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest combination of elective credits required.

Campus Location

WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226

Requirements

Simple Requirements

Program Requirements

Unmanned Aircraft System Technical Certificate C

Type

Completion Requirement

Unmanned Aircraft System Technical Certificate C Course List

Complete ALL of the following Courses:

- UAS180 - Ground School - 4 Credits
- UAS185 - Multi-Rotor Flight - 4 Credits
- UAS190 - Videography - 4 Credits
- UAS220 - UAS Multi-Rotor Maintenance - 5 Credits
- UAS225 - Post-Processing - 3 Credits
- UAS235 - Small Business Fundamentals - 3 Credits
- UAS240 - Multi-Rotor Instructor - 5 Credits
- UAS250 - Advanced Post-Processing - 5 Credits
- UAS255 - Advanced Payloads - 3 Credits
- UAS260 - Fixed-Wing Construction - 3 Credits
- UAS267 - Advanced UAS Operations - 3 Credits
- UAS275 - Internship - 4 Credits
  OR UAS273 - Capstone - 4 Credits

Entry Requirements

Be 16 years of age or older

Degree Maps

Degree Map Name

Unmanned Aircraft System Technical Certificate C

Total Degree Map Credits

46

Degree Map Effective Catalog Year

2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	23	0

Requirement Select

- UAS180 - Ground School

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select

- UAS185 - Multi-Rotor Flight

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- UAS190 - Videography

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select

- UAS220 - UAS Multi-Rotor Maintenance

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select

- UAS225 - Post-Processing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- UAS235 - UAS Small Business Fundamentals

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	23	0

Requirement Select
- UAS240 - Multi-Rotor Instructor

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- UAS250 - Advanced Post-Processing

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	5
Progress Credits	-
Contact Hours	90
Clinical	-
Criticality	No

Requirement Select
- UAS255 - Advanced Payloads

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- UAS260 - Fixed-Wing Construction

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- UAS267 - Advanced UAS Operations

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- UAS273 - Capstone

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	180
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-WELDING - Welding Technology Level 2, TC

Overview

Department(s)
Manufacturing

Degree Designation
Technical Certificate

Catalog Full Description
This program allows students to gain knowledge and skills in cutting, arc welding, MIG and TIG welding and provides some exposure to oxy-acetylene cutting and welding. Program includes classroom and lab instruction in safety, blueprint reading and sketching, tools and materials used in the various forms of welding, machine adjustments and rod selection, skill requirements for various welding positions, weld testing and qualifications, fabrication and layout of various welding projects. Students will have the opportunity to complete one or more American Welding qualification tests. The WSU Tech Welding Technology program is aligned with the National Center for Education Statistics CIP code 48.0508: Welding Technology/Welder prepares individuals to apply technical knowledge and skills to join or cut metal surfaces. Includes instruction in arc welding, resistance welding, brazing and soldering, cutting, high-energy beam welding and cutting, solid state welding, ferrous and non-ferrous materials, oxidation-reduction reactions, welding metallurgy, welding processes and heat treating, structural design, safety, and applicable codes and standards.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Obtain general industry OSHA 10 card

Name
Fabricate a project to specifications utilizing a print

Name
Inspect and test welds to American Welding Society (AWS) specifications

Name
Demonstrate ability to produce fillet welds

Name
Demonstrate ability to produce full penetration open root welds

Program Costs
Welding Technology, Level 2 -$14,800.00

Cost does not include online fees, books or tools. Financial Assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211, WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226, CTEC + WSU Tech – 1301 E. 27th Terrace, Pittsburg, KS 66762

Requirements

Simple Requirements

Program Requirements

Welding Technology, TC - Level 2

Type
Completion Requirement

Welding Technology Level 2 Requirements

Complete ALL of the following Courses:

- CWG103 - Blue Print Reading for Welders - 3 Credits
- CWG105 - Welding Safety OSHA & Orient - 2 Credits
- CWG107 - Prin of Welding - 2 Credits
- CWG112 - Work Ethics - 2 Credits
- CWG115 - SMAW - 3 Credits
- CWG116 - SMAW II - 4 Credits
- CWG120 - GMAW - 3 Credits
- CWG121 - GMAW II - 4 Credits
- CWG125 - GTAW - 3 Credits
- CWG126 - GTAW II - 4 Credits
- CWG135 - Measurement and Specification - 1 Credits
- CWG141 - Oxy-Acetylene Weld & Cutting - 2 Credits

Welding Technology Level 2 Elective Requirements

Students must choose either CWG 242 or CWG 243 to fulfill this requirement

Earn at least 8 credits from the following:

- CWG130 - Robotic Welding - 4 Credits
- CWG145 - Fabrication & Design - 4 Credits
- CWG155 - Flux Cored Arc Welding - 4 Credits
- CWG160 - Welding Internship - 4 Credits
- CWG242 - SMAW D1.1 Qualification - 4 Credits
- CWG243 - GMAW D1.1 Qualification - 4 Credits

Entry Requirements
Be 16 years of age or older

Degree Maps

Degree Map Name
Welding Technology Level 2
Total Degree Map Credits
41
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	17	0

Requirement Select
- CWG103 - Blue Print Reading for Welders

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- CWG105 - Welding Safety OSHA and Orientation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CWG120 - GMAW

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CWG121 - GMAW II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- CWG135 - Measurement and Specification

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Requirement Select
- CWG112 - Work Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- CWG107 - Principles of Welding

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 1	Spring	16	0

Requirement Select
- CWG115 - SMAW

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CWG116 - SMAW II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- CWG125 - GTAW

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CWG126 - GTAW II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- CWG141 - Oxy Acetylene Welding & Cutting

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Year	Semester	Actual Credits	Progress Credits
Year 2	Fall	8	0

Requirement Select
- Welding Technology Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Requirement Select
- Welding Technology Elective

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	-
Clinical	-
Criticality	No

Total General Education Credits	Total Major Credits
0	0
Total Minor Credits	**Total Elective Credits**
0	0

TC-WELD_FAST - Welding Technology Level 1, TC

Overview

Department(s)
Manufacturing

Degree Designation
Technical Certificate

Catalog Full Description
This program allows students to gain knowledge and skills in cutting, arc welding, MIG and TIG welding and provides some exposure to oxy-acetylene cutting and welding. Program includes classroom and lab instruction in safety, blueprint reading and sketching, tools and materials used in the various forms of welding, machine adjustments and rod selection, skill requirements for various welding positions, weld testing and qualifications, fabrication and layout of various welding projects. Students will have the opportunity to complete one or more American Welding qualification tests. The WSU Tech Welding Technology program is aligned with the National Center for Education Statistics CIP code 48.0508: Welding Technology/Welder prepares individuals to apply technical knowledge and skills to join or cut metal surfaces. Includes instruction in arc welding, resistance welding, brazing and soldering, cutting, high-energy beam welding and cutting, solid state welding, ferrous and non-ferrous materials, oxidation-reduction reactions, welding metallurgy, welding processes and heat treating, structural design, safety, and applicable codes and standards.

Program Level
Undergraduate

Effective Start Term
Fall 2026

Learning Outcomes

Name
Obtain general industry OSHA 10 card

Name
Fabricate a project to specifications utilizing a print

Name
Inspect and test welds to American Welding Society (AWS) specifications

Name
Demonstrate ability to produce fillet welds

Name
Demonstrate ability to produce full penetration open root welds

Program Costs
Welding Technology Level 1, TC - $6,400.00

Cost does not include online fees, books or tools. Financial assistance may be available to those who qualify. Total calculated based on the lowest cost combination of elective credits required.

Campus Location
WSU Tech City Center – 301 S. Grove, Wichita, KS 67211, WSU Tech Main Campus - National Center for Aviation Training (NCAT) - 4004 N. Webb Rd., Wichita, KS 67226, CTEC + WSU Tech – 1301 E. 27th Terrace, Pittsburg, KS 66762

Requirements

Simple Requirements

Program Requirements

Welding Technology Level 1

Type
Completion Requirement

Welding Technology Level 1 Requirements

Complete ALL of the following Courses:

- CWG103 - Blue Print Reading for Welders - 3 Credits
- CWG105 - Welding Safety OSHA & Orient - 2 Credits
- CWG107 - Prin of Welding - 2 Credits
- CWG112 - Work Ethics - 2 Credits
- CWG120 - GMAW - 3 Credits
- CWG121 - GMAW II - 4 Credits
- CWG135 - Measurement and Specification - 1 Credits

Entry Requirements

- Be 16 years of age or older
- Complete required admission documents

Degree Maps

Degree Map Name
Welding Technology, TC Level 1
Total Degree Map Credits
17
Degree Map Effective Catalog Year
2027 -

Year	Semester	Actual Credits	Progress Credits
Year 1	Fall	17	0

Requirement Select

- CWG103 - Blue Print Reading for Welders

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	60
Clinical	-
Criticality	No

Requirement Select
- CWG105 - Welding Safety OSHA and Orientation

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CWG107 - Principles of Welding

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	45
Clinical	-
Criticality	No

Requirement Select
- CWG112 - Work Ethics

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	2
Progress Credits	-
Contact Hours	30
Clinical	-
Criticality	No

Requirement Select
- CWG120 - GMAW

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	3
Progress Credits	-
Contact Hours	75
Clinical	-
Criticality	No

Requirement Select
- CWG121 - GMAW II

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	4
Progress Credits	-
Contact Hours	105
Clinical	-
Criticality	No

Requirement Select
- CWG135 - Measurement and Specification

Course Requirement Group	
Course Requirement Group (Free Text)	-
Minimum Grade	-
Area	-
Actual Credits	1
Progress Credits	-
Contact Hours	15
Clinical	-
Criticality	No

Total General Education Credits	**Total Major Credits**
0	0
Total Minor Credits	**Total Elective Credits**
0	0

All Courses

AAD110 - Data Exploration and Interpretation

Overview

Department
Information Technology

Course Description
This course will enable the student to examine the role data analytics plays in helping to make better decisions based on data. The student will explore various models that can be utilized to help summarize, visualize, and interpret data in a variety of disciplines.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Spring 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Students will understand how data are used by professionals to address real-world problems

Name
Students will understand that data are used in all facets of modern life

Name
Students will understand how data support science to identify and tackle real-world problems in our communities

Name
Students will analyze statistical graphics to identify patterns in data and to connect these patterns back to the real world

Name
Students will understand that by treating photos, words, numbers, and sounds as data, we can gain insight into the real world

Name
Students will learn to analyze data, including: posing questions that can be answered by considering relations among variables in a data set, using collected data to generate hypotheses for future data collection, critically evaluating shortcomings and strengths in the data and the data collection process, and informally evaluating hypotheses using data at hand.

AAD120 - Data Visualization

Overview

Department
Information Technology

Course Description
This course provides students with an introduction to data literacy and quantitative skills. These skills are prerequisites for data-driven fields of study, professional success, and everyday life. In this course, data literacy is defined as “to understand, explore, and communicate with data”. This course provides students the opportunity to learn through hands on experience with data and will help students share information about people, places, things, events, and phenomena, and answer questions about the world around us.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Summer 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Students will understand the meaning of data literacy

Name
Students will be proficient in quantitative skills

Name
Students will have knowledge of basic statistical concepts

Name
Develop critical thinking competencies

Name
Students will learn how to communicate with data

Name
Students will demonstrate knowledge of Tableau

Name
Students will learn design principles

Name
Students will demonstrate proficiency in visualization best practices and methods

Name
Students will develop chart building skills and competencies

Name
Students will make visual comparisons using data

Name
Students will communicate with interactive stories

AAD130 - Python Data Foundations

Overview

Department
Information Technology

Course Description
Python/R Data Foundations course is designed to introduce students to the exciting opportunities available at the intersection of data analysis, computing, and mathematics through hands-on activities. Data are everywhere, and this curriculum will help prepare students to live in a world of data. The curriculum focuses on practical applications of data analysis to give students concrete and applicable skills. This course engages students with a wider world of data that fall into the "Big Data" paradigm and are relevant to students' lives. Statistical inference is taught algorithmically, using modern randomization and simulation techniques. Students will learn to find and communicate meaning in data, and to think critically about arguments based on data.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Students will interpret categorical and quantitative data

Name
Students will make inferences and justify conclusions

Name
Students will use conditional probability and rules of probability to solve for possible outcomes

Name
Students will use probability to make decisions

Requirements

Simple Requirements

A minimum grade of 'C' in Course AAD120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AAD120 - Data Visualization

AAD140 - SQL Database Applications

Overview

Department
Information Technology

Course Description
This course will learn to use SQL to streamline their work An overview of relational database management systems is then followed by setting up MySQL Workbench and design a database using examples. Query single and multiple tables, modify data using SQL querying. This course will also cover aggregate functions, flow controls statements, error handling, and subqueries. Best practices for writing SQL and designing indexes and tables will also be covered.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Install, configure, and use MySQL Workbench to restore a database

Name
Explore different data types such as string, numeric, and data and time

Name
Query a single table using the basic SQL Select statement and the FROM, WHERE, and ORDER BY clauses

Name
Query multiple tables by understanding various types of table relationships

Name
Modify data in tables using the INSERT, UPDATE, and DELETE statements

Name
Use aggregate functions to group and summarize data

Name
Detect bad data, duplicates, and irrelevant values while processing data

Requirements

Simple Requirements

A minimum grade of 'C' in Course AAD130

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AAD130 - Python Data Foundations

AAD150 - Data Engineering

Overview

Department
Information Technology

Course Description
In this course students will learn the skills necessary to to integrate, transform and consolidate data from various structured and unstructured data systems into structures that are suitable for building analytics solutions. Topics will include data storage, data processing and data security.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Students will design and implement Data Storage

Objective
Design a data storage structure', Design a partition strategy', Design the serving layer', Implement physical data storage structures', Implement logical data structures', Implement the serving layer

Name
Students will design and develop data processing

Objective
Ingest and Transform Data', Design and Develop a batch processing solution', Design and Develop a stream processing solution', Manage batch pipelines

Name
Students will design and implement data security

Objective
Design security for data policies and standards', Implement data security

Requirements

Simple Requirements

A minimum grade of 'C' in Course AAD140

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AAD140 - SQL Database Applications

AAD160 - Data Modeling

Overview

Department
Information Technology

Course Description
In this course students will explore the process of simplifying the diagram or data model of a software system by applying certain formal techniques. It involves creating and expressing a conceptual representation of data objects and their relationships to one another.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Understand the principles and concepts of data modeling.

Name
Develop proficiency in creating entity-relationship diagrams (ERDs).

Name
Demonstrate the ability to normalize and denormalize databases.

Name
Apply various data modeling techniques to real-world scenarios.

Name
Evaluate and choose appropriate data modeling tools for different projects.

Requirements

Simple Requirements

A minimum grade of 'C' in Course AAD140

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AAD140 - SQL Database Applications

AAD210 - Power BI & Tableau

Overview

Department
Information Technology

Course Description
This course covers the content required for the Power BI Data Analyst Associate and Tableau Desktop Specialist certifications that validates the skills and knowledge required to enable businesses to maximize the value of their data assets by using Power BI and Tableau.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Master the fundamentals of data visualization using Power BI and Tableau.

Name
Create interactive dashboards and reports to present data insights effectively.

Name
Utilize advanced features such as calculated fields, parameters, and filters.

Name
Incorporate best practices for design and layout in data visualization projects.

Name
Integrate data from multiple sources and formats into Power BI and Tableau.

AAD220 - Predictive Analytics

Overview

Department
Information Technology

Course Description
Students will deepen their understanding of data analysis processes and methods, with a particular focus on descriptive analytics and predictive analytics methods. In the process, students will advance their proficiency with industry-leading analytics software, grow increasingly comfortable with analytics programming, and refine their presentation and reporting skills.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Gain proficiency in statistical techniques for predictive modeling.

Name
Understand the process of data preprocessing and feature engineering.

Name
Apply regression, classification, and clustering algorithms to make predictions.

Name
Evaluate model performance using metrics like accuracy, precision, and recall.

Name
Interpret and communicate the results of predictive analytics models.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CLD138

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CLD138 - Object-Oriented Programming (Python)

AAD230 - Advanced SQL Applications

Overview

Department
Information Technology

Course Description
This course will provide students with the algebraic skills necessary to begin understanding abstract mathematical concepts that involve arithmetic and algebraic manipulation, equations and inequalities, graphs, analysis of equations and graphs, and real-world applications.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Master complex SQL queries for data manipulation and analysis.

Name
Utilize SQL functions, subqueries, and joins effectively.

Name
Optimize database performance through indexing and query tuning.

Name
Implement advanced SQL techniques such as window functions and recursive queries.

Name
Apply SQL in real-world scenarios including data warehousing and business intelligence.

Requirements

Simple Requirements

A minimum grade of 'C' in Course AAD140

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AAD140 - SQL Database Applications

AAD240 - Data Analytics Internship

Overview

Department
Information Technology

Course Description
In this project-based course, students will apply the skills and knowledge acquired throughout the Data Analytics program to a real-world project. Students will produce a critical reflection on their capstone experience demonstrating how they have addressed specific learning goals. A successful project will include a project presentation to representatives of industry, faculty and fellow students.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
3

Other Hours

Other Hours
Min:
135

Course Learning Outcomes

Learning Outcomes

Name
Demonstrates effective workplace behaviors

Name
Applied your knowledge, skills, experience to a work environment

Name
Acquired new learning through challenging and meaningful activities

Name
Reflected on the content and process of the learning experience

Name
Advocated for your own learning in alignment with internship goals

Name
Demonstrated professional skills in the workplace

Name
Built and maintained positive professional relationships

Name
Demonstrated awareness of community and/or organizational issues

Name
Identified, clarified and/or confirmed professional direction as it relates to your academic studies and future career path

Name
Developed self-understanding, self-discipline, maturity and confidence

Name
Developed strong networking/mentoring relationships

ACC105 - Fundamentals of Accounting

Overview

Department
Professional Studies

Course Description
This is a course designed for students who want a working knowledge of accounting, but not to the extent as a person working primarily in the accounting field. Although the basic accounting principles are learned and applied, the course, in comparison to Principles of Accounting I, covers a smaller amount of material at a somewhat slower pace. It is recommended for students with no previous accounting background.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explain the basic accounting equation and understand the basics of accounting including debits, credits and each accounts normal balance side

Objective
Define accounting and identify parts of the basic accounting equation', Record transactions involving all elements of the fundamental', accounting equation', Use the rules of the debits and credits in analyzing and recording', transactions into Taccounts', Use the rules of the debit and credits in analyzing and recording', transactions into a general journal', Post entries from twocolumn general journal to general ledger', Prepare a trial balance from the ledger accounts', Prepare the financial statements for a sole proprietorship Income', Statement Statement of Owners Equity and Balance Sheet

Name
The student will be able to successfully demonstrate the ability to explain the accrual basis of accounting including journalizing and posting entries as well as adjusting and closing entries in the accounting cycle

Objective
Complete the accounting cycle by journalizing and posting adjusting', entries', Define the accrual basis of accounting', Complete the accounting cycle by journalizing and posting closing', entries at end of fiscal year', Prepare a postclosing trial balance', List the steps of the accounting cycle

Name
The student will be able to reconcile a bank statement as well as prepare the appropriate journal entries related to it.

Objective
Reconcile a bank statement', Journalize required journal entries directly from the bank reconciliation', Record journal entries to establish and reimburse a Petty Cash Fund', Record the journal entries to establish a Change Fund', Record journal entries for transactions involving Cash Short and Over

Name
The student will be able to calculate earnings based on a variety of methods as well as prepare the journal entries associated with payroll.

Objective
Calculate total earnings based on hourly piecerate on commission', Determine deductibles from employees gross earnings', Complete a payroll register', Journalize payroll entry and payment of payroll from payroll register', Calculate employers payroll tax expense and journalize the related', entry', Calculate and journalize entries for Workers Compensation Insurance

Name
The student will be able to describe and use specific accounts used in a merchandising business as well as journalizing into special journals and posting into subsidiary ledgers and prepare financial statements.

Objective
Describe the specific accounts used by a merchandising business', Journalize transactions into the four special journals Sales Cash', Receipts Purchases and Cash Payments', Post transactions from the four special journals into the general ledger', accounts receivable ledger and accounts payable ledger', Prepare a schedule of accounts receivable or accounts payable', Calculate cash discounts according to credit terms', Journalize and post adjusting and closing entries for merchandising', business', Prepare the financial statements for a merchandising business

ACC130 - Managerial Accounting

Overview

Department
Professional Studies

Course Description
This course studies management tools for business decision making, including study of the evaluation of financial condition and performance of business. Emphasis is given to the process of formulating and utilizing sound accounting data to evaluate alternatives involved in managerial decision-making necessary for planning, execution, and control of a business enterprise.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Hybrid

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Explain the difference between managerial and financial accounting

Objective
Explain the differences between managerial and financial accounting', Describe the value chain and its usefulness in analyzing a business', Identify and explain the management tools used for continuous improvement', Explain the balanced scorecard and its relationship to performance measures and prepare an analysis on nonfinancial data Identify the standards of ethical conduct for management accountants

Name
Evaluate the ethical dimensions of managerial accounting

Objective
Explain how to take into account the interests of external parties customers owners suppliers governmental agencies and the local community when they make decisions', Identify and explain when ethical conflicts arise what responsibilities do management accountants have to help managers balance those interests', Explain guidance provided by the Institute of Management Accountants which has issued standards of ethical conduct for practitioners of managerial accounting and financial management

Name
Apply management accounting techniques to planning and control of operations including: Master Budget and Capital Budget, Variance Analysis, Cost Volume Profit Analysis, and Cost Allocations

Objective
Define budgeting and describe how it relates to the concepts of comparability and understandability', Identify the elements of a master budget in different types of organizations and the guidelines forpreparing budgets', Prepare the operating budgets that support the financial budgets', Prepare a budgeted income statement a cash budget and a budgeted balance sheet', Explain why budgeting is essential to the management process', Define budgeting and explain managements role in the budgeting process', Define standard costs and explain why standard costing is useful', Compute standard unit costs and describe the role of flexible budgets in variance analysis tocontrol costs', Compute and analyze direct materials variances', Compute and analyze direct labor variances', Compute and analyze overhead variances', Explain how variances are used to evaluate a businesss performance', Define cost behavior and identify variable fixed and mixed costs', Separate mixed costs into their variable and fixed components and prepare a contribution marginincome statement', Perform costvolumeprofit CVP analysis', Define breakeven point and use contribution margin to determine a companys breakeven pointfor multiple products', Discuss how managers use CVP analysis in the management process and how they can projectthe profitability of products and services', Describe how managers use information about costs in the management cycle', Explain how managers classify costs and how they use these cost classifications', Compare how service retail and manufacturing organizations report costs on their financialstatements and how they account for inventories', Describe the flow of costs through a manufacturers inventory accounts', Define product unit cost and compute the unit cost of a product or service', Define cost allocation and explain how cost objects cost pools and cost drivers are used toassign manufacturing overhead costs

Name
Interpret cost behaviors for decision making

Objective
Define cost behavior and explain how managers use this concept in the management cycle', Identify variable fixed and mixed costs and separate mixed costs into their variable and fixed components', Define the costvolumeprofit CVP analysis and discuss how managers use it as a tool for planning and control', Define breakeven point and use contribution margin to determine a companys breakeven point for multiple products', Use CVP analysis to project the profitability of products and services

Name
Communicate managerial accounting information in an appropriate format

Objective
Identify interpret explain the formulation of managerial accounting information which is aimed at helping managers within the organization make decisions', Compute and explain internally developed managerial accounting templates which are designed to provide timely information aimed at helping managers within the organization make decisions', Develop necessary communication skills needed to communicate about the changes results and the information pertaining to the managerial accounting information', Develop skills necessary to ensure that managerial accounting information being provided is accurate and in a format that explains the information in such a way that management with the organization can make decisions

Name
Track the flow of costs through the manufacturing process

Objective
Describe the process costing system identify the reason for its use and discuss its role in the management cycle', Explain the role of the Work in Process Inventory accounts in a process costing system', Define equivalent production and compute equivalent units', Prepare a process cost report using the first in first out costing and average costing methods', Evaluate operating performance using information about product cost

Name
Define, explain, and prepare costing systems for jobs and projects

Objective
Define the role that information about costs plays in management processes and explain why unit cost is important', Distinguish between the two basic types of product costing systems and identify the information each provides', Explain the cost flow in a manufacturers job order costing system', Prepare a job order cost card and compute a job orders product unit cost', Apply job order costing to a service organization and distinguish between job order costing and project costing

Name
Define, and explain how managers make short-run decisions with incremental analysis

Objective
Explain how managers make shortrun decisions', Define and perform incremental analysis for outsourcing decisions special order decisions segment profitability decisions sales mix decisions and sell or processfurther decisions

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACC170

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACC170 - Principles of Accounting II

ACC137 - QuickBooks

Overview

Department
Professional Studies

Course Description
This course introduces students to the fundamental concepts and operations necessary to use QuickBooks. Emphasis is placed on basic functions and familiarity with the QuickBooks software. Topics include: Introduction to basic accounting concepts, introduction to QuickBooks concepts, working with customers and vendors, performing banking tasks, and creating and maintaining computer files.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Students will be able to identify the steps in setting up QuickBooks.

Objective
Students will be able to identify basic accounting concepts, Students will be able to identify the attributes of QuickBooks editions, Define features of the QuickBooks window, Open a portable company file, Backup and restore a company file

Name
Students will be able to work effectively with customers

Objective
identify Customer Center features and create new customers and jobs, Create and edit various lists, Create invoices and sales receipts and receive payments, Correct errors in customer transactions, Create customer-related reports

Name
Students will be able to work effectively with vendors

Objective
Identify features of the Vendor Center and Vendor Lists, Enter and pay bills, Write and print checks, Correct errors in vendor transactions, Produce vendor and profit & loss reports

Name
Students will be able to perform banking tasks

Objective
Create a credit card account, Transfer funds and make deposits, Manage debit and credit card transactions, Reconcile accounts, Create banking reports, Use online banking with QuickBooks

Name
Students will be able to create a company file

Objective
Plan and create a company file, Edit your QuickBooks preferences, Customize a company file, Customize the Chart of Accounts, Add services, Add users and assign permissions

Name
Students will be able to work with balance sheet accounts and budgets

Objective
Create and use current asset accounts and transfer funds between accounts, Track petty cash, Create and use fixed asset accounts and items, Record depreciation of assets, Pay current liabilities and set up a long term liability, Create and manage equity accounts

Name
Students will be able to use QuickBooks for payroll

Objective
Manage the Employees List, Input information from an outside payroll service into QuickBooks, Set up QuickBooks to run payroll, Create paychecks, Track and pay payroll liabilities, Fix payroll errors, Process payroll forms and reports

Name
Students will be able to understand the Accounting Cycle, reporting and closing the books

Objective
Apply the accounting cycle and process and GAAP, Utilize class tracking in transactions and running reports, Create financial statements and reports, Make general journal entries, Close the books in QuickBooks

ACC152 - Payroll Accounting

Overview

Department
Professional Studies

Course Description
Provides an understanding of the laws that affect a company’s payroll structure and practical application skills in maintaining payroll records. Topics include payroll tax laws, payroll tax forms, payroll and personnel records, computing wages and salaries, taxes affecting employees and employers and analyzing and journalizing payroll transactions. Provides first-hand experience in calculating payroll, completing payroll taxes and preparing records and reports. Topics include payroll tax entries, preparing payroll registers and maintaining employees’ earnings records using computerized software.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will explore the various federal laws and the impact they have on personnel and payroll operations

Objective
Identify the various laws that affect employers in their payroll operations', Examine the recordkeeping requirements of these laws', Describe the employment payroll procedures generally followed in a Human Resources Department', Recognize the various personnel records used by businesses and know the type of information shown on each form', Identify the payroll register and the employees earning record', Use the procedures employed in a typical payroll accounting system', Explain the importance of a thorough recordkeeping system

Name
The student will be able to evaluate different types of employee pay including applicable withholdings and taxes

Objective
Apply all Federal and State tax withholding requirements, Calculate and apply voluntary and involuntary employee and employer withholdings from pay, Determine worker classification and impact on withholdings and pay

Name
The student will be able prepare payroll registers, employees earnings records, create IRS tax forms, and journalize and post payroll entries. Also, the student will learn what adjustments need to be made at the end of the fiscal period

Objective
Understand account classifications and how to determine account balances in payroll accounting, Apply knowledge of different employee payment methods, Apply knowledge of IRS rules and ability to complete tax forms

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACC160

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

No selection provided

ACC160 - Principles of Accounting I

Overview

Department
Professional Studies

Course Description
This course is designed to help the students develop a basic understanding of accounting theory, concepts and procedures. It will provide a foundation for further study for the student seeking a career in accounting or business administration or for the student entering into the occupational field.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify issues relating to a merchandising business including transactions using the perpetual and periodic inventory systems

Objective
Identify the management issues related to merchandising businesses', Describe the terms of sale related to merchandising transactions', Identify and describe the basic components of a classified balance sheet', Prepare an income statement and record merchandising transactions under the perpetual inventory system and the periodic inventory system

Name
The student will be able to explain management decisions related to inventory accounting and how income is measured based on this information

Objective
Explain the management decisions related to inventory accounting evaluation of inventory level and the effects of inventory misstatements on income measurement', Define inventory cost contrast goods flow and cost flow and explain the lowerofcostormarket LCM rule', Calculate inventory cost under the perpetual inventory system and the periodic inventory system using various cost methods', Explain the effects of inventory costing methods on income determination and income taxes

Name
The student will be able to perform methods of controlling cash including a bank reconciliation as well as accounting for uncollectible accounts and promissory notes receivable

Objective
Identify and explain the management and ethical issues related to cash and receivables', Define cash equivalents and explain methods of controlling cash including bank reconciliation', Apply the allowance method of accounting for uncollectible accounts', Define promissory note and make calculations for promissory notes receivable

Name
The student will be able to identify management issues associated with internal control as it relates to common merchandising transactions.

Objective
Identify the management issues associated with internal control', Describe the components of internal control control activities and limitations of internal control', Apply internal control activities to common merchandising transactions'

Name
Identify and demonstrate the effects of transactions and economic events on the financial statements in corporations and other business entities.

Name
Measure the value of assets and liabilities, including an introduction to fair value accounting.

Name
Prepare the fundamental financial statements per US GAAP.

Name
Analyze and interpret the information presented in the financial statements.

Name
Evaluate the quality of business decisions in an ethical context.

Name
Demonstrate an awareness of IFRS.

ACC170 - Principles of Accounting II

Overview

Department
Professional Studies

Course Description
This course is a continuation of ACC 160 Principles of Accounting I. It is a study of corporations which includes organization and operations; stockholders' equity, earnings and dividends; long term assets and liabilities, investments, income tax and their effort on business decisions; and assessing a company's financial performance.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify and define long term assets, capital and revenue expenditures as well as issues relating to natural resources, depletion, and acquiring and amortizing intangible assets

Objective
Identify types of longterm assets and explain management issues related to accounting for them', Distinguish between capital and revenue expenditures', Define depreciation and calculate using straightline production method and decliningbalance', Identify issues related to accounting for natural resources calculate depletion', Identify issues related to acquiring and amortizing intangible assets

Name
The student will be able to identify management issues related to contributed capital, stockholders equity, preferred stock, issuance of stock for cash, other assets and treasury stock

Objective
Identify and explain the management issues related to contributed capital', Identify the components and characteristics of stockholders equity and preferred stock', Account for the issuance of stock for cash other assets and treasury stock

Name
The student will be able to identify management issues related to long-term debt.

Objective
Identify the management issues related to longterm debt', Describe the features of a bond issue and the major characteristics of bonds', Record bonds issued at face value and at a discount or premium', Use present values to determine the value of bonds', Amortize bond discounts and bond premiums using the straightline and effective interest methods', Account for the retirement of bonds and the conversion of bonds into stock

Name
The student will be able to define and identify components of a corporate income statement

Objective
Define quality of earnings and identify the components of a corporate income statement', Show the relationships among income taxes expense deferred income taxes and net of taxes', Computer earnings per share and book value per share', Define comprehensive income and describe the statement of stockholders equity', Account for stock dividends and stock splits

Name
The student will be able to demonstrate the ability to describe the principal purposes and uses of the statement of cash flow as well as analyze the statement of cash flows

Objective
Describe the principal purposes and uses of the statement of cash flows and identify its components', Analyze the statement of cash flows', Use the indirect method to determine cash flows from operating activities', Determine cash flows from investing activities and financing activities

Name
The student will be able to identify and explain management issues related to investments and the reporting implications of consolidated financial statements and debt investments

Name
Analyze and interpret the information presented in the financial statements.

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACC160

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACC160 - Principles of Accounting I

ACC230 - Tax Accounting

Overview

Department
Professional Studies

Course Description
This course provides students with a comprehensive understanding of tax principles and practices, focusing on individual taxation. It will include an introduction to business taxation. Through a combination of theoretical concepts and practical applications, students will receive an overview knowledge of the complexities of the tax code. The course emphasizes critical thinking, problem-solving, and ethical considerations in the context of taxation.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Understand Tax Basics:Explain the fundamental principles and rules governing individual and business taxes.

Name
Prepare Tax Returns:Develop the ability to accurately complete individual tax returns, considering income, deductions, and credits.

Name
Navigate Business Taxes:Learn how to assess tax implications for different business types, such as partnerships and corporations.

Name
Apply Tax Planning:Identify and use basic strategies to minimize tax liabilities for individuals and businesses.

Name
Use Tax Software:Become proficient in utilizing tax preparation software for efficient and accurate tax compliance.

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACC170

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACC170 - Principles of Accounting II

ACP100 - Introduction to Coatings & Paint Technology

Overview

Department
Aviation

Course Description
The objective of this course is to discuss the fundamentals of paint composition, application, and processing. As such, basic ingredients of paint properties will be discussed. Paint selection, performance criteria, application methods, defects, problem resolution, future paint and raw materials needs will be discussed.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the components of aerospace paint and coatings

Objective
Identify the elements of aerospace paint and coatings including resins solvents pigments and additives', Identify the formulations of aerospace paint and coatings', Identify the types of paint and coatings in aerospace', Identify the properties of each type of paintcoating', Identify common composition issues with aerospace painting and coatings', Apply problem solving techniques to industry based scenarios involving painting and coating composition issues', Identify corrosion control properties in coatings', Identify color and appearance properties in coatings', Identify rheological properties of coatings', Identify the planning process used in the surface preparation of aircraft', Identify surface preparation techniques', Demonstrate surface preparation techniques

Name
The student will be able to demonstrate proper surface preparation techniques

Objective
Identify the planning process used in the surface preparation of aircraft', Identify surface preparation techniques', Demonstrate surface preparation techniques

Name
The student will be able to effectively demonstrate application techniques for painting and coatings of aircraft

Objective
Identify application techniques used for painting and coatings', Demonstrate application techniques for painting and coating aircraft', Identify common application issues', Apply problem solving techniques to industry based scenarios

Name
The student will be able to demonstrate proper drying/curing techniques of conventional paints

Objective
Identify dryingcuring techniques used for conventional paints waterborne coatings and powder coatings', Identify Ultra Violet UV Infrared IR and Electron Beam EB cure technology', Demonstrate dryingcuring techniques

Name
The student will be able to apply the fundamentals of adhesion theory to industry based problem sets

Objective
Identify the fundamentals of adhesion theory', Apply adhesion theory to industry based problem sets

Name
The student will be able to apply appropriate regulations/standards to the workplace

Objective
Locate the appropriate MSDS', Apply MSDS information to the workplace', Identify OSHA regulations in connection with painting and coatings', Identify NDI techniques used in painting and coatings testing', Apply basic NDI techniques to industry based scenarios

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

ACP101 - Surface Preparation & Coatings

Overview

Department
Aviation

Course Description
This course is a study of surface preparation from various coating and painting applications on all interior and exterior aircraft components. The content includes safety procedures including hazardous waste, surface preparations techniques, material application techniques and effectively using industry based technologies.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to safely utilize all tools and materials in surface preparations and coatings

Objective
Demonstrate ability to use tools and materials according to manufacturers safety procedures', Demonstrate appropriate hazardous waste procedures', Identify MSDS Material Safety Data Sheet', Describe proper use of respiratory safety equipment', Demonstrate proper use of respiratory safety equipment

Name
The student will be able to demonstrate proper documentation procedure and processes

Objective
Demonstrate proper recordkeeping for process documentation', Document methods and material used on paint log', Demonstrate ability to review all process instructions internal OEM and manufacturers specifications

Name
The student will be able to demonstrate proper use of surface preparation equipment

Objective
Adjust spray gun to proper air pressure', Adjust pattern size and material from spray gun', Effectively maintain a spray gun by removing all evidence of material used to instructors satisfaction Ex gun cap fluid tube etc

Name
The student will be able to demonstrate basic surface preparation techniques

Objective
Demonstrate and initiate ability to properly prepare a surface for sanding priming and paint by removing all contaminants such as wax grease oil etc', Identify the procedure of featheredging and when it is necessary in the surface preparation process', Demonstrate featheredging by sanding a broken paint area until tapered and smooth so that no imperfection can be felt by hand', Demonstrate skill for masking parts so that all unpainted surfaces are covered and all surfaces to be painted left fully exposed', Demonstrate paint removal procedures using chemical and mechanical methods

Name
The student will be able to demonstrate corrosion preventative application skills

Objective
Demonstrate knowledge of corrosion control by properly applying a rust preventative treatment to all substrates metal panel

Name
The student will be able to demonstrate in the lab application skills when working with primers, sealers and top coat application

Objective
Select proper materials needed for sanding and priming a panel', Apply primer and primer surface by properly mixing and spraying primer on a properly prepared panel', Identify various types of paint

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACP100

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACP100 - Introduction to Coatings & Paint Technology

A minimum grade of 'C' in Course MTH020

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MTH020 - Math Fundamentals (Inactive)

ACP102 - Performance & Durability of Coatings

Overview

Department
Aviation

Course Description
The objective of this course is to discuss facts and findings affecting performance and permanence of coatings. Topics include: methods of enhancing durability and permanence, properties and selection of raw materials processes leading to robust coatings, service – life prediction, and coating evaluation.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to illustrate the service life of paint and coatings including why failure happens

Objective
Describe the mechanisms of paint failure', Describe the types of paint failure', Identify application induced failure', Identify material induced failure', Identify parameters affecting coating durability', Identify coating service life prediction

Name
The student will be able to identify the properties of coatings and how these impact performance and durability

Objective
Identify the properties of polymersresins', Identify the physical and mechanical properties of films', Identify the process of film formation', Identify the properties and steps for curing', Identify the chemical and physical properties of pigments', Identify the role of stabilizers', Identify the photochemistry of polymer degradation', Identify the adhesive properties of polymeric coatings', Identify the properties of corrosion', Identify the corrosion controls exhibited by organic coatings', Identify the properties of paint discoloration', Identify the role of additives', Analyze the impact of coating and paint properties on durability and performance', Identify role of induction

Name
The student will be able to evaluate the durability and performance of paint and coatings

Objective
Identify ratings for coatings in durability and performance', Identify tests for predicting coating durability using industry standards', Identify tests for evaluating coating durability using industry standards', Demonstrate ability to adhere to Aerospace Coatings performance standards

Name
The student will be able to demonstrate through lab and classroom work methods of enhancing permanence in aerospace coatings

Objective
Describe the mechanisms of paint failure', Describe the types of paint failure', Identify application induced failure', Identify material induced failure', Identify parameters affecting coating durability', Identify coating service life prediction

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACP101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACP101 - Surface Preparation & Coatings

ACP103 - Color Technology

Overview

Department
Aviation

Course Description
This course is a study of the fundamentals of visual color match evaluation and of color measurement for industrial color control. Students utilize industry appropriate technologies on projects that demonstrate proper lighting, observe testing, objective terminology for color difference and determination of tolerances. Students analyze measurement data of the same industrial sample to study the correlation of visual to measured results.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to utilize effective color matching tools

Objective
Identify color technology tools including spectrophotometer and portable Macbeth lighting system', Utilize color technology tools', Discuss the impact of lighting color order systems and metamerism on color matching tools and testing

Name
The student will be able to effectively utilize the terminology associated with color technology

Objective
Identify industry specific terminology

Name
The student will be able to effectively utilize color matching techniques

Objective
Describe aeronautical standards in color matching', Identify color measurement techniques', Utilize color measurement techniques', Demonstrate visual color matching skills', Identify visual color matching skills', Analyze measured vs visual color matching data', Determine acceptable tolerance levels in color matching', Verify quality control in color matching

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACP101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACP101 - Surface Preparation & Coatings

ACP104 - Specialized Coatings Processes

Overview

Department
Aviation

Course Description
This course is a study in special coatings for aerospace structures. Topics include mixing, application and curing coating materials, environmental effects of coating materials and general and hazardous material handling safety. The course also covers equipment used in these processes.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply all industry specific safety procedures

Objective
Demonstrate and identify the correct safety procedures used in application of special coating and painting materials', Identify OSHA regulations in relationship to these processes', Identify MSDS Material Safety Data Sheet', Explain and demonstrate the techniques required in equipment usage for applications and proper maintenance of siphon and pressure systems

Name
The student will be able to demonstrate base metal preparation and priming procedures

Objective
Demonstrate the steps to take before preparing the surface', Demonstrate steps or procedures involved in preparing the surface for painting such as cleaning sanding treating bare metal and priming

Name
The student will be able to demonstrate refinish application skills

Objective
Demonstrate the proper procedures in surface preparation in refinishing interior and exterior surfaces', Identify special primers for interior refinishing', Demonstrate the ability to properly use and maintain all spraying equipment used in refinishing', Demonstrate appropriate curing techniques

Name
The student will be able to demonstrate special techniques in associated materials

Objective
Identify different sealers and their procedures according to manufacturer specifications', Demonstrate different sealers and their procedures according to manufacturer specifications', Demonstrate the ability to select the proper thinner or reducer for a specific type of material', Identify the types of reducer and thinnerwhy and when it is used', Explain why special additives are used in aerospace refinishing

Name
The student will be able to demonstrate techniques used in painting and coating specialized surfaces

Objective
Explain special primers and identify which plastic needs which refinishing procedure', Explain texturing procedures', Demonstrate proper retexturing procedures', Demonstrate proper refinishing procedures', Explain composite coating procedures', Demonstrate composite coating procedures

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACP101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACP101 - Surface Preparation & Coatings

ACP105 - Specialized Detailing

Overview

Department
Aviation

Course Description
This course provides instruction in the equipment, material, and techniques used in the application of special paints. Emphasis will be placed on aircraft refinishing procedures. Topics include: safety; paint identification; equipment use and maintenance; color application; original finish sealing; panel-spot repair and blending; thinners, reducers, and additives; and composite materials, plastics, and rubber refinishing.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to analyze finish process

Objective
Determine types of finish ie base coat clear coat acrylic enamel etc

Name
The student will be able to demonstrate finish techniques in lab and classroom

Objective
Identify types of sand paper proper grit for specific finish and type of backing pad for finish defect', Demonstrate sanding techniques using proper safety guidelines', Identify proper equipment and materials ie type of buffing and polishing pads', Demonstrate buffing and polishing techniques to avoid damage to final finish using proper safety guidelines

Name
The student will be able to demonstrate final preparation skills

Objective
Identify proper material for cleaning various top coats adhering to safety procedures and manufacturers guidelines

Name
The student will be able to demonstrate decorative techniques

Objective
Select position on partstructure matching it to interior correctly end stripes adhering to safety guidelines', Demonstrate proper technique for adding decal spray mask and avoid bubbles adhering to safety guidelines

Name
The student will be able to demonstrate special application techniques

Objective
Demonstrate the ability to refinish in metallic or solid color', Demonstrate the ability to make a spot repair', Demonstrate correct procedures in blending

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACP103

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACP103 - Color Technology

ACP106 - Aerospace Coatings & Materials

Overview

Department
Aviation

Course Description
This course covers advanced technologies for coating materials and applications. Topics include: coating technologies that address aesthetics, durability, and environmental issues.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify proper protective exterior and interior coatings

Objective
Identify protective exterior and interior coatings', Identify adhesion', Identify the elements which make up a good adhesion', Identify methods of promoting and maintaining adhesion', Identify the effects of adhesion on durability and corrosion resistance

Name
The student will demonstrate application of appropriate surface pretreatment techniques

Objective
Identify the impact of the surface nature and characteristics and their importance', Identify the selection methods of surface treatment', Select appropriate primers adhesion promoters and corrosion inhibitors', Apply appropriate primers adhesion promoters and corrosion inhibitors', Demonstrate surface cleaning techniques including mechanical and physical treatments conversion coatings and anodizing treatments

Name
The student will compare and contrast decorative platings and corrosion protection

Objective
Identify decorative platings and their characteristics, Describe the performance of various platings metal alloys and plastics', Contrast between corrosion protection and platings

Name
The student will be able to identify the elements of corrosion control

Objective
Identify materials selection process', Describe structural design', Describe intact and non intact methods', Describe the elements of corrosion', Identify corrosion in various materials including aluminum alloys ferrous metals magnesium and alloys', Identify methods of corrosion prevention', Identify the impact of coatings on the variables of corrosion', Identify the factors which impact corrosion protection of coatings', Identify factors for selecting coating for corrosion protection', Identify methods for evaluating corrosion protection of coatings

Name
The student determines the positive and negative of various types of coatings and demonstrates their application

Objective
Identify the types of liquid organic coatings', Identify the properties of liquid organic coatings', Identify the advantages and limitations of liquid organic coatings', Identify the selection process', Identify the application methods of liquid organic coatings', Apply liquid organic coatings', Identify the service life of liquid organic coatings', Identify process to convert to liquid organic coatings', Demonstrate ability to convert to liquid organic coatings', Describe developments and future trends of organic coatings', Identify the types of waterborne coatings', Identify the properties of waterborne coatings', Identify the advantages and limitations of waterborne coatings', Identify the selection process', Identify the application methods of waterborne coatings', Apply waterborne coatings', Identify the service life of waterborne coatings', Identify process to convert to waterborne coatings', Demonstrate ability to convert to waterborne coatings', Describe developments and future trends of waterborne coatings', Identify the types of powder coatings', Identify the properties of powder coatings', Identify the advantages and limitations of powder coatings', Identify the selection process', Identify the application methods of powder coatings', Identify the service life of powder coatings', Identify process to convert to powder coatings', Describe developments and future trends of powder coatings

Name
The student will be able to demonstrate application of coatings on composite and plastic parts

Objective
Identify the properties and paintability of plastics and composites', Identify the selection process for determining the coating of plastics and composites', Identify special considerations for coating composites and plastics', Demonstrate application of coatings on composites and plastics', Identify requirements for defect free plastic and composites parts

Name
The student will be able to identify evaluation systems of coating durability

Objective
Identify factors which impact performance', Identify methodology for service life prediction', Identify test coatings

Name
The student will be able to describe the fundamentals of Industrial Robotics through web-based ROB 100 Robotics Innovative Technology for Learning (ITL)

Objective
Identify basic concepts associated with robotics including history tasks and types', Identify safety standards associated with robotics including hazards ANSIRIA standards and PPE', Identify basic concepts associated with robotic axes', Identify basic concepts associated with Controllers and end effectors', Identify basic robotic applications

Name
The student will be able to describe and demonstrate basic robot operation through classroom and laboratory projects

Objective
Review the robot safety standards and the safety devices', List the safety devices implemented in the robot cell', Review the operation manual of the robot', Learn and practice Joint Jog Mode', Learn and practice Linear Jog Mode', Learn and practice ReOrient Jog Mode', Learn and practice reading the XYZ coordinates of TCP and angular locations of joints', Practice 3 or more different incremental precise positioning movements

Name
The student will be able to describe and demonstrate basic robot programming through classroom and laboratory projects

Objective
Review the basic coordinate system calibration steps', Review the basic programming', Activate the default tool and the base coordinate system', Create a pointer tool using the 4point method', Create a user coordinate system using the 3point method', Create a routine called triangle and add instructions that draw a triangle shape', Create a routine called rectangle and add instructions that draw a rectangle shape', Create a routine called circle and add instructions that draw a circle shape', Create the Main routine and call the three shape routines from the Main routine', Execute the Main routine and troubleshoot

Name
The student will be able to describe and demonstrate the proper usage of the Automated Panel Sprayer

Objective
Identify and explain components of sprayer', Demonstrate proper setup breakdown and cleaning of sprayer', Demonstrate proper usage of sprayer to paint test panels', Apply problem solving techniques to industry based scenarios

Name
The student will be able to describe and demonstrate proper usage and basic programming of a robotic unit with the 2D Virtual Paint Equipment

Objective
Demonstrate correct safety procedures used in operation of robotic unit with 2D Virtual Paint Equipment', Demonstrate proper setup of robot unit with 2D Virtual Paint Equipment', Demonstrate ability to properly run a preprogrammed painting operation', Demonstrate ability to properly write and execute a basic program for an assigned painting operation using the robot unit with the 2D Virtual Paint Equipment

Name
The student will be able to describe and demonstrate the basic operation and safety procedures of the robotic paint unit

Objective
Identify and explain components of robotic paint system', Demonstrate correct safety procedures used in operation of robotic paint system', Demonstrate proper startup and shutdown procedures for robotic paint system', Demonstrate ability to run a preprogrammed painting operation using the robotic paint system

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACP102

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACP102 - Performance & Durability of Coatings

A minimum grade of 'C' in Course ACP105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACP105 - Specialized Detailing

ACP110 - Integrated Assembly Capstone Project

Overview

Department
Aviation

Course Description
This course addresses the full spectrum of the Coating Technicians role within the industry. Problem solving strategies within a team concept will be emphasized. Industry and applied research projects will be assigned. Prerequisite: ACP 100, 101, 102, 103, 104, 105, 106, and 107

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
180

Billing Hours

Billing Hours Min:
4

Lab Hours

Lab Hours Min:
180

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply skills and techniques of aerospace painting and coatings to industry based projects and scenarios

Objective
Apply various skills and techniques of advanced paint and coating to industrybased scenarios requiring problemsolving skills

Name
The student will be able to demonstrate proficiency in application of skills to experimental project

Objective
Design paint and coating experimental project', Conduct paint and coating experimental project', Analyze data from paint and coating experimental project', Interpret data from paint and coating experimental project

Name
The student will be able to apply the elements of work ethics training to their on the job experience

Objective
Apply the ten characteristics of the work ethics program in the workplace environment

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACP100

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACP100 - Introduction to Coatings & Paint Technology

A minimum grade of 'C' in Course ACP101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACP101 - Surface Preparation & Coatings

A minimum grade of 'C' in Course ACP102

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACP102 - Performance & Durability of Coatings

A minimum grade of 'C' in Course ACP103

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACP103 - Color Technology

A minimum grade of 'C' in Course ACP104

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACP104 - Specialized Coatings Processes

A minimum grade of 'C' in Course ACP105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACP105 - Specialized Detailing

A minimum grade of 'C' in Course ACP106

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACP106 - Aerospace Coatings & Materials

A minimum grade of 'C' in Course ACP107

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACP107 - Aerospace Program Management (Inactive)

ACP111 - Technical Co-Operative Project

Overview

Department
Aviation

Course Description
Students will work on a part-time basis in a job directly related to applied technologies. The employer and supervising instructor will evaluate students' progress. Upon course completion, students will be able to apply skills and knowledge in an employment setting.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
180

Billing Hours

Billing Hours
Min:
4

Other Hours

Other Hours
Min:
180

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply skills learned in the classroom to tasks assigned by the employer

Objective
Apply classroom based painting and coating skills and techniques to the workplace', Enhance classroom based skills and techniques with on the job experiences', Document workplace experiences in faculty approved format

Name
The student will be able to utilize interpersonal skills appropriate to the workplace

Objective
Demonstrate communication skills', Demonstrate listening skills', Demonstrate teamwork skills', Demonstrate cooperation skills

Name
The student will be able to apply the elements of work ethics training to their on the job experience

Objective
Apply the ten characteristics of the work ethics program in the workplace environment

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACP107

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACP107 - Aerospace Program Management (Inactive)

ACP121 - Surface Preparation & Coatings II

Overview

Department
Aviation

Course Description
This course is designed to enhance the students understanding of surface preparation and coatings learned in ACP 101. Students will demonstrate their ability to apply this knowledge to advanced projects.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2023

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to safely utilize all tools and materials in surface preparations and coatings

Objective
Demonstrate ability to use tools and materials according to manufacturer’s safety procedures, Demonstrate appropriate hazardous waste procedures, Identify MSDS (Material Safety Data Sheet), Describe proper use of respiratory safety equipment, Demonstrate proper use of respiratory safety equipment

Name
The student will be able to demonstrate proper documentation procedure and processes

Objective
Demonstrate proper recordkeeping for process documentation, Document methods and material used on paint log, Demonstrate ability to review all process instructions (internal, OEM, and manufacturers) specifications

Name
The student will be able to demonstrate proper use of surface preparation equipment

Objective
Adjust spray gun to proper air pressure, Adjust pattern size and material from spray gun, Effectively maintain a spray gun by removing all evidence of material used to instructor's satisfaction (Ex. gun cap, fluid tube, etc.)

Name
The student will apply surface preparation techniques to advanced projects

Objective
Demonstrate and initiate ability to properly prepare a surface for sanding, priming and paint by removing all contaminants such as wax, grease, oil, etc Identify the procedure of featheredging and when it is necessary in the surface preparation process, Demonstrate featheredging by sanding a broken paint area until tapered and smooth, so that no imperfection can be felt by hand, Demonstrate skill for masking parts so that all unpainted surfaces are covered and all surfaces to be painted left fully exposed, Demonstrate paint removal procedures using chemical and mechanical methods

Name
The student will apply corrosion preventative application skills to advanced projects

Objective
Demonstrate knowledge of corrosion control by properly applying a rust preventative treatment to all substrates metal panel

Name
The student demonstrate application skills when working with primers, sealers and top coat application to advanced projects

Objective
Select proper materials needed for sanding and priming a panel, Apply primer and primer surface by properly mixing and spraying primer on a properly prepared panel, Identify various types of paint

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACP101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACP101 - Surface Preparation & Coatings

ACP124 - Specialized Coatings Processes II

Overview

Department
Aviation

Course Description
This course is designed to enhance the students understanding of aviation coatings processes learned in ACP 104. Students will demonstrate their ability to apply this knowledge to advanced projects.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2023

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply all industry specific safety procedures

Objective
Demonstrate and identify the correct safety procedures used in application of special coating and painting materials', Identify OSHA regulations in relationship to these processes', Identify MSDS Material Safety Data Sheet', Explain and demonstrate the techniques required in equipment usage for applications and proper maintenance of siphon and pressure systems

Name
The student will apply base metal preparation and priming procedures to advanced projects.

Objective
Demonstrate the steps to take before preparing the surface', Demonstrate steps or procedures involved in preparing the surface for painting such as cleaning sanding treating bare metal and priming

Name
The student will apply refinish application skills to advanced projects

Objective
Demonstrate the proper procedures in surface preparation in refinishing interior and exterior surfaces', Identify special primers for interior refinishing', Demonstrate the ability to properly use and maintain all spraying equipment used in refinishing', Demonstrate appropriate curing techniques

Name
The student apply special techniques in associated materials to advanced project

Objective
Identify different sealers and their procedures according to manufacturer specifications', Demonstrate different sealers and their procedures according to manufacturer specifications', Demonstrate the ability to select the proper thinner or reducer for a specific type of material', Identify the types of reducer and thinnerwhy and when it is used', Explain why special additives are used in aerospace refinishing

Name
The student will apply the techniques used in painting and coating specialized surfaces to advanced projects.

Objective
Explain special primers and identify which plastic needs which refinishing procedure', Explain texturing procedures', Demonstrate proper retexturing procedures', Demonstrate proper refinishing procedures', Explain composite coating procedures', Demonstrate composite coating procedures

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACP104

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACP104 - Specialized Coatings Processes

ACP145 - Environmental Health and Safety

Overview

Department
Aviation

Course Description
Environmental Health and Safety (EHS) is a comprehensive course designed to provide students with a solid foundation in the principles and practices of maintaining a safe and healthy environment in an industrial paint setting. This course covers a wide range of topics crucial for ensuring the well-being of workers, the protection of the environment, and compliance with industry regulations. Throughout this course, students will delve into essential areas of EHS, including industrial paint shop safety, personal protective equipment (PPE), hazardous materials and chemical safety, fire safety, electrical safety, respiratory protection, ventilation systems, emergency preparedness and response, safe operation of equipment, ergonomics, safety audits, and inspections.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate a foundational understanding of industrial paint shop safety principles.

Objective
Importance of paint shop safety', Common hazards in an industrial paint shop', Safety regulations and standards in the paint industry

Name
Identify and select appropriate Personal Protective Equipment (PPE) for paint shop tasks.

Objective
Overview of PPE requirements in a paint shop', Selection and proper use of protective clothing and accessories', Maintenance and inspection of PPE

Name
Safely handle, store, and manage hazardous materials and chemicals in the paint shop environment.

Objective
Identification and labeling of hazardous materials in a paint shop', Safe handling storage and disposal of chemicals', Understanding Safety Data Sheets SDS

Name
Implement fire prevention measures and respond effectively to paint shop fire incidents.

Objective
Fire prevention techniques in a paint shop', Fire detection and suppression systems', Emergency response procedures in case of a fire

Name
Apply electrical safety practices and procedures within a paint shop setting.

Objective
Basics of electrical safety', Proper use and maintenance of electrical equipment', Lockouttagout procedures for electrical systems

Name
Choose, use, and maintain respiratory protection devices for various paint shop hazards.

Objective
Types of respiratory hazards in a paint shop', Selection and use of respiratory protection devices', Fit testing and maintenance of respirators

Name
Explain the importance of proper ventilation systems and air quality control in a paint shop.

Name
Develop and execute an emergency preparedness plan for the paint shop, including first aid and CPR training.

Objective
Creating an emergency evacuation plan for the paint shop', First aid and CPR training for paint shop workers', Incident reporting and investigation procedures

Name
Operate paint shop equipment safely and maintain it in accordance with safety standards.

Objective
Safety guidelines for paint spraying equipment', Handling and storage of paint and solvents', Preventative maintenance and inspection of equipment

Name
Recognize ergonomic hazards and apply injury prevention techniques in the paint shop.

Objective
Understanding ergonomic hazards in a paint shop', Injury prevention techniques and proper body mechanics', Importance of regular stretching and exercise for paint shop workers

Name
Conduct safety audits and inspections to identify and rectify hazards in the paint shop environment.

Objective
Conducting regular safety audits and inspections in the paint shop', Identifying and correcting safety hazards and deficiencies', Recordkeeping and documentation of safety inspections

ACR112 - HVAC Fundamentals

Overview

Department
Applied Technologies

Course Description
This course is designed to introduce students to the HVAC industry. Topics include: basic HVAC concepts and theories of refrigeration, the laws of thermodynamics, pressure and temperature relationships, heat transfer, refrigerant identification, the refrigeration cycle. Technical skills will be introduced in soldering, brazing and refrigerants. Additionally, students will become familiar with trade related organizations, safety and job requirements.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to describe the regulatory issues

Objective
Describe the types of regulatory codes encountered in the HVAC trade

Name
The student will be able to describe the schedules/drawings

Objective
Identify the types of schedulesdrawings used in the HVAC trade

Name
The student will be able to demonstrate skills associated with refrigerant piping

Objective
State the precautions that must be taken when installing refrigerant piping', Select the right tubing for a job', Cut and bend copper tubing', Safely join tubing by using flare and compression fittings', Determine the kinds of hangers and supports needed for refrigerant piping', State the basic safety requirements for pressuretesting a system', Identify types of plastic pipe and state their uses', Cut and join lengths of plastic pipe', Demonstrate soldering and brazing techniques

Name
The student will be able to demonstrate skills associated with heat transfer

Objective
Explain how heat transfer principles occur in a cooling system demonstrating an understanding of the terms and concepts used in the refrigeration cycle', Calculate the temperature and pressure relationships at key points in the refrigeration cycle', Demonstrate the use of temperature and pressuremeasuring instruments to make readings at key points in the refrigeration cycle

Name
The student will be able to demonstrate skills associated with handling refrigerants

Objective
Identify commonly used refrigerants', Demonstrate the proper procedures for handling refrigerants', Demonstrate refrigerant leak detection procedures', Demonstrate refrigerant evacuation procedures', Demonstrate refrigerant recovery procedures', Demonstrate refrigerant charging procedures

Name
The student will be able to demonstrate skills associated with cooling systems

Objective
Identify the major components of a cooling system and explain how each type works', Identify the major accessories available for cooling systems and explain how each works', Identify the control devices used in cooling systems and explain how each works', Install one or more of the following HVAC systems and their components 1 Residential 2 Commercial andor 3 Industrial

Name
The student will be able to Identify career paths available in the HVAC/R trade

Objective
Identify career and apprentice opportunities in the HVAC trade

ACR113 - Electrical Fundamentals

Overview

Department
Applied Technologies

Course Description
Students will be introduced to basic electrical theory for DC and AC systems. The students will become familiar with the production of electricity and how to apply Ohm's Law and Power Formula. Additional topics include electrical safety, reading and interpreting schematic designs.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate safety standards

Objective
State and demonstrate the safety precautions that must be followed when working on electrical equipment and circuits

Name
The student will be able to discuss electrical principles and laws

Objective
Read and interpret common electrical symbols', Read and interpret electrical diagrams', Describe how voltage current resistance and power are related', State how electrical power is distributed', State how AC and DC electricity are different', Describe the difference between series and parallel circuits and calculate loads in each

Name
The student will be able to compute concepts used in conjunction with electricity

Objective
Review math principles pertaining to basic algebraic equations', Apply Ohms law to calculate the current voltage and resistance in a circuit', Apply the power formula to calculate how much power is consumed by a circuit', Calculate loads in series and parallel circuits

Name
The student will be able to construct circuits

Objective
Describe the purpose and operation of the various electrical components used in HVAC equipment', Perform voltage current and resistance measurements using electrical test equipment

ACR116 - Workplace Skills

Overview

Department
Applied Technologies

Course Description
Upon successful completion of this course, the student should be able to identify the job skills necessary to have a successful career in the field of their choice. Topics include: listening skills, oral communication, human relations, decision making/problem solving, how to work as a team, time and resource management, work ethics, career planning and resume building.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
Proficiently use listening skills to interpret, analyze and follow through on instructions

Name
Demonstrate oral communication through presentations, speeches, interviews and group interactions. Display the necessary human relation skills to be a valued employee.

Name
Utilize problem solving/decision making in a work environment

Name
Participate in team tasks in building group consensus.

Name
Identify and explain resource management.

Name
Develop time management strategies for scheduling, meeting deadlines and prioritizing tasks.

Name
Interpret work ethics for responsibility, behavior, workplace rules that lead to job satisfaction.

Name
List the job interview skills necessary in a career decision-making process.

ACR117 - Intro to Mechanical Refrigeration

Overview

Department
Applied Technologies

Course Description
The students will learn the basics of the refrigeration system and its components. The students will also learn proper refrigerant handling techniques regarding system evacuation and charging; and the best practices for refrigerant recovery, reclamation, and recycle – all of which form the basis for the EPA 608 exam.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to properly recover refrigerant, evacuate the system, and recharge the system following all Federal EPA guidelines.

Objective
Explain the role and function of the major components in the refrigeration system', Explain the different types of metering devices and the differences of operation for each', Demonstrate how to check and calibrate service instruments before using', Explain the EPA requirements for refrigerant recovery', Demonstrate the proper procedures for recovering refrigerant from a system', Explain the EPA requirements for proper system evacuation', Demonstrate the proper procedures for system evacuation', Explain how to properly charge a system and describe two different methods for checking proper charge level', Demonstrate how to charge a system using one of the two methods from the previous step

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACR112

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACR112 - HVAC Fundamentals

ACR118 - Electrical Fundamentals II

Overview

Department
Applied Technologies

Course Description
Students will be introduced to motor theory and explore motor applications. This course builds on previous knowledge gained in Electrical Fundamentals I and requires a firm understanding of magnetism and voltage production. Motor trouble shooting will be introduced. Types of motors covered will be single phase motors, three phase and ECM motors.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The students will know how to apply electrical knowledge to HVAC equipment

Objective
Describe and identify the parts and function of an induction motor', Define and measure Locked Rotor Amps and Full Load Amps', Describe how overload protectors work', Evaluate and describe the function and application of capacitors', Describe and explain motor speed', Explain motor rotation', Demonstrate and explain the purpose of checking motor windings', Describe a dual voltage three phase motor and explain the wiring configurations', Wire up motor starters using schematics', Draw schematics utilizing various types of motors and their starting components

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACR113

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACR113 - Electrical Fundamentals

ACR119 - Advanced Electrical Theory for HVAC

Overview

Department
Applied Technologies

Course Description
Advanced Electrical Theory for HVAC is a continuation of Electrical Fundamentals I & II, and places an emphasis on developing systematic diagnosis and troubleshooting methods and procedures that will enable the student to become a highly-skilled, professional HVAC-R service technician.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply advanced electrical theory to troubleshoot HVAC equipment

Objective
Demonstrate proper use of a voltohm meter to find problems in electrical systems', Evaluate and troubleshoot various HVAC equipment', Study and define the basics of wiring diagram for heating and cooling systems', Construct a schematic diagram of a midrange furnace

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACR118

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- ACR118 - Electrical Fundamentals II

ACR121 - Heating System Fundamentals

Overview

Department
Applied Technologies

Course Description
This course will provide students a firm understanding of combustion and how it is applied in the HVAC industry. Residential gas furnaces will be studied in detail to gain understanding in service and installation, including standard, mid-range, and high efficiency furnaces.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Students will demonstrate effective safety standards associated with heating systems

Objective
Apply trade math to daily applications', Interpret mechanical drawings symbols and their applications', Recognize the different fuel types used in various furnaces', Indentify different efficiency of furnaces', Check gas pressures', Inspect and perform standard seasonal maintenance and tuneup', List sequence of operation', Assess air flow', Measure temperature split', Check and adjust thermostat heat anticipators', Perform start up procedures', Design and install venting for fossil fuel appliances', Design and install heating equipment installations', Explain furnace design and functions', Introduce commercial airside and hydronic systems including various types of boilers piping chilledwater systems and thier components', Measurement and control of air temperature humidity pressure and velocity', Maintenance and repairs of various HVAC systems', Identify the types of ferrous metal pipes', Measure the sizes of ferrous metal pipes', Identify the common malleable iron fittings', Cut ream and thread ferrous metal pipe', Join lengths of threaded pipe together and install fittings', Describe the main points to consider when installing pipe runs', Describe the methods used to join grooved piping', List the effects of changing air flow', Evaluate combustion', Identify residential codes related to the installation of HVAC equipment', Demonstrate an understanding of psychrometrics

Name
Student will be able to troubleshoot basic issues associated with heating systems

Objective
Introduce troubleshooting of heating cooling and heat pump systems', Introduce troubleshooting of control circuits electronic controls and accessories', Introduce troubleshooting of air quality and energy conservation equipment

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

ACR122 - Heating System Fundamentals II

Overview

Department
Applied Technologies

Course Description
The Heating System Fundamentals II course is designed to walk students through the requirements of the Uniform Mechanical Code in relation to Gas Piping and exhaust ventilation. Students will gain a thorough understanding and be able to apply skills in sizing vents and pipe upon completion of this course.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Determine gas pipe size per the uniform mechanical code.

Name
Determine vent size for fuel burning appliances.

Name
Determine the ventilation rate of the occupied space per the uniform mechanical code.

Name
Determine combustion air requirements per the uniform mechanical code.

Name
Identify requirements for safe installations of mechanical units.

Name
Prepare steel pipe for installation.

Name
Join lengths of threaded pipe together and install fittings.

Name
Describe the main points to consider when installing pipe runs.

Name
Describe the methods used to join piping.

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

ACR123 - Heat Loads and Duct Sizing

Overview

Department
Applied Technologies

Course Description
The course will teach students to analyze heat flow characteristics as they study heat loss and heat gain factors as it pertains to residential HVAC design. Topics will include the effects of selected materials and the layout of the system for the purpose of trouble shooting, load estimation and duct sizing.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate knowledge of heat flow

Objective
Describe velocity and volume as it pertains to air flow through a duct system', Identify the various types of duct systems', Describe the installation of fittings and transitions used in duct systems', Explain the use of diffusers register and grills', Explain the use of dampers insulation and vapor barriers used in duct systems', Perform load calculations using the ACCA JManual', Perform duct sizing calculations using the ACCA DManual', Analyze heat flow through various construction designs', Analyze air flow through various duct designs', Explain the process of selecting equipment

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACR121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- ACR121 - Heating System Fundamentals

ACR124 - Advanced Heating Systems

Overview

Department
Applied Technologies

Course Description
This course will introduce students to electric furnaces and hydronic heating with an emphasis on the electrical systems of those units and code requirements for the safe installation of such equipment. Indoor air quality will be discussed in detail as a major factor in human comfort.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to evaluate furnace operations

Objective
Perform maintenance on an electric heating unit', Troubleshoot an electric furnace', List the order of operations for an electric forced air furnace', Describe the layout of a typical residential hydronic heating system with zone controls', Explain the maximum working pressure and maximum temperature of hydronic heating systems', Identify the types of terminal equipment and explain how they function with hydronic heating systems', Compare a hydronic system versus a steam heating system', Identify and explain the role of boiler trim and system components', Perform proper procedures in purging air from a hydronic system', Plot conditions using the psychometric chart', Describe the factors involved in comfort', Demonstrate knowledge of air cleaning devices', Assess air flow', Explain the difference between propeller and centrifugal fans and blowers', Create a schematic based on the wiring of an electric furnace', Draw the schematics for a basic residential boiler

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACR121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACR121 - Heating System Fundamentals

ACR126 - EPA 608

Overview

Department
Applied Technologies

Course Description
This course prepares students for the certification exam required by federal and state governments and the heating, ventilation, air conditioning and refrigeration (HVAC/R) industry. Students focus on Environmental Protection Agency (EPA) refrigerant handling exams and Industry Competency Exams (ICE).

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
Students will be able to: Identify the concepts associated with EPA 608 standards

Objective
Identify the legal handling of refrigerants', Identify cooling equipment components and basic refrigeration theory', Explain ozone depletion and its consequences', Describe the Clean Air Act No Venting Law', Identify EPA regulations', List service procedures', Identify substitute refrigerants and oils', Describe general safety procedures', Describe refrigerant cylinder safety procedures', Identify equipment service requirements recovery procedures and safety procedures for Type I technicians small appliances Type II technicians high pressure systems and Type III technician low pressure systems

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACR117

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACR117 - Intro to Mechanical Refrigeration

ACR127 - Heat Pumps

Overview

Department
Applied Technologies

Course Description
The student will learn basic functions of heat pump designs, charging, and trouble shooting.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to troubleshoot heat pumps

Objective
Describe a reversing valve and explain its operations', Identify the major parts in an airtoair heat pump and explain their operations', List and describe the metering devices that may be used with a heat pump', Demonstrate how to properly evacuate and charge a heat pump system', Describe the special piping accessories needed in a heat pump', Describe the operation of the indoor and outdoor coil', Define a duel fuel system', Explain how the defrost cycle is initiated and terminated', Explain the purpose of auxiliary heat', Demonstrate proficiency with multimeter while troubleshooting the electrical system of a heat pump', Demonstrate knowledge and explain how a geothermal heat pump functions', Interpret an electrical schematic of an airtoair heat pump', Explain the operations and concepts of variable refrigerant flow

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACR117

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACR117 - Intro to Mechanical Refrigeration

A minimum grade of 'C' in Course ACR121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACR121 - Heating System Fundamentals

ACR128 - Commercial HVAC

Overview

Department
Applied Technologies

Course Description
This course will introduce students to the commercial applications of various HVAC systems. A strong foundation in refrigeration theory is required as well as a comprehensive understanding of system airflow and electrical fundamentals. Students who complete this course will be skilled in reading advanced electrical schematics and be able to describe the function and application of various commercial systems and components including Direct Digital Control systems and frequency drives. This is a capstone course.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply refrigeration theory, airflow and electric fundamentals to commercial HVAC equipment.

Objective
Describe the function of airquality and airconditioning sensors', Identify resources for obtaining product information', Describe and explain a basic control loop', Identify Inputs and outputs', Explain the different types of control actions', Identify common control system characteristics', Describe common control system arrangements', Identify common control system requirements', Describe the function and application of common types of control systems', Explain control system anticipation methods', Explain unit level control', Explain system level control', Identify the qualities of the building automation system', Explain the difference between a constant volume and VAV system', Explain the operations of a VAV system', List and identify the components of a VAV system', Describe occupied unoccupied morning warmup and cooldown modes', Describe common methods for wiring inputs outputs and peripheral devices', Describe system interoperability and protocols', Develop a schedule for system operations', Read sensor resistances as compared to manufacturer data', Read commercial wiring diagrams and identify components', Use a Multimeter to determine voltage at test points

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACR127

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACR127 - Heat Pumps

ACR129 - Commercial HVAC Lab

Overview

Department
Applied Technologies

Course Description
This course continues the introduction to commercial HVAC systems through hands-on training. Students will perform basic maintenance, repairs and troubleshooting on functioning light commercial and commercial equipment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
120

Billing Hours

Billing Hours
Min:
4

Lab Hours

Lab Hours Min:
120

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to maintain and repair commercial HVAC equipment

Objective
Explain the operation of frequency drive', Create a seasonal maintenance plan based on equipment provided', Demonstrate awareness of safety issues', Describe economizer functions', Demonstrate maintenance procedures', Demonstrate quality torch skills while soldering or brazing', Read and interpret advanced electrical diagrams', Repair and rebuild packaged conditioning units', Demonstrate knowledge of fundamental HVAC principles and practices

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACR128

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACR128 - Commercial HVAC

ACR140 - Sheet Metal Fabrication I

Overview

Department
Applied Technologies

Course Description
Upon successful completion of this course, the student will be able to identify the components, equipment, and operations associated with sheet metal layout and fabrication. Duct sizing and code requirements for duct systems are also discussed.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Objective
Describe HVAC application and materials used in sheet metal work', Recognize potential safety hazards on the job when using hand tools power tools metal cutting and bending machinery', Solve sheet meal problems involved with measurement or lines area volume weight and geometric figures', Identify and describe proper use and maintenance of all sheet metal work', Demonstrate the use of various kinds of fasteners used in sheet metal work', Match each of the three common sheet metal layout procedures to their applications', Demonstrate skill and competence in the construction of seams edges notches locks and clips', Identify layout fabrication of selected truck runs and duct run fittings', Identify applicable standards codes and ordinances and demonstrate the ability to adhere to those specifications

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the components, equipment, and operation for sheet metal layout and fabrication.

ACR210 - Automation Controls & Sensors

Overview

Department
Applied Technologies

Course Description
This course introduces students to the essential components of automation controls and sensors used in building automation systems. Topics include the operation, configuration, and troubleshooting of sensors, actuators, and controllers for HVAC, lighting, and security systems. Students will gain practical skills in control circuit configuration and calibration, as well as the application of control theory to create automated systems. By the end of this course, students will be equipped to analyze and optimize various control strategies to enhance building efficiency.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate understanding of different types of sensors and actuators used in building automation systems

Name
Configure and calibrate automation controls for various building applications, including HVAC, lighting, and security systems

Name
Analyze and troubleshoot issues in control circuits within automation systems.

Name
Apply knowledge of control theory and logic programming to design basic automated systems.

Name
Evaluate the effectiveness and efficiency of various control strategies in different environmental conditions.

ACR220 - Building Management Systems (BMS)

Overview

Department
Applied Technologies

Course Description
This course provides an in-depth look at Building Management Systems (BMS) and their role in integrating multiple building systems for enhanced efficiency and control. Students will learn about BMS software and hardware components, including their application in managing HVAC, lighting, and security systems. The course emphasizes hands-on experience with BMS configuration, monitoring, and troubleshooting techniques, as well as data interpretation for performance assessment. Additionally, students will explore energy management strategies to optimize building operations and promote sustainability.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Explain the function and components of a Building Management System and its role in integrating building systems

Name
Configure basic BMS software to monitor and control HVAC, lighting, and security systems.

Name
Interpret data from BMS dashboards to assess system performance and identify potential improvements.

Name
Demonstrate proper troubleshooting techniques for diagnosing BMS-related issues.

Name
Evaluate energy-saving strategies within BMS applications to enhance building efficiency.

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACR210

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACR210 - Automation Controls & Sensors

ACR230 - Data Analytics for Building Performance

Overview

Department
Applied Technologies

Course Description
In this course, students will learn how to apply data analytics to assess and improve building performance. The curriculum covers techniques for collecting and analyzing performance data, identifying trends in energy consumption, and making data-driven recommendations for operational enhancements. Students will also gain experience using data visualization tools to present findings and develop actionable insights for stakeholders. Case studies in building performance optimization and sustainability will reinforce concepts and highlight real-world applications of data analytics in the building automation industry.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Use data analysis techniques to interpret building performance data and make recommendations for efficiency improvements.

Name
Evaluate trends in energy consumption and operational performance within automated systems.

Name
Employ data visualization tools to communicate insights and findings effectively to stakeholders.

Name
Implement strategies for real-time data monitoring to optimize building operations

Name
Analyze case studies in data-driven building performance optimization and sustainability efforts

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACR220

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACR220 - Building Management Systems (BMS)

ADN110 - Concepts of Professional Nursing: Transitioning from LPN to RN

Overview

Department
Nursing

Course Description
This course focuses on the transition from a Licensed Practical Nurse (LPN) into the Associate Degree nursing program and introduces students to concepts under the categories of Client-Centered Care, Professional Nursing and Healthcare System. Students will be able to differentiate the scope of practice of the LPN from the RN. Emphasis is placed on concepts that are commonly used by professional nurses for the care of diverse clients, in a variety of settings, across the life span.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Integrate caring behaviors in practicing the art and science of nursing within a diverse population.

Name
Implement professional standards and scope of practice within legal, ethical, and regulatory frameworks.

Name
Collaborate with clients and members of the inter-professional health care team to optimize client outcomes.

Name
Formulate safe and effective clinical judgements guided by the nursing process, clinical reasoning, and evidence-based practice.

Name
Provide leadership in the management of care to meet client needs using available resources and current technology.

Name
Generate teaching and learning processes to promote and maintain health and reduce risks for a global population.

Name
Demonstrate effective communication methods to manage client needs and to interact with other healthcare team members.

Requirements

Simple Requirements

A minimum grade of 'C' in Course ALH175

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ALH175 - Introduction to Pathophysiology

A minimum grade of 'C' in Course BIO150

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- BIO150 - Human Anatomy & Physiology

A minimum grade of 'C' in Course ENG101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- ENG101 - Composition I

A minimum grade of 'C' in Course PSY101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PSY101 - General Psychology

ADN120 - Introduction to Nursing Concepts

Overview

Department
Nursing

Course Description
This course introduces students to a core set of concepts critical to professional nursing practice. Conceptual learning and its role in promoting deep learning will be examined. Students will complete concept analyses on selected concepts that will be used throughout the curriculum. Evidence-based exemplars will also be briefly reviewed in relation to selected concept.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
Discuss the purpose of a concept-focused curriculum.

Name
Define what concepts are and their role in a concept-based curriculum.

Name
Review the list of concepts upon which this curriculum is based.

Name
Analyze the three categories that accommodate groupings of concepts.

Name
Develop a concept analysis for a selected concept.

Name
Define what exemplars are and how they are related to concepts.

Name
Identify exemplars for the concept under study and add to concept analysis.

Requirements

Simple Requirements

Enrolled in Course ADN130

Type
Prerequisite

Enroll in the following Courses:
- ADN130 - Foundational Concepts in Nursing

Enrolled in Course ADN140

Type
Prerequisite

Enroll in the following Courses:
- ADN140 - Pharmacological Concepts in Nursing I

ADN130 - Foundational Concepts in Nursing

Overview

Department
Nursing

Course Description
This course introduces students to concepts under the category of Client Centered Care. Instruction will emphasize the knowledge and skills needed by professional nurses to provide safe, quality care. The faculty will present the theoretical foundation for nursing skills and the nursing process, and students will demonstrate these skills in a laboratory setting.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
6

Contact Hours

Contact Hours
Min:
150

Billing Hours

Billing Hours
Min:
6

Lecture Hours

Lecture Hours
Min:
60

Other Hours

Other Hours
Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Discuss the importance of recognizing client attributes to promote diversity, equity and inclusion (culture, spirituality, developmental stage, sexuality/ sexual identity).

Name
Describe the nurses role in identifying and supporting physiologic and psychosocial needs of clients (rest and sleep; spirituality; growth and development; sensory perception; hygiene; activity and exercise; infection control; elimination; nutrition; comfort/pain).

Name
Discuss the nurses role in implementing strategies to promote an environment that is safe for the client, self, and others.

Name
Demonstrate basic nursing skills using proper techniques and measures to promote safe, quality, client-centered care.

Name
Apply the various elements of the nursing process to clinical decision-making.

Requirements

Simple Requirements

Enrolled in Course ADN120

Type
Prerequisite

Enroll in the following Courses:
- ADN120 - Introduction to Nursing Concepts

Enrolled in Course ADN140

Type
Prerequisite

Enroll in the following Courses:
- ADN140 - Pharmacological Concepts in Nursing I

ADN140 - Pharmacological Concepts in Nursing I

Overview

Department
Nursing

Course Description
The purpose of this course is to examine pharmacotherapeutic agents used in the treatment of illness and the promotion, maintenance, and restoration of wellness in diverse individuals. It focuses on drug classification, concepts, and principles of pharmacology with special consideration for the nursing role in developing a comprehensive approach to the clinical application of drug therapy through the use of the nursing process. In addition, students examine the Nursing implications relative to the utilization of drug therapy and engage in discussion around the safety and legal implications of drug administration.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Apply principles of pharmacology, pharmacokinetics, and pharmacodynamics to medication therapy.

Name
Recognize selected major classifications of medications, common medications within each classification, their side effects, and contraindications.

Name
Discuss nursing implications and concepts of safety when performing medication administration.

Name
Recognize that each client's unique physiology and body system function will influence the pharmacokinetics and pharmacodynamics of medication therapy.

Name
Discuss the legal and ethical implications/aspects of medication administration.

Name
Identify basic pathophysiologic conditions and correlate the pharmacotherapeutic interventions utilized in client care.

Name
Apply standard mathematical principles to accurately calculate dosages of prescribed pharmacologic agents.

Requirements

Simple Requirements

Enrolled in Course ADN120

Type
Prerequisite

Enroll in the following Courses:
- ADN120 - Introduction to Nursing Concepts

Enrolled in Course ADN130

Type
Prerequisite

Enroll in the following Courses:
- ADN130 - Foundational Concepts in Nursing

ADN150 - Professional Nursing Concepts I

Overview

Department
Nursing

Course Description
This course introduces students to concepts under the categories of Professional Nursing and Healthcare System. Emphasis is placed on concepts that professional nurses commonly use in a variety of settings with diverse clients.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Discuss the role of the nurse and scope of practice related to established code of ethics, nurse practice acts, and professional guidelines.

Name
Review the spectrum of health and healthcare settings across which client care is provided.

Name
Recognize the importance of profession-related concepts as they pertain to Quality and Safety Education for Nurses QSEN

Name
Discuss the concepts integral to the provision of client-centered care: nursing process, clinical judgment, advocacy, cultural sensitivity, diversity, and communication

Name
Examine the characteristics of professional nurses, including professional behaviors and professional identity.

Name
Identify the characteristics of effective leaders and leadership roles held by professional nurses.

Name
Discuss the importance of communication and developing therapeutic relationships in healthcare.

Name
Examine how systems-based practice is integral to work within healthcare organizations and as a part of the healthcare team.

Requirements

Simple Requirements

A minimum grade of 'C' in Course ADN120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ADN120 - Introduction to Nursing Concepts

A minimum grade of 'C' in Course ADN130

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ADN130 - Foundational Concepts in Nursing

A minimum grade of 'C' in Course ADN140

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ADN140 - Pharmacological Concepts in Nursing I

Enrolled in Course ADN160

Type
Prerequisite

Enroll in the following Courses:
- ADN160 - Client Care Concepts I

Enrolled in Course ADN170

Type
Prerequisite

Enroll in the following Courses:
- ADN170 - Pharmacological Concepts in Nursing II

ADN160 - Client Care Concepts I

Overview

Department
Nursing

Course Description
This course focuses on the care of clients across the lifespan with concept-related health alterations that require intervention. Clinical experiences allow the student to apply theoretical concepts and implement safe client care to clients in various settings.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
6

Contact Hours

Contact Hours
Min:
150

Billing Hours

Billing Hours
Min:
6

Lecture Hours

Lecture Hours
Min:
60

Other Hours

Other Hours
Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Perform a basic health assessment of clients across the lifespan to identify deviations from normal.

Name
Develop evidence-based plans of care that include cultural, spiritual, and developmentally appropriate interventions and health promotion recommendations for clients across the lifespan.

Name
Participate as a member of the inter-professional healthcare team in the provision of safe, quality care.

Name
Demonstrate clinical decision-making when participating in the provision of care.

Name
Apply knowledge of pharmacology, pathophysiology, and nutrition in the provision of client care.

Name
Use verbal and nonverbal communication that promotes caring, therapeutic relationships with clients and their families, as well as professional relationships with members of the healthcare team.

Name
Demonstrate ability to securely use health information systems and client care technologies in an appropriate, effective manner.

Name
Provide health- and safety-related education based on the identified needs of clients.

Name
Use organizational and time-management skills in the provision of client care.

Name
Report environmental hazards and client safety concerns and participate in activities that promote quality improvement.

Name
Adhere to ethical, legal, and professional standards while providing client care.

Requirements

Simple Requirements

A minimum grade of 'C' in Course ADN120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ADN120 - Introduction to Nursing Concepts

A minimum grade of 'C' in Course ADN130

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ADN130 - Foundational Concepts in Nursing

A minimum grade of 'C' in Course ADN140

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ADN140 - Pharmacological Concepts in Nursing I

Enrolled in Course ADN150

Type
Prerequisite

Enroll in the following Courses:
- ADN150 - Professional Nursing Concepts I

Enrolled in Course ADN170

Type
Prerequisite

Enroll in the following Courses:
- ADN170 - Pharmacological Concepts in Nursing II

ADN170 - Pharmacological Concepts in Nursing II

Overview

Department
Nursing

Course Description
This course is a continuation of Pharmacological Concepts in Nursing I. The purpose of this course is to examine pharmacotherapeutic agents used in treating illness and promoting, maintaining, and restoring wellness in diverse individuals. It focuses on drug classification, concepts, and principles of pharmacology with special consideration for the nursing role in developing a comprehensive approach to the clinical application of drug therapy through the use of the nursing process. In addition, students will have the opportunity to examine the nursing implications relative to the utilization of drug therapy. Finally, students will study the safety and legal implications of drug administration.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Apply principles of pharmacology, pharmacokinetics, and pharmacodynamics to medication therapy.

Name
Discuss nursing implications and concepts of safety when performing medication administration.

Name
Apply standard mathematical principles to accurately calculate dosages of prescribed pharmacologic agents for clients across the lifespan.

Requirements

Simple Requirements

A minimum grade of 'C' in Course ADN120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ADN120 - Introduction to Nursing Concepts

A minimum grade of 'C' in Course ADN130

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ADN130 - Foundational Concepts in Nursing

A minimum grade of 'C' in Course ADN140

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ADN140 - Pharmacological Concepts in Nursing I

Enrolled in Course ADN150

Type
Prerequisite

Enroll in the following Courses:
- ADN150 - Professional Nursing Concepts I

Enrolled in Course ADN160

Type
Prerequisite

Enroll in the following Courses:
- ADN160 - Client Care Concepts I

ADN180 - Client Care Concepts II

Overview

Department
Nursing

Course Description
This course builds on Client Care Concepts I, focusing on the care of clients across the lifespan with concept-related health alterations that require intervention. Clinical experiences allow the student to apply theoretical concepts and implement safe client care to clients in a variety of settings.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
6

Contact Hours

Contact Hours
Min:
150

Billing Hours

Billing Hours
Min:
6

Lecture Hours

Lecture Hours
Min:
60

Other Hours

Other Hours
Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Perform a comprehensive health assessment of clients across the lifespan to identify deviations from normal.

Name
Develop individualized, evidence-based plans of care that include cultural, spiritual, and developmentally appropriate interventions and health promotion recommendations for clients across the lifespan.

Name
Collaborate with members of the inter-professional healthcare team while acting as a client advocate in the provision of safe, quality care.

Name
Demonstrate clinical judgment when providing direct client care to clients with health alterations.

Name
Integrate knowledge of pharmacology, pathophysiology, nutrition, and established evidence-based practices when caring for a clients health alterations.

Name
Use verbal and nonverbal communication that promotes caring, therapeutic relationships with clients and families, as well as professional relationships with members of the healthcare team.

Name
Use health information systems and client care technologies in an effective and secure manner when assessing and monitoring clients.

Name
Apply evidence-based knowledge in the provision of care to clients with health alterations.

Name
Provide health- and safety-related education to clients and families using a variety of teaching methods.

Name
Use organizational, time management, priority-setting, and decision-making skills in the provision of care to clients with health alterations.

Name
Evaluate strategies used to provide a safe environment for clients, self, and others while supporting quality improvement initiatives.

Name
Adhere to ethical, legal, and professional standards in the provision of care to clients with health alterations.

Requirements

Simple Requirements

A minimum grade of 'C' in Course ADN150

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ADN150 - Professional Nursing Concepts I

A minimum grade of 'C' in Course ADN160

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ADN160 - Client Care Concepts I

A minimum grade of 'C' in Course ADN170

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ADN170 - Pharmacological Concepts in Nursing II

Enrolled in Course ADN190

Type
Prerequisite

Enroll in the following Courses:
- ADN190 - Professional Nursing Concepts II

ADN190 - Professional Nursing Concepts II

Overview

Department
Nursing

Course Description
This course requires students to continue appraising concepts under the categories of Professional Nursing and Healthcare System. Instruction in this course emphasizes contemporary issues and the concepts of Health Care Law and Ethics, Healthcare Delivery Systems and Organizations, Healthcare Quality, Health Policy, Leadership and Management, and Professionalism and Professional Identity.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Defend opinions using evidence-based literature about selected contemporary issues and their effects on the profession of nursing, healthcare delivery system, and system-based practice.

Name
Examine the organizational structure of a healthcare system, its governance structure, potential impact on the role of the nurse, and provision of healthcare in a work unit.

Name
Evaluate the current healthcare system and the role of selected healthcare policies and the politics that surround their establishment.

Name
Analyze selected leadership styles and theories and their effect on the management of employees.

Name
Integrate principles of group process and teamwork into the operation of the inter-professional healthcare team.

Name
Apply leadership skills and empowerment strategies when managing the care of clients, families, groups, communities, and populations.

Name
Examine the ethical and legal principles of nursing practices and their roles in protecting client rights.

Name
Explore the characteristics of the profession of nursing; the norms, values, attitudes, and behaviors essential to the role; and how professional identity is developed.

Name
Analyze quality improvement and the nurses role in identifying and acting to improve client outcomes.

Requirements

Simple Requirements

A minimum grade of 'C' in Course ADN150

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ADN150 - Professional Nursing Concepts I

A minimum grade of 'C' in Course ADN160

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ADN160 - Client Care Concepts I

A minimum grade of 'C' in Course ADN170

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ADN170 - Pharmacological Concepts in Nursing II

Enrolled in Course ADN180

Type
Prerequisite

Enroll in the following Courses:
- ADN180 - Client Care Concepts II

ADN200 - Client Care Concepts III

Overview

Department
Nursing

Course Description
This course builds on Client Care Concepts I and II, focusing on the care of clients across the lifespan with concept-related exemplary multisystem health alterations that require intervention. Clinical experiences allow the student to apply theoretical concepts and implement safe client care to clients in a variety of settings.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
6

Contact Hours

Contact Hours
Min:
150

Billing Hours

Billing Hours
Min:
6

Lecture Hours

Lecture Hours
Min:
60

Other Hours

Other Hours
Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Perform a comprehensive health assessment of clients with deviations from normal that contribute to multisystem alterations in health.

Name
Develop an individualized, evidence-based plan of care that demonstrates an appreciation of a clients diverse cultural, spiritual, and developmental variations while addressing the interaction of multisystem alterations in health.

Name
Act as a client advocate when collaborating with members of the inter-professional healthcare team in the provision of safe, quality care for clients with multisystem alterations in health.

Name
Demonstrate clinical judgment when managing the care of clients with multisystem alterations in health.

Name
Integrate knowledge of pharmacology, pathophysiology, nutrition, established evidence-based practices, and concepts from previous nursing courses when caring for clients with multisystem alterations in health.

Name
Use verbal and nonverbal communication to promote caring, therapeutic relationships with clients, families, and groups, as well as professional relationships with members of the healthcare team.

Name
Use healthcare information systems and client care technology to manage client care, mitigate error, and communicate relevant client information with members of the healthcare team.

Name
Integrate evidence-based knowledge in the management of care to clients with multisystem alterations in health.

Name
Evaluate the efficacy of health-related education that has been provided to clients, families, and groups.

Name
Use organizational, time-management, and priority-setting skills when managing a caseload of clients and making clinical judgments about their care.

Name
Adhere to ethical, legal, and professional standards while managing the care of clients with multisystem alterations in health.

Requirements

Simple Requirements

A minimum grade of 'C' in Course ADN180

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ADN180 - Client Care Concepts II

A minimum grade of 'C' in Course ADN190

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ADN190 - Professional Nursing Concepts II

Enrolled in Course ADN210

Type
Prerequisite

Enroll in the following Courses:
- ADN210 - Transition to Practice

ADN210 - Transition to Practice

Overview

Department
Nursing

Course Description
This course facilitates the transition of the student to the role of a professional nurse. Emphasis is placed on contemporary issues and management concepts and developing the skills of delegation, conflict management, and leadership. Students will review the legal and ethical issues with a focus on personal accountability and responsibility. Standards of practice and the significance of functioning according to state regulations and statutes are analyzed. Clinical experiences provide the student the opportunity to apply theoretical concepts.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
120

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
30

Other Hours

Other Hours
Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Defend position using evidence-based literature about selected contemporary issues and their effects on the profession of nursing, the healthcare delivery system, and system-based practice.

Name
Examine the organizational structure of a healthcare system, its governance structure, potential impact on the role of the nurse, and provision of healthcare within a work unit.

Name
Analyze selected leadership styles and theories and their effects on the management of employees.

Name
Apply leadership skills and empowerment strategies when managing the care of clients.

Name
Delegate tasks within the legal parameters of that entitys scope and practice, ensuring safe, quality, client-centered care.

Name
Act as an advocate for clients, families, groups, communities, and populations regarding healthcare and health-related decisions.

Name
Use healthcare information systems and client care technology to manage client care, support clinical judgments, mitigate error, and communicate relevant client information with members of the healthcare team.

Name
Manage the care of clients, families, groups, communities, and populations while adhering to ethical, legal, and professional standards and maintaining accountability and responsibility for care provided.

Name
Evaluate the effectiveness of quality improvement strategies using client outcome data to improve healthcare services.

Name
Assist in the implementation of mass casualty plans in the event of an emergency.

Name
Analyze personal career goals and additional education or certification needed to achieve these goals.

Requirements

Simple Requirements

A minimum grade of 'C' in Course ADN180

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ADN180 - Client Care Concepts II

A minimum grade of 'C' in Course ADN190

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ADN190 - Professional Nursing Concepts II

Enrolled in Course ADN200

Type
Prerequisite

Enroll in the following Courses:
- ADN200 - Client Care Concepts III

AEN105 - Industrial Robotics

Overview

Department
Automation and Advanced Tech

Course Description
This course examines types, applications and troubleshooting of industrial robots and subsystems. Included in this course is the programming of industrial robotic control software.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate the safety procedures when working with industrial robotic systems.

Name
Describe the various types and applications of industrial robots.

Name
Describe the various types and functions of robotic subsystems.

Name
Select the proper wiring and terminations of robotic hardware.

Name
Describe the various types of robotic software programs.

Name
Demonstrate how to program a representative sample of robotic systems.

Name
Demonstrate the process of industrial robotic system troubleshooting.

AEN106 - AC/DC Circuits

Overview

Department
Automation and Advanced Tech

Course Description
AC/DC circuits address the basics of direct and alternating current circuits.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Describe and apply Ohms, Watts, and Kirchhoff laws.

Objective
Define, demonstrate, and apply the characteristics of series, parallel, and combination circuits.

Name
Explain DC theory concepts

Objective
Explain AC theory concepts.

Name
Perform and interpret electrical measurements using industry standard equipment.

Objective
Read and interpret electrical symbols and schematics.

Name
Troubleshoot basic AC and DC circuits.

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

AEN109 - Programmable Logic Controllers (PLC)

Overview

Department
Automation and Advanced Tech

Course Description
This course examines types, installation, programming procedures and troubleshooting of programmable logic controllers (PLC). Hardware and programming aspects, as well as ladder logic symbols and operations necessary to develop a PLC program are covered in this course.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate safety procedures when working with PLCs

Name
Connect a PLC to a programming device with proper wiring and terminations of inputs and outputs.

Name
Identify the types, components, and basic operation of a PLC, including the primary function and the various basic components.

Name
Identify the numbering systems and symbols used in PLC relay ladder logic.

Name
Describe addressing and the function of tags, how PLC module terminals are referenced by tag names, and the application of module-defined tag structures.

Name
Describe the purposes of the power supply, input/output (both discrete and analog), processor and programming sections of a PLC, and the function and operation of I/O diagrams and module indicator lights.

Name
Develop a functional PLC program using appropriate programming languages.

Name
Demonstrate the execution of a created PLC program, including monitoring of the PLC operation, and running and stopping a PLC processor file

Name
Demonstrate the process of PLC system troubleshooting, including I/O sections of a PLC and related field devices.

AEN111 - Foundations of Manufacturing

Overview

Department
Automation and Advanced Tech

Course Description
This course is designed to teach students the non-technical side of manufacturing that helps them to know where they fit into the value chain and how their performance affects the company, and to understand how and why decisions are made. Soft skills, proper selection and use of maintenance tools, safety, differences in maintenance practices will be introduced.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The students will describe the function of preventive maintenance

Name
The students describe the function of reactive maintenance

Name
The students will understand key maintenance terms

Name
The student will be able to understand failure consequences and modes

Name
The students will understand the basics of root cause analysis as it applies to the course content

Name
The student will apply the appropriate safety techniques.

Name
The student will understand accountability and its role in the industry

Name
The students will apply lean manufacturing techniques to the course projects

AEN115 - Industrial Safety

Overview

Department
Automation and Advanced Tech

Course Description
The primary purpose of this course is to introduce and familiarize new students with the use and safety precautions to consider and apply as an Industrial Mechanic. This course will cover the principles of Lockout/Tagout and Arc Flash. These standards along with safety principles within a production environment will be covered.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
Describe the purpose and steps required for proper Lockout/Tagout of industrial equipment.

Name
Demonstrate Lockout /Tagout operations

Name
Describe the purpose and principals of Arc Flash Safety.

Name
Demonstrate safe Arc Flash operations

Name
Apply industrial safety techniques in all course projects and exercises.

AEN116 - Fundamentals of Motor Controls

Overview

Department
Automation and Advanced Tech

Course Description
This course provides instruction in two-wire motor control circuits using relays, contractors, and motor starts with application sending devices. Topics include: wiring limit switches, wiring pressure switches, wiring float switches, wiring temperature switches, wiring proximity switches, wiring photo switches, sequencing circuits, reduced voltage starting, motor control centers, and troubleshooting.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to install and adjust a variety of switches

Objective
Install motor control limit switches to control magnetic starters', Adjust motor control limit switches for proper operation', Install a pressure switch to control a magnetic starter of a motor controller', Adjust the range and differential settings for given pressure limits of motor controller', Install a motor controller float switch to operate a pump', Adjust a motor controller float switch for given operating levels', Install a motor controller temperature switch to control a heating element', Adjust a motor controller temperature switch for a given range of temperature', Install a motor controller proximity switch in a control circuit to detect the pressure of metal', Install a motor controller proximity switch for use as a motion detector', Calibrate a motor controller proximity switch for sensitivity', Install a motor controller photo switch in a control circuit to detect the pressure of light', Install a motor controller photo switch for use as light detector', Calibrate a motor controller photo switch for sensitivity

Name
The student will be able to install time delay relay and sequence with two motors

Objective
Identify the various types of timers used in motor control circuits', Operate ondelay timers for applications in motor control circuits', Operate offdelay timers for applications in motor control circuits', Install a time delay relay for use in a motor control circuit', Adjust the time on a time delay relay used in a motor', Install a time delay relay and two magnetic starters to sequence the operation of two motors

Name
The student will be able to install and operate reduced voltage starting

Objective
Install and operate a primary resistance starter motor controller', Install and operate an autotransformer starter in a motor control circuit', Install and operate a wyedelta starter in a motor control circuit', Install and operate a solid state starter in a motor control circuit

Name
The student will be able to perform installation process in a motor control center

Objective
Install various motor control components in a motor control center

Name
The student will be able to perform troubleshooting processes

Objective
Use proper troubleshooting techniques to eliminate problems in motor control systems', Use a VOM to troubleshoot a motor control circuit and diagnose the problems', Use motor controller schematic diagrams a VOM test terminals and terminal strips to locate and diagnose problems at motor control centers', Utilize meggrs to troubleshoot motor control systems

Name
The student will be able to complete final project

Objective
Final project will be industrial based using 2 wire diagrams

AEN117 - Variable Speed Motor Control

Overview

Department
Automation and Advanced Tech

Course Description
This course provides instruction in the fundamentals of variable speed drives, industrial motors, and other applications of variable speed drives. Topics include: fundamentals of variable speed control, AC frequency drives, DC variable speed drives, installation procedures, and ranges.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to define the fundamentals of variable speed control

Objective
Cite industrial applications of variable speed motor control circuits', Define parameters torque acceleration deceleration pwm frequency voltagehertz ratio boost IR compensation and high bus fault as applicable to variable speed motor controllers

Name
The student will be able to demonstrate knowledge of AC frequency drives

Objective
Describe how an AC frequency drive operates to vary motor speed', Install an AC frequency drive to control motor speed', Set up and calibrate an AC frequency drive change parameters', Determine the interconnections needed for various AC motor speed applications on two speed motors

Name
The student will be able to demonstrate knowledge of stepper motors

Objective
Describe how an stepper motor drive operates to vary motor speed', Install an stepper motor drive to control motor speed', Set up and calibrate an stepper motor drive change parameters', Determine the interconnections needed for various stepper motor speed applications on two speed motors

Name
The student will be able to demonstrate knowledge of DC variable speed drives

Objective
Identify the relationships of torque and speed to series shunt and compound DC motors', Identify armature rheostat variable speed circuits for DC motors', Identify compound variable speed DC motors', Identify methods used to obtain variable speed control of compound DC motors', Install a DC variable speed drive for a DC motor', Calibrate a DC variable speed drive for a DC motor

Name
The student will be able to install components for AC and DC variable motor circuits

Objective
Select appropriate control cabinets for variable speed motor control circuits', Sketch floor plans for the installation of variable speed motor control systems', Sketch the layout of electrical accessories and conductors used in variable speed motor control circuits', Install components wire control cabinets operators stations and motors for variable speed DC motor circuits', Install components wire control cabinets operators stations and motors for variable speed AC motor circuits

Name
The student will be able to evaluate the use of motors and variable speed motors in industrial applications

Objective
Explain the formulas for determining the synchronous speed of AC motors', Diagram a bank of starters used to achieve speed ranges for AC motors', Sketch circuits which use mechanical interlocks for starters in AC motor variable speed controllers', Sketch circuits which use auxiliary contacts for interlocks between starts in AC motor variable speed controllers', Sketch circuits which use pushbuttons for interlocks between starts in AC motor variable speed controllers', Describe the limiting factors of speed ranges for variable speed DC motor controllers', Evaluate the use of DC motors and variable speed controllers in specific industrial applications

AEN122 - AC/DC Circuits

Overview

Department
Automation and Advanced Tech

Course Description
AC/DC circuits addresses the basics of direct and alternating current circuits.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Describe and apply Ohms, Watts, and Kirchhoff laws

Name
Define, demonstrate, and apply the characteristics of series, parallel, and combination circuits.

Name
Explain DC theory concepts

Name
Explain AC theory concepts.

Name
Perform and interpret electrical measurements using industry standard equipment.

Name
Read and interpret electrical symbols and schematics.

Name
Troubleshoot basic AC and DC circuits.

AEN131 - Industrial Programmable Logic Controls (PLC)

Overview

Department
Automation and Advanced Tech

Course Description
This course examines types, installation and troubleshooting of programmable logic controllers (PLC). Hardware and programming aspects, as well as ladder logic symbols and operations necessary to develop a PLC program are covered in this course.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to develop and troubleshoot a functional programmable logic controller program

Objective
Demonstrate the safety procedures when working with programmable logic controllers', Identify the types and components of a programmable logic controller', Connect a programmable logic controller to a programming device', Select the proper wiring and terminations of inputs and outputs', Identify the numbering systems used in programmable logic controllers', Identify the symbols used in programmable logic controller relay ladder logic', Develop a functional programmable logic controller program', Document a programmable logic controller program', Demonstrate the process of programmable logic controller system troubleshooting

Name
Demonstrate the safety procedures when working with programmable logic controllers

Name
Identify the types and components of a programmable logic controller

Name
Connect a programmable logic controller to a programming device

Name
Select the proper wiring and terminations of inputs and outputs

Name
Identify the numbering systems used in programmable logic controllers

Name
Identify the symbols used in programmable logic controller relay ladder logic

Name
Develop a functional programmable logic controller program

Name
Document a programmable logic controller program

Name
Demonstrate the process of programmable logic controller system troubleshooting

Requirements

Simple Requirements

A minimum grade of C in course AEN109

Type
Prerequisite

AEN132 - Industrial Process Control

Overview

Department
Automation and Advanced Tech

Course Description
This course provides understanding of different types of process control systems like temperature, flow and level control. The course includes process control principles, thermocouples, RTD's, temperature measurement devices, ON/Off temperature controlled, programmable process heat controllers, transmitters, process loop test and operate system found in industrial application.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explain the basic principles & importance of process control in industrial process plants, and specify the required instrumentation and final elements to ensure that well-tuned control is achieved.

Name
Demonstrate safety procedures when working with PLCs.

Name
Connect a PLC to a programming device with proper wiring and terminations of inputs and outputs

Name
Identify the types, components, and basic operation of a PLC, including the primary function and the various basic components.

Name
Identify the numbering systems and symbols used in PLC relay ladder logic.

Name
Describe addressing and the function of tags, how PLC module terminals are referenced by tag names, and the application of module-defined tag structures

Name
Describe the purposes of the power supply, input/output (both discrete and analog), processor and programming sections of a PLC, and the function and operation of I/O diagrams and module indicator lights.

Name
Develop a functional PLC program using appropriate programming languages.

Name
Demonstrate the execution of a created PLC program, including monitoring of the PLC operation, and running and stopping a PLC processor file.

Name
Demonstrate the process of PLC system troubleshooting, including I/O sections of a PLC and related field devices.

AEN137 - Industrial Schematics

Overview

Department
Automation and Advanced Tech

Course Description
This course is designed to provide students with the skills and knowledge necessary to read and interpret various types of schematics commonly used in electrical hydraulic, pneumatics, and IOT systems. Through theoretical instruction and hands on practice, students will learn how to analyze and understand schematics accurately, identify key components, interpret symbols and diagrams and help troubleshoot systems issues effectively.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Read and interpret electrical, hydraulic, and pneumatic schematics accurately.

Name
Identify and understand the function of key components within schematic diagrams.

Name
Analyze basic system operations based on schematic representations.

Name
Develop a basic understanding of troubleshooting basic system faults and malfunctions using schematic diagrams.

Name
Apply schematic reading skills to practical engineering tasks and projects.

Name
Demonstrate basic understanding in integrating multiple types of schematics for complex systems.

Name
Describe the principles of equipment installation utilizing drawings and schematics

Name
Demonstrate basic understanding of schematics to integrate of IIOT systems including main/control panels and machine operations.

AEN143 - Electrical System Troubleshooting

Overview

Department
Automation and Advanced Tech

Course Description
Students will focus on the application and troubleshooting of advanced electrical applications in an industrial maintenance setting. A systems approach will be utilized to include panels, relays, power, and the impact of electrical code.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Identify and apply power supply requirements to industrial electrical systems

Name
Connect and operate relays for industrial operations

Name
Perform basic control panel setup and wiring

Name
Identify proper safety protocols utilised in industrial operations

Name
Discuss concepts associated with code based on project installation and troubleshooting

Name
Describe relationship of i/o, controls, and other industrial components in system integration

Name
Demonstrate skills associate with installation and troubleshooting of industrial electrical systems

Requirements

Simple Requirements

A minimum grade of 'C' in Course AEN 109

Type
Prerequisite

Complete ALL of the following Courses:
- AEN109 - Programmable Logic Controllers (PLC)

A minimum grade of "C" in Course AEN 106

Type
Completion Requirement

Complete ALL of the following Courses:
- AEN106 - AC/DC Circuits

AEN145 - Actuators & Sensors

Overview

Department
Automation and Advanced Tech

Course Description
This course introduces the principles, selection, and application of industrial actuators and sensors used in automated systems. Students will study common device types, installation practices, and troubleshooting techniques, with emphasis on integration into modern control systems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate safe practices when working with controls systems

Objective
Explain appropriate PPE for working with electrical and pneumatic systems, Identify relevant safety standards and agencies

Name
Compare open-loop and closed-loop control systems

Objective
Contrast open-loop and closed-loop systems, Discuss the role of sensors in closed-loop feedback, Illustrate signal and energy flow in a control loop, Summarize PID principles and setpoint/process-variable relationships

Name
Classify common types of industrial sensors

Objective
Describe operating principles of mechanical, optical, and thermal sensors, Compare analog vs. digital sensing, Select sensors for given applications based on environment and operating requirements

Name
Contrast common types of industrial actuators

Objective
Describe operation of electric, pneumatic, and hydraulic actuators, Explain motors and motor drives in automation, Compare actuator options for speed, force/torque, precision, and duty cycle

Name
Complete installation and configuration of actuators and sensors in control systems

Objective
Use proper wiring, cabling, and connectors per device specs, Complete calibration procedures for common sensors, Integrate devices into PLC- and PID-based control schemes

Name
Analyze control documentation for automation systems

Objective
Interpret wiring diagrams, schematics, and P&IDs, Trace control loops and identify device symbols, Evaluate documentation for accuracy and completeness

Name
Solve actuator and sensor system faults and plan preventive maintenance

Objective
Categorize common failure modes and symptoms, Use systematic test methods to isolate faults, Plan corrective actions and preventive maintenance records

Requirements

Simple Requirements

A minimum grade of 'C' in Course AEN 109

Type
Prerequisite

Complete ALL of the following Courses:
- AEN109 - Programmable Logic Controllers (PLC)

AEN146 - Motion Control: Servos & Drives

Overview

Department
Automation and Advanced Tech

Course Description
This course introduces the principles and applications of motion control for automated systems. Students will study programming, maintenance, and troubleshooting techniques for modern motion control systems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Explain the fundamental principles of motion control and their role in automated systems

Objective
Describe the relationship between motion control, automation, and process efficiency, Summarize common industrial applications for motion control.

Name
Identify common motion control components, including motors, drives, controllers, encoders, and feedback devices

Objective
Classify types of motors (e.g., servo, stepper, induction), Explain feedback devices and their signal types.

Name
Program basic motion control sequences using motion control software platforms

Objective
Develop simple linear and rotary motion routines, Implement homing, jogging, and positioning commands.

Name
Analyze motion profiles, speed, acceleration, and positioning requirements for automated processes

Objective
Interpret motion diagrams and performance specifications, Calculate speed, acceleration, and deceleration for specific tasks, Evaluate system response based on load and inertia.

Name
Demonstrate proper installation, calibration, and alignment procedures for motion control equipment

Objective
Install wiring between motors, drives, and controllers, Perform mechanical alignment of shafts, couplings, and feedback devices, Verify proper calibration of encoders and sensors.

Name
Diagnose and solve common motion control system faults using systematic troubleshooting methods

Objective
Identify typical error codes, alarms, and warning indicators, Demonstrate use of common troubleshooting techniques and tools for fault analysis, Apply fault isolation techniques to resolve performance issues, Implement corrective and preventative changes for function and longevity of motion control systems.

Name
Plan routine maintenance and documentation practices to ensure long-term reliability of motion control systems

Objective
Develop maintenance schedules for drives, motors, and feedback devices, Implement preventive measures to reduce downtime.

Requirements

Simple Requirements

A minimum grade of 'C' in Course AEN 116

Type
Prerequisite

Complete ALL of the following Courses:
- AEN116 - Fundamentals of Motor Controls

AEN147 - Industrial Fluid Power

Overview

Department
Automation and Advanced Tech

Course Description
This course provides instruction in fundamental concepts and theories for safely operating hydraulic components and pneumatic systems. Topics include: hydraulic theory, suction side of pumps, actuators, valves, pumps/motors, accumulators, symbols and circuitry, fluids, filters, pneumatic theory, compressors, pneumatic valves, air motors and cylinders, pump identification and pump operation.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the concepts associated with hydraulic theory

Name
The student will be able to discuss concepts associated with suction Side of Pumps

Name
The student will be able to explain concepts associated with actuators

Name
The student will be able to adjust hydraulic valves

Name
The student will be able to maintain accumulators

Name
The student will be able to read hydraulic schematics

Name
The student will be able to discuss concepts associated with hydraulic fluids and reservoirs

Name
The student will be able to discuss concepts associated with pneumatic theory

Name
The student will be able to manipulate air compressor

Name
The student will be able to perform functional analysis on pneumatic valves

Name
The student will be able to perform a Functional analysis vacuum valves

Name
The student will be able to identify pumping industry standards

Name
The student will be able to basic principles of piping operations

Name
Demonstrate the safety procedures when working with hydraulic and pneumatic systems.

Name
Describe the various types and applications of hydraulic components.

Name
Describe the various types and applications of pneumatic components.

Name
Interpret a pneumatic circuit drawing.

Name
Demonstrate the process of hydraulic and pneumatic system troubleshooting

AEN150 - Manufacturing Equipment and Tools

Overview

Department
Automation and Advanced Tech

Course Description
In this course students will learn how to use common manufacturing tools and equipment properly and safely. Students will learn the proper selection and applications of maintenance tools and demonstrate safe practices in a maintenance environment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will identify and select tools for manufacturing equipment maintenance.

Objective
Identify the usefunction of common tools used in predictive and reactive maintenance', Select the correct hand and power tools for different predictive and reactive maintenance scenarios

Name
The student will demonstrate safety practices of common maintenance tools and equipment.

Objective
Demonstrate safety precautions for common maintenance tools such as screwdrivers wrenches sockets hammers punches chisels files pliers and vise grips', Demonstrate safety procedures for maintenance power tools such as drilling cutting grinding and sanding tools', Demonstrate safety procedures for maintenance equipment found in the lab

Name
The student will demonstrate effective operation of common maintenance tools and equipment

Objective
Effectively operate common maintenance tools such as screwdrivers wrenches sockets hammers punches chisels files pliers and vise grips', Effectively operate power tools found in the laboratory', Effectively operate maintenance equipment found in the lab

Requirements

Simple Requirements

A minimum grade of "C" in Course AEN 111

Type
Completion Requirement

Complete ALL of the following Courses:
- AEN111 - Foundations of Manufacturing

AEN152 - Predictive Maintenance

Overview

Department
Automation and Advanced Tech

Course Description
This course addresses regular routine predictive maintenance measures that allow for forecasted maintenance issues that may impact manufacturing operations. Introduces students to the various types and styles of predictive maintenance components, principles, and practices used in industrial applications.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The students will describe the use of infrared cameras

Objective
Discuss the history of infrared, discuss the key uses of infrared cameras, identify parts of infrared cameras, discuss reflectivity, discuss reflections, discuss how infrared imagers work.

Name
The students will describe various temperature scales and make conversions

Objective
The student will be able to identify the four temperature scales, the student will be able to demonstrate temperature conversions between the four scales, the student will be able to explain the three units of heat, the student will be able to explain the two laws of thermodynamics.

Name
The students will take quality images with an infrared camera

Objective
The student will be able to explain the span and level functions, the student will be able to explain the focus and range functions, the student will be able to explain color palette selection, the student will be able to explain how distance and orientation affect image quality.

Name
The students will conduct motor tests with the PDMA motor tester

Objective
The student will be able to demonstrate through classroom and lab projects the ability to safely conduct all motor tests according to published standards, the student will be able to explain what motor testing is, the student will be able to demonstrate the use of proper PPE, the student will be able to safely connect and disconnect the motor test equipment.

Name
The students will interpret test results and write a report on the findings

Objective
The student will be able to explain what the six offline test results mean, the student will be able to explain what the six online tests mean, the student will be able to demonstrate the ability to interpret the data of all twelve tests, the student will be able to demonstrate the ability to properly write a fault report.

Name
The students will demonstrate online and offline tests

Objective
The student will be able to explain the differences in how the online and offline tests are conducted, The student will be able to explain the difference between what the results will be between the online and offline tests, The student will be able to explain the differences between the online and offline tests for AC and DC motors, The student will be able to demonstrate the different connections of each tests

Name
The students will explain and demonstrate why temperature correction is important to the test

Objective
The student will be able to explain why IEEE 43 states that temperature correction is important, the student will be able to demonstrate display corrections, the student will be able to demonstrate the formula used for temperature correction when the actual temperature is unavailable

Name
The students will identify components (test leads, connectors, battery, battery indicator, switches) of the tester

Objective
The student will be able to demonstrate the correct cable selection for online testing, the student will be able to demonstrate the correct cable selection for offline testing, the student will be able to explain where and how the battery connects to the unit, the student will be able to explain the battery indicator.

Name
The students will describe the fundamentals of Tribology

Objective
The student will be able to explain the definition/origin of Tribology, the student will be able to explain the fundamentals of Tribology, the student will be able to explain Tribology components, the student will be able to explain Tribology testing.

Name
The students will describe differences in grease and oil

Objective
The student will be able to define oil, the student will be able to define grease, the student will be able to define the differences in oil and grease, the student will be able to define correct lubricant selection, the student will be able to explain the differences in testing oil and grease

Name
The students will describe various mechanical equipment

Objective
The student will be able to demonstrate the ability to identify motors, the student will be able to demonstrate the ability to identify gear types, the student will be able to demonstrate the ability to identify various bearings, the student will be able to demonstrate the ability to explain the uses of different mechanical equipment, the student will be able to demonstrate the ability to explain conveyor systems, the student will be able to demonstrate the ability to identify pumps.

Name
The student will describe various electrical equipment

Objective
The student will be able to demonstrate the ability to identify various disconnect means, the student will be able to demonstrate the ability to identify fuses, the student will be able to demonstrate the ability to identify breakers, the student will be able to demonstrate the ability to explain lockout/tagout, the student will be able to demonstrate the ability to explain basic electrical terms, the student will be able to demonstrate the ability to properly use electrical test equipment.

Name
The students will identify the different data patterns and the problems they may represent

Objective
The student will be able to interpret the results of the AC standard test, the student will be able to interpret the results of the polarization index test, the student will be able to interpret the results of the RIC test, the student will be able to interpret the results of the resistance to ground test, the student will be able to interpret the results of the capacitance to ground test, the student will be able to interpret the results of the step voltage test, the student will be able to interpret the results of the Emax auto test, the student will be able to interpret the results of the Inrush/Startup test, the student will be able to interpret the results of the eccentricity test.

Name
The students will explain the filtration system design and filter selection.

Objective
The student will be able to explain absolute filter ratings, the student will be able to explain nominal filter ratings, the student will be able to explain beta filter ratings, the student will be able to design a filtration system, the student will be able to explain various filter media, the student will be able to define filtration guidelines.

Name
The students will demonstrate sampling methods

Objective
The student will be able to explain the critical aspects of sampling, the student will be able to demonstrate the proper sampling methods, the student will be able to demonstrate proper sampling location, the student will be able to demonstrate proper sampling procedures, the student will be able to define sampling hardware.

Name
The students will identify lubricant failure mechanisms

Objective
The student will be able to explain the effects of misalignment, the student will be able to explain the effects of water on lubrication, the student will be able to explain the effects of particle contamination, the student will be able to explain the P-F curve, the student will be able to explain the six failure patterns.

Name
The students will explain the history of ultrasound

Objective
The student will be able to explain when ultrasound was discovered, the student will be able to explain the uses of ultrasound through history, the student will be able to define ultrasound frequencies

AEN157 - Preventative Maintenance

Overview

Department
Automation and Advanced Tech

Course Description
This course addresses regular routine preventative maintenance measures that allow for continued manufacturing operations. Introduces students to the various types and styles of preventative maintenance components, principles, and practices used in industrial applications.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The students will describe various temperature scales and make conversions

Objective
The student will be able to identify the four temperature scales, The student will be able to demonstrate temperature conversions between the four scales, The student will be able to explain the 3 units of heat, The student will be able to explain the two laws of thermodynamics.

Name
The students will conduct motor tests with the PDMA motor tester

Objective
The student will be able to demonstrate through classroom and lab projects the ability to safely conduct all motor test, The student will be able to explain what motor testing is, The student will be able to demonstrate the use of proper PPE, The student will be able to safely connect and disconnect the motor test equipment,

Name
The students will interpret test results and write a report on the findings

Objective
The student will be able to explain what the six offline test results mean, the student will be able to explain what the six online tests mean, the student will be able to demonstrate the ability to interpret the data of all twelve tests, the student will be able to demonstrate the ability to properly write a fault report.

Name
The students will demonstrate online and offline tests

Objective
The student will be able to explain the differences in how the online and offline tests are conducted, the student will be able to explain the difference between what the results will be between the online and offline tests, the student will be able to explain the differences between the online and offline tests for AC and DC motors, the student will be able to demonstrate the different connections of each test.

Name
The students will explain and demonstrate why temperature correction is important to the test

Objective
The student will be able to explain why IEEE 43 states that temperature correction is important, the student will be able to demonstrate display corrections, the student will be able to demonstrate the formula used for temperature correction when the actual temperature is unavailable.

Name
The students will identify components (test leads, connectors, battery, battery indicator, switches) of the tester

Objective
The student will be able to demonstrate the correct cable selection for online testing, the student will be able to demonstrate the correct cable selection for offline testing, the student will be able to explain where and how the battery connects to the unit, the student will be able to explain the battery indicator.

Name
The students will describe the fundamentals of Tribology

Objective
The student will be able to explain the definition/origin of Tribology, the student will be able to explain the fundamentals of Tribology, the student will be able to explain Tribology components, the student will be able to explain Tribology testing.

Name
The students will describe differences in grease and oil

Objective
The student will be able to define oil, the student will be able to define grease, the student will be able to define the differences in oil and grease, the student will be able to define correct lubricant selection, the student will be able to explain the differences in testing oil and grease.

Name
The students will describe various mechanical equipment

Objective
The student will be able to demonstrate the ability to identify motors, the student will be able to demonstrate the ability to identify gear types, the student will be able to demonstrate the ability to identify various bearings, the student will be able to demonstrate the ability to explain the uses of different mechanical equipment, the student will be able to demonstrate the ability to explain conveyor systems, the student will be able to demonstrate the ability to identify pumps.

Name
The student will describe various electrical equipment

Objective
The student will be able to demonstrate the ability to identify various disconnect means, the student will be able to demonstrate the ability to identify fuses, the student will be able to demonstrate the ability to identify breakers, the student will be able to demonstrate the ability to explain lockout/tagout, the student will be able to demonstrate the ability to explain basic electrical terms, the student will be able to demonstrate the ability to properly use electrical test equipment.

Name
The students will explain the functions of a lubricant

Objective
The student will be able to explain what a lubricant does, the student will be able to explain the types of lubricants, the student will be able to define why contamination is bad, the student will be able to define characteristics of new base lubricants, the student will be able to define the various types of lubrication regime.

Name
The students will explain the filtration system design and filter selection.

Objective
The student will be able to explain absolute filter ratings, the student will be able to explain nominal filter ratings, the student will be able to explain beta filter ratings, the student will be able to design a filtration system, the student will be able to explain various filter media, the student will be able to define filtration guidelines.

Name
The student will demonstrate the proper methods to find air leaks

Objective
The student will be able to explain absolute filter ratings, the student will be able to explain nominal filter ratings, the student will be able to explain beta filter ratings, the student will be able to design a filtration system, the student will be able to explain various filter media, the student will be able to define filtration guidelines.

AER106 - Aerospace Manufacturing Tooling Orientation

Overview

Department
Aviation

Course Description
This course provides an overview of the Tooling safety hazards, traits employers value, various roles and responsibilities within advanced manufacturing teams and what elements are necessary to make a manufacturing company successful.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
1

Contact Hours

Contact Hours Min:
15

Billing Hours

Billing Hours Min:
1

Lecture Hours

Lecture Hours Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify tooling used in aerospace manufacturing

Objective
Identify and explain the different types of tooling', Define the education required to become a toolmaker', Describe the materials used by toolmakers', Describe the role of toolmaker

Name
The student will be able to identify the Tooling program expectations and policies

Objective
Describe what the this program means for you', List the expectations of all students of the program', Explain the potential safety hazards

Name
The student will be able to identify the traits employers value in the aerospace tooling industry

Objective
Explain the top traits employers value in employee', Describe the attributes of each trait', Explain how to apply these traits in the workplace

Name
The student will be able to identify teams and there in the manufacturing environment

Objective
Identify teams that work together in the advanced manufacturing world', Articulate the overall mission of a team', Describe various tools and responsibilities within advance manufacturing teams', Describe how teams and individuals work together to manufacture quality products', List the teams that are present in manufacturing environment', Define the term team', Define the term teamwork', Describe the seven common elements of teams', Identify the advantages of teams', Describe functional teams', List the aspects of winning teams', Define teambuilding', List the purposes of teambuilding', Identify the purpose of teambuilding activities designed to build team purpose', Identify the purpose of teambuilding activities designed to improve group dynamics', List the four common types of teambuilding exercises

Name
The student will be able to describe the basic for a successful manufacturing company

Objective
List the main elements that can help a manufacturing company win', Understand how costs - including target cost and cost of production help determine an advanced manufacturing companys success', Use math to determine the efficiency and productivity of a manufacturing cycle or equipment', Explain how customer satisfaction creates several wins for the manufacturing company

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- AVC110 - Safety/OSHA 10

A minimum grade of 'C' in Course AVC107

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC107 - Fundamentals for Aerospace Manufacturing

A minimum grade of 'C' in Course AVC104

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC104 - Quality Control Concepts

A minimum grade of 'C' in Course AVC103

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC103 - Geometric Dimensioning & Tolerancing

AER111 - Tap and Die

Overview

Department
Aviation

Course Description
This course provides knowledge and technical skills on taps and dies. Topics include 60 degree thread form, common fastener thread series and markings on taps. The student will learn the process of hand tapping, the process of repairing a thread with a threading die and the process of installing a threaded insert.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the common characteristics of threads

Objective
Define pitch', Define TPI', Identify the sections of a 60 degree thread form', List common fastener thread series

Name
The student will be able to identify the common characteristics of tap

Objective
Identify a hand tap', Identify a helical tap', Identify the sections of tap', Understand the markings on a tap

Name
The student will be able identify the characteristics of hand tapping

Objective
List types of tap wrenches', List proper cutting fluids for tapping different materials', Understand the process of hand tapping

Name
The student will be able to identify the characteristics of threading dies

Objective
List types of threading dies', List the parts of an adjustable threading die', Understand the process of repairing a thread with a threading die

Requirements

Simple Requirements

A minimum grade of 'C' in Course AER106

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AER106 - Aerospace Manufacturing Tooling Orientation

AER115 - Aerostructures Assembly

Overview

Department
Aviation

Course Description
Students will master the techniques associated with aerospace mechanical assembly. Topics include the identification, installation and removal of fasteners, sealant applications, component assembly, wing structures, fuselage structures, curved surfaces, and repair techniques. Students learn in an environment which combines interactive online delivery of theoretical content with hands on application in a state of the art assembly laboratory.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
6

Contact Hours

Contact Hours
Min:
165

Billing Hours

Billing Hours
Min:
6

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
150

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply safety concepts in the laboratory

Objective
Define Foreign Object Damage FOD', Demonstrate tool control by performing toolbox inventory startend shift', Identify impact of FOD control on finished product', Apply all shop safety standards - breaking sharp edges eyehearing protection unplug air hose when changing drill bitsrivet sets

Name
The student will be able to utilize industry specific tools and materials

Objective
Identify measurement tools', Utilize measurement tools micrometer caliper scale countersink gauge ball gauges dial indicator gono go gauges grip gauges', Effectively read measurement tools to the 10000th place', Apply measurement tool readings to fabrication of aircraft part', Identify fasteners used in aircraft - NAS MS BAC', Identify rivet specifications', Select correct fastener based on engineering drawings', Identify most common materials used in aircraft manufacturing such as sheet metal', Identify elements of drills used in aircraft assembly', Identify elements of rivet gun used in aircraft assembly', Identify special fasteners used in aircraft assembly

Name
The student will be able demonstrate layout techniques

Objective
Apply blueprint reading skills to laboratory assignments', Calculate parts angle nutplates fasteners locations based on engineering drawings', Mark all rivet location points', Apply layout techniques to industry specific project within tolerance of 03', Use layout tape to protect skin quality surfaces', Explain edge distance minimum and maximum', Identify the term net trim in aerospace industry', Discuss importance of net trim', Demonstrate checking for net trim', Demonstrate net trim skills', Utilize a variety of industry files to obtain net trim

Name
The student will be able to demonstrate temporary assembly techniques

Objective
Identify temporary assembly', Identify function of temporary assembly', Identify the tools used in temporary assembly clecos and cleco pliers clamps', Demonstrate effective temporary assembly', Demonstrate removal of temporary assembly

Name
The student will be able to demonstrate drilling techniques

Objective
Identify the three parts to drill bit shank body and heel', Identify drill bit diameter', Determine drill bit diameter', Identify drill bit material', Identify correct drill bit for different materials - aluminum composite titanium', Utilize conversion chart', Identify correct drill motor for desired speed and fabrication situation', Identify the function of each part of the drill motor', Determine drill bit length', Demonstrate chucking the bit', Demonstrate connecting air hose to drill motor', Demonstrate a drill start', Identify the importance of perpendicular hole', Identify Drill cup and Drill Guide', Utilize drill cup and drill guide', Demonstrate drilling a perpendicular hole', Identify the term deburring', Demonstrate deburring techniques', Identify when rivet must be drilled out', Select correct pin punch', Utilize pin punch', Demonstrate drilling out', Universal rivet', Demonstrate drilling out flush rivet

Name
The student will be able to demonstrate riveting techniques

Objective
Identify rivets', Identify Rivet sets for standard universal modified universal and flush rivets', Identify Retainer Spring', Select rivet sets and retainer spring based on engineering drawing', Identify different sizes of Rivet Guns based on size of Rivets installed', Identify the functions of each part of the rivet gun', Install rivet set into a retainer spring', Utilize rivet gun', Demonstrate adjusting regulator for the selected rivet', Identify size and shape bucking bar and its function', Demonstrate effective riveting using bucking bar', Discuss importance of being within tolerance', Utilize rivet gauge to determine tolerance', Identify term counter sinkcounter boreflush rivets', Identify function of counter sinkcounter boreflush rivet', Identify standards for counter sinkcounter boreflush rivet', Identify fastener code symbol for counter sinkcounter boreflush rivet on engineering drawing', Identify equipment used in counter sinkcounter boreflush rivet', Identify the parts of counter sinkcounter bore cutter', Identify parts and functions of micro stop counter sinkcounter bore cutter', Demonstrate assembly of micro stop cage and counter sinkcounter bore cutter', Demonstrate setting the depth for counter sink rivet', Install counter sunk rivet', Demonstrate driving the counter sunkcounter bore rivet

Name
The student will be able to utilize special fasteners

Objective
Identify HiLokHiLite fastener', Identify the function of HiLokHiLite fastener', Identify the parts of HiLok HiLite fastener', Identify tools used for HiLok HiLite fasteners', Identify hole size for HiLok HiLite', Identify Huck Bolt fastener', Identify the function of Huck bolt fastener', Identify the parts of Huck bolt fastener', Identify tools used for Huck bolt fasteners', Identify hole size for Huck bolt', Identify interference fit', Utilize measurement tools ball gauges and micrometer gonogo gauge to determine hole size', Demonstrate HiLok HiLite installation', Identify Cherrymax fastener', Identify the function of Cherrymax fastener', Identify the parts of Cherrymax fastener', Identify tools used for Cherrymax fasteners including pneumatichydraulic tools', Identify drill diameter rivet diameter and grip length for Cherrymax fastener', Utilize measurement tools ball gauges and micrometer to determine hole size', Demonstrate Cherrymax installation', Demonstrate Cherrymax removal

Requirements

Simple Requirements

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

All of the following requirements

Earn a minimum grade (UG) of C in the following:
- AVC112 - Blueprint Reading

AND

All of the following requirements

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

AND

All of the following requirements

Earn a minimum grade (UG) of C in the following:
- AVC120 - Introduction to Sealing

AND

All of the following requirements

Earn a minimum grade (UG) of C in the following:
- AVC140 - Electrical Bonding & Grounding

AND

All of the following requirements

Fulfill ALL of the following requirements:

Enroll in the following Courses:
- MTH020 - Math Fundamentals (Inactive)

AND

Earn a minimum grade (UG) of C in the following:
- MTH020 - Math Fundamentals (Inactive)

A minimum grade of 'C' in Course AVC104

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC104 - Quality Control Concepts

A minimum grade of 'C' in Course AVC127

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC127 - Aviation Assembly Core

A minimum grade of 'C' in Course AVC102

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC102 - Precision Instruments

AER116 - Hand and Power Tools for Aerospace Tooling

Overview

Department
Aviation

Course Description
This course provides technical knowledge on hand power tools used by a toolmaker in the aerospace industry. The student will learn about die grinders, disco grinders and magnetic drills.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
1

Contact Hours

Contact Hours Min:
30

Billing Hours

Billing Hours Min:
1

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the characteristics of files used in aerospace tooling

Objective
Define and explain the file', Classify a file by it coarseness', Classify a file by its cut pattern', Identify the correct file for the job', Demonstrate basic filing techniques

Name
The student will be able to identify the characteristics of reamers used in aerospace tooling

Objective
Define and explain the hand reaming tool', Identify the different types of hand reamers', Define the major components of a reamer', Demonstrate how to ream a drilled hole

Name
The student will be able to identify the characteristics of lapping tools used in aerospace tooling

Objective
Define and explain the lapping tool', Identify the different types of lapping tools', Define the major components of a lapping tool', Demonstrate how to lap a drilled hole

Name
The student will be able to identify the characteristics of hammers used in aerospace tooling

Objective
Define and explain hammers', Identify the different types of hammers', Define the major components of a hammer

Name
The student will be able to identify the characteristics of punches used in aerospace tooling

Objective
Define and explain punches', Identify the different types of punches', Define the major components of a punch', Demonstrate how to use a punch

Name
The student will be able to identify the characteristics of pliers and ratchets used in aerospace tooling

Objective
Define and explain a pair of pliers', Identify the different types of pliers', Define the major components of a pair of pliers', Define and explain ratchets', Identify the different types of ratchets', Define the major components of a ratchet

Name
The student will be able to identify the characteristics of scribes used in aerospace tooling

Objective
Define and explain the scribe', Identify the different types of scribes', Demonstrate how to use a scribe

Name
The student will be able to identify the characteristics of drill blocks used in aerospace tooling

Objective
Define and explain drill block', Identify the different types of drill blocks', Define the major components of drill blocks', Demonstrate how to use a drill blocks

Name
The student will be able to identify the characteristics of die grinders used in aerospace tooling

Objective
Define die grinder', Describe how die grinders are rated', State the impact of RPM rating on the grinder performance', Define mandrel', List some common die grinder bits

Name
The student will be able to identify the characteristics of disc grinders used in aerospace tooling

Objective
Define disc grinder', Describe the uses of disc grinder', List the basic components of a disc grinder', List the common grinding discs', List the steps required for proper grinding

Name
The student will be able to identify the characteristics of magnetic drills used in aerospace tooling

Objective
Define magnetic drill', List the common varieties of magnetic drills', List the components of magnetic drills', Describe the steps for properly using a magnetic drill

Requirements

Simple Requirements

A minimum grade of 'C' in Course AER111

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AER111 - Tap and Die

AER122 - Introduction to Light Sport Aircraft, Structural Assembly I, Flight Surfaces

Overview

Department
Aviation

Course Description
Students will be proficient in the techniques associated with aircraft assembly procedures. Subjects include the ability to identify proper PPE and usage, understand and practice hand and power tool shop safety practices, read, and understand parts lists and assembly drawings, perform inventory, identification, installation and removal of fasteners, component assembly, wing structures and flight control structures. Students learn in an environment which combines interactive online delivery of content of theory with hands on application in an assembly laboratory scenario.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to utilize industry safety practices, specific tools, and materials.

Name
The student will be able to utilize parts, kit content lists and assembly drawings to perform part inventory and note discrepancies.

Name
The student will be able to utilize engineering/assembly drawings to assemble aircraft components.

Name
The student will be able to demonstrate layout techniques.

Name
The student will be able to demonstrate temporary assembly techniques.

Name
The student will be able to demonstrate drilling techniques.

Name
The student will be able to demonstrate riveting techniques.

Name
The student will be able to demonstrate a special fastener installation.

Name
The student will be able to demonstrate final assembly and inspection techniques.

AER126 - Tooling Capstone

Overview

Department
Aviation

Course Description
This course provides the specific technical knowledge and skills necessary to utilize hand and power tools to create a drill jig. This course emphasizes the importance of critical features, the process of permanent assembly and the role of toolmakers in the manufacturing environment.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
120

Billing Hours

Billing Hours Min:
4

Lab Hours

Lab Hours Min:
120

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the need for creating tools in the aerospace industry

Objective
Understand the need for new tools', List some common sources of information for a toolmaker', Understand the role of the tooling engineer in the making of a tool', Understand the role of the toolmaker

Name
The student will be able identify the process used to create a tool

Objective
Identify critical features of a tool', Define removability', Identify critical features or requirements on an engineering drawing

Name
The student will be able to identify the role of performance assemblies

Objective
Define a permanent assembly', Understand the process of making a permanent assembly with screws and dowel pins', Understand the function of screws and dowel pins in a permanent assembly

Name
The student will be able identify the critical features the tooling process

Objective
Understand the purpose of precision locators', Understand how removability is attained in building a drill jig

Name
The student will be able identify the final details in tooling process

Objective
Understand how to layout a clamp for installation', Understand the importance to deburring

Name
The student will be able to demonstrate tooling techniques by creating a series of 4 projects

Objective
Demonstrate skills associated with hand drilling operations - Project 1', Demonstrate skills associated with hand drill and drill press operations - project 1', Demonstrate skills associated with precision drilling operations - project 3', Demonstrate skills associated with removable sub assembly - Project 4', Demonstrate tool building skills by creating Drill Fixture - Project 5

Requirements

Simple Requirements

A minimum grade of 'C' in Course AER116

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AER116 - Hand and Power Tools for Aerospace Tooling

A minimum grade of 'C' in Course AER150

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AER150 - Assembly Overview I

AER135 - Quality Assurance Orientation

Overview

Department
Aviation

Course Description
This course provides an overview of the Quality Assurance Program. The course includes an overview of the expectations of the program, potential safety hazards, traits employers value, various role and responsibilities within advanced manufacturing teams and what elements are necessary to make a manufacturing company successful.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the basic work requirements associated Quality Assurance Technician

Objective
Describe what this program means for you', List the expectations of all students of the program including motivation attention participation attendance', Explain the potential safety hazards including equipment safety hazardous energy controls compressed air safety hand tool safety drilling safety riveting safety chemical safety PPE

Name
The student will be able identify the concepts associated with good work traits in the workplace

Objective
Identify concept of good work traits including character attitude respect appearance teamwork and productivity', Explain the components of each work trait', Define each of the work traits', Identify how the work traits are applied on the job', Identify the role of in giving and receiving respect', Identify the impact of attendance on safety in the workplace

Name
The student will be able to describe the concepts associated with teams in the manufacturing environment

Objective
Identify teams that work together in the advanced manufacturing world', Articulate the overall mission of a team', Describe various roles and responsibilities within advanced manufacturing teams', Describe how teams and individuals work together to manufacture quality products', List the teams that are present in a manufacturing environment

Name
The student will be able to explain how companies succeed

Objective
List the main elements that can help a manufacturing company win', Understand how costs - including target costs and cost of production - help determine an advanced manufacturing companys success', Use math to determine the efficiency and productivity of a manufacturing cycle or equipment', Explain how customer satisfaction creates several wins for the manufacturing company

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

AER140 - Assembly Mechanic Orientation

Overview

Department
Aviation

Course Description
This course provides an overview of the technical and mechanical knowledge and skills necessary to qualify for employment in the aerospace industry as an assembly mechanic. The course is presented using interactive online content.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
1

Contact Hours

Contact Hours Min:
15

Billing Hours

Billing Hours Min:
1

Lecture Hours

Lecture Hours Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able toidentify the basic work requirements associated with an Assembly Mechanic

Objective
Describe the required skills to be an effective Assembly Mechanic including math computers hand tools power tools precision measurement skills blueprint reading teamwork reading communication technical skills', Describe the components of the program', Describe the role of Assembly Mechanic in the manufacturing of airplanes', List the expectations of all students of the program including motivation attention participation attendance', Explain the potential safety hazards including equipment safety hazardous energy controls compressed air safety hand tool safety drilling safety riveting safety chemical safety PPE', Explain role of ID badges in the lab and workplace', Describe computer network usage regulations', Explain tools usage policies', Explain foreign object damage

Objective
Identify concept of good work traits including character attitude respect appearance teamwork and productivity', Explain the components of each work trait', Define each of the work traits', Identify how the work traits are applied on the job', Identify the role of in giving and receiving respect', Identify the impact of attendance on safety in the workplace

Objective
Identify teams that work together in the advanced manufacturing world', Articulate the overall mission of a team', Describe various roles and responsibilities within advanced manufacturing teams', Describe how teams and individuals work together to manufacture quality products', List the teams that are present in a manufacturing environment

Objective
List the main elements that can help a manufacturing company win', Understand how costs - including target costs and cost of production - help determine an advanced manufacturing companys success', Use math to determine the efficiency and productivity of a manufacturing cycle or equipment', Explain how customer satisfaction creates several wins for the manufacturing company

AER150 - Assembly Overview I

Overview

Department
Aviation

Course Description
This course is designed to provide the student with a general overview of assembly techniques used in aviation. Working in a hands-on setting, students will learn the basics of aircraft assembly while focusing on inspection techniques. Students learn in an environment which combines interactive online delivery of theoretical content with hands on application in a state of the art assembly laboratory.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply safety concepts in the laboratory

Objective
Define Foreign Object Damage FOD', Demonstrate tool control by performing toolbox inventory startend shift', Identify impact of FOD control on finished product', Apply all shop safety standards - breaking sharp edges eyehearing protection unplug air hose when changing drill bitsrivet sets

Name
The student will be able to utilize industry specific tools and materials

Objective
Identify measurement tools', Utilize measurement tools micrometer caliper scale countersink gauge ball gauges dial indicator gono go gauges grip gauges', Effectively read measurement tools to the 10000th place', Apply measurement tool readings to fabrication of aircraft part', Identify fasteners used in aircraft - NAS MS BAC', Identify rivet specifications', Select correct fastener based on engineering drawings', Identify most common materials used in aircraft manufacturing such as sheet metal', Identify elements of drills used in aircraft assembly', Identify elements of rivet gun used in aircraft assembly', Identify special fasteners used in aircraft assembly

Name
The student will be able demonstrate layout techniques

Objective
Apply blueprint reading skills to laboratory assignments', Calculate parts angle nutplates fasteners locations based on engineering drawings', Mark all rivet location points', Apply layout techniques to industry specific project within tolerance of 03', Use layout tape to protect skin quality surfaces', Explain edge distance minimum and maximum', Identify the term net trim in aerospace industry', Discuss importance of net trim', Demonstrate checking for net trim', Demonstrate net trim skills', Utilize a variety of industry files to obtain net trim

Name
The student will be able to demonstrate temporary assembly techniques

Objective
Identify temporary assembly', Identify function of temporary assembly', Identify the tools used in temporary assembly clecos and cleco pliers clamps', Demonstrate effective temporary assembly', Demonstrate removal of temporary assembly

Name
The student will be able to demonstrate drilling techniques

Objective
Identify the three parts to drill bit shank body and heel', Identify drill bit diameter', Determine drill bit diameter', Identify drill bit material', Identify correct drill bit for different materials - aluminum composite titanium', Utilize conversion chart', Identify correct drill motor for desired speed and fabrication situation', Identify the function of each part of the drill motor', Determine drill bit length', Demonstrate chucking the bit', Demonstrate connecting air hose to drill motor', Demonstrate a drill start', Identify the importance of perpendicular hole', Identify Drill cup and Drill Guide', Utilize drill cup and drill guide', Demonstrate drilling a perpendicular hole', Identify the term deburring', Demonstrate deburring techniques', Identify when rivet must be drilled out', Select correct pin punch', Utilize pin punch', Demonstrate drilling out', Universal rivet', Demonstrate drilling out flush rivet

Name
The student will be able to demonstrate riveting techniques

Objective
Identify rivets', Identify Rivet sets for standard universal modified universal and flush rivets', Identify Retainer Spring', Select rivet sets and retainer spring based on engineering drawing', Identify different sizes of Rivet Guns based on size of Rivets installed', Identify the functions of each part of the rivet gun', Install rivet set into a retainer spring', Utilize rivet gun', Demonstrate adjusting regulator for the selected rivet', Identify size and shape bucking bar and its function', Demonstrate effective riveting using bucking bar', Discuss importance of being within tolerance', Utilize rivet gauge to determine tolerance', Identify term counter sinkcounter boreflush rivets', Identify function of counter sinkcounter boreflush rivet', Identify standards for counter sinkcounter boreflush rivet', Identify fastener code symbol for counter sinkcounter boreflush rivet on engineering drawing', Identify equipment used in counter sinkcounter boreflush rivet', Identify the parts of counter sinkcounter bore cutter', Identify parts and functions of micro stop counter sinkcounter bore cutter', Demonstrate assembly of micro stop cage and counter sinkcounter bore cutter', Demonstrate setting the depth for counter sink rivet', Install counter sunk rivet', Demonstrate driving the counter sunkcounter bore rivet

Name
The student will complete all projects associated with the course.

Objective
Universal YOO', Universal Fasteners MS', Flush Fasteners MS', 90 Degree Drilling Reaming CT Holes HiLoks', Advanced Fasteners Nut Plates Torqueing Safety Wiring

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

AER157 - Advanced Assembly

Overview

Department
Aviation

Course Description
This course is the second of two courses designed to provide students with real world experiences as aviation sheetmetal assemblers. In a state of the art assembly laboratory students will learn and apply drilling, countersinking skills as well as fastener installation and removal techniques. Students will learn to complete the work to the required standards within specified timeframes.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Student will demonstrate proper drilling technique to prescribed proficiency within the specified time frame.

Name
Student will demonstrate proper countersinking technique to prescribed proficiency within the specified time frame.

Name
Student will demonstrate proper installation of solid driven fasteners to prescribed proficiency within the specified time frame.

Name
Student will demonstrate proper installation of specialized fasteners to prescribed proficiency within the specified time frame.

Name
Student will demonstrate proper installation of close tolerance fasteners to prescribed proficiency within the specified time frame.

Name
Student will demonstrate proper fastener removal to prescribed proficiency within the specified time frame.

Requirements

Simple Requirements

A minimum grade of 'C' in Course AER150

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AER150 - Assembly Overview I

AER162 - Structural Assembly II, Tailcone & Empennage

Overview

Department
Aviation

Course Description
Students will continue to develop proficiencies in techniques associated with aircraft assembly procedures as they build the Tailcone and Empennage components. Students will continue to demonstrate and identify PPE and proper usage, and practice hand and power tool shop safety practices, utilize parts lists and assembly drawings to assemble and install aircraft structural components.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply safety practices in the laboratory.

Objective
Explain and demonstrate the proper use of PPE during all phases of fabrication up to and including working with composites', Demonstrate proper control and disposal of composite waste materials during trim and drilling operations', Explain FOD and the effect it can have on an aircraft', Explain Tool control and demonstrate proper toolbox inventory techniques', Demonstrate Good Shop Practices - breaking sharp edges use of eyehearing protection unplugging air hoses when changing drill bitsrivet sets etc

Name
The student will be able to identify and utilize industry specific tools, fasteners, and materials.

Objective
Identify tools used for part layout', Utilize measurement tools caliper scale countersink gauge dial indicator grip gauges', Apply measurement readings to complete fabrication of aircraft part', Identify fasteners used in aircraft - AN MS NAS Manufacturer specific part numbers', Identify rivet specifications lengths diameters and formula to determine diameters and lengths', Select correct fastener based on engineering drawings', Identify most common materials used in aircraft manufacturing', Identify parts of the drill and drill motors used in aircraft assembly', Identify the different rivet sets and parts of the rivet gun used in aircraft assembly', Identify special fasteners and the tools used in aircraft assembly

Name
The student will be able to demonstrate proper composite machining and drilling techniques.

Objective
Utilize the manufacturers assemblyengineering drawing to determine the part location and installation process', Identify how composite materials are different than sheet metal materials and how it affects the machiningdrilling process', Identify tools used for processing the composite parts drill bits rotary files drill press band saw router orbital sander pneumatic 90 degree or straight hand grinders and hand drills', Determine and or layout trim lines using methods including templates measurements and tolerances per manufacturers assemblyengineering drawings', Choose processing tools based on the composite material thickness position contour and length of the cut and manufactures recommendations', Demonstrate the ability to machine drill or trim the part using appropriate tool or tools', Perform inspection of part to determine if there is any hole damage delamination and level of damage', Demonstrate the ability to properly install the finished part using appropriate tools per assembly drawingsmanufacturers specifications

Requirements

Simple Requirements

A minimum grade of 'C' in Course AER122

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AER122 - Introduction to Light Sport Aircraft, Structural Assembly I, Flight Surfaces

AER165 - Electrical Assembly Mechanic Orientation

Overview

Department
Aviation

Course Description
The electrical certificate educational program is a tremendous opportunity for you to learn technical skills that are needed for employment in the aerospace manufacturing industry. Your participation in this program is a unique opportunity for you to set a course for success on your career journey. This course exposes students to the potential to a good career in the electrical wiring installation portion of aircraft manufacturing.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to describe what this program means for you.

Objective
Explain how this course will give you the skills required to assemble and install electrical wiring and components in aircraft

Name
The student will be able to describe the key principles for success in a team environment.

Objective
List the teams that are present in a manufacturing environment', Describe how teams and individuals work together to manufacture quality products', Describe various roles and responsibilities within advanced manufacturing teams', Articulate the overall mission of a team', Identify teams that work together in the advanced manufacturing world

Name
The student will be able to explain why its all about you.

Objective
Explain how to apply the top traits employers value in an employee', Describe the attributes of the top traits employers value in an employee', Explain the top traits employers value in an employee

Name
The student will be able to list the expectations of all students of the program.

Objective
Explain why foreign object damage is a serious problem', State the process of acquiring tools', List all of the potential safety hazards', Describe the expectations of the students in this program

Name
The student will be able to explain the concept of winning in manufacturing

Objective
List the main elements that can help a manufacturing company win', Understand how costs including target cost and cost of production help determine an advanced manufacturing companys success', Use math to determine the efficiency and productivity of a manufacturing cycle or equipment', Explain how customer satisfaction creates several wins for the manufacturing company

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC135

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC135 - Hand Tools

A minimum grade of 'C' in Course AVC125

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC125 - Bonding and Grounding

A minimum grade of 'C' in Course AVC104

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC104 - Quality Control Concepts

A minimum grade of 'C' in Course AVC102

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC102 - Precision Instruments

A minimum grade of 'C' in Course AVC105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC105 - Aircraft Familiarization

A minimum grade of 'C' in Course AVC107

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC107 - Fundamentals for Aerospace Manufacturing

A minimum grade of 'C' in Course AVC108

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC108 - Aircraft Systems & Components

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

A minimum grade of 'C' in Course AVC112

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC112 - Blueprint Reading

A minimum grade of 'C' in Course AVC120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC120 - Introduction to Sealing

AER166 - Electrical Hand Tools

Overview

Department
Aviation

Course Description
This course familiarizes the student with various hand tools and connectors used in the installation of electrical wiring in aerospace manufacturing.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be know how to safely use hand tools used in electrical installation in aerospace manufacturing.

Objective
List the potential hazards that may be present when operating hand tools', Describe safety practices associated with certain hand tools', Identify the types of personal protective equipment that may be required to wear when operating hand tools

Name
The student will be able to identify electrical connectors and types of mechanical fasteners used in electrical installations in aerospace manufacturing.

Objective
Understand the function of each type of mechanical fastener', Recognize the following types of mechanical fasteners rivets hiloks lockbolts screws studs bolts nuts and washers', Understand the function of each component of a wire bundle', List the components of a wire bundle

Name
The student will be able explain the types and use of hand tools used to install wire bundles.

Objective
Understand the proper use of the tools', List some of the parts of these tools', Understand the tools used to install wire bundles

Name
The student will be able explain the use of tools they may need for wire bundle installation that are normally used by assembly mechanics.

Objective
Demonstrate an understanding of the proper use of the tools', List some of the parts of these tools', Demonstrate an understanding of the hand tools used by assembly mechanics

Name
The student will be able to describe and understand how to drill, deburr and chamfer quality holes.

Objective
List the characteristics of a quality hole', Recognize the tools and accessories needed to drill a quality hole', List the different types of drill bits than may be used', Recognize the parts of a drill bit

Name
The student will be able to describe and understand the use of power hand tools used by assembly electricians.

Objective
List some of the parts of a rivet gun', Understand and explain the best way to hold drills', List some of the parts of these drills', Understand the different types of drills used by assembly electricians

Requirements

Simple Requirements

A minimum grade of 'C' in Course AER165

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AER165 - Electrical Assembly Mechanic Orientation

AER167 - Basic Drilling & Riveting/Ground Stud Installation

Overview

Department
Aviation

Course Description
This course familiarizes the student with power tools and acquired skills used in drilling a quality hole and installing driven fasteners. In conjunction with this procedure, Ground Studs will be installed and electrical resistance verified.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate riveting techniques.

Objective
Identify rivets', Identify Rivet sets for standard universal modified universal and flush rivets', Identify Retainer Spring', Select rivet sets and retainer spring based on engineering drawing', Identify different sizes of Rivet Guns based on size of Rivets installed', Identify the functions of each part of the rivet gun', Install rivet set into a retainer spring', Utilize rivet gun', Demonstrate adjusting regulator for the selected rivet', Identify size and shape bucking bar and its function', Demonstrate effective riveting using bucking bar', Discuss importance of being within tolerance', Utilize rivet gauge to determine tolerance

Name
The student will be able to demonstrate drilling techniques.

Objective
Identify the three parts to drill bit shank body and heel', Identify drill bit diameter', Determine drill bit diameter', Identify drill bit material', Identify correct drill bit for different materials - aluminum composite titanium', Utilize conversion chart', Identify correct drill motor for desired speed and fabrication situation', Identify the function of each part of the drill motor', Determine drill bit length', Demonstrate chucking the bit', Demonstrate connecting air hose to drill motor', Demonstrate a drill start', Identify the importance of perpendicular hole', Identify Drill cup and Drill Guide', Utilize drill cup and drill guide', Demonstrate drilling a perpendicular hole', Identify the term deburring', Demonstrate deburring techniques', Identify when rivet must be drilled out', Select correct pin punch', Utilize pin punch', Demonstrate drilling out', Universal rivet

Name
The student will be able to demonstrate temporary assembly techniques.

Objective
Demonstrate effective temporary assembly', Demonstrate removal of temporary assembly', Identify the tools used in temporary assembly clecos and cleco pliers clamps', Identify function of temporary assembly', Identify temporary assembly

Name
The student will be able demonstrate layout techniques.

Objective
Apply blueprint reading skills to laboratory assignments', Calculate parts angle nutplates fasteners locations based on engineering drawings', Mark all rivet location points', Apply layout techniques to industry specific project within tolerance of 03', Use layout tape to protect skin quality surfaces', Explain edge distance minimum and maximum', Identify the term net trim in aerospace industry', Discuss importance of net trim', Demonstrate checking for net trim', Demonstrate net trim skills', Utilize a variety of industry files to obtain net trim

Name
The student will be able to utilize industry specific tools and materials.

Objective
Identify measurement tools', Utilize measurement tools micrometer caliper scale countersink gauge ball gauges dial indicator gono go gauges grip gauges', Effectively read measurement tools to the 10000th place', Apply measurement tool readings to fabrication of aircraft part', Identify fasteners used in aircraft - NAS MS BAC', Identify rivet specifications', Select correct fastener based on engineering drawings', Identify most common materials used in aircraft manufacturing such as sheet metal', Identify elements of drills used in aircraft assembly', Identify elements of rivet gun used in aircraft assembly', Identify special fasteners used in aircraft assembly

Name
The student will be able to apply safety concepts in the laboratory.

Objective
Apply all shop safety standards - breaking sharp edges eyehearing protection unplug air hose when changing drill bitsrivet sets', Identify impact of FOD control on finished product', Demonstrate tool control by performing toolbox inventory startend shift', Define Foreign Object Damage FOD

Name
The student will describe and perform proper surface preparation and installation of a pre-installed ground stud required to meet the allowed resistance measurement between the bond and the structure.

Objective
Explain how to check resistance on the preinstalled ground stud', Explain how to install a preinstalled ground stud

Name
The student will describe and perform proper installation of a direct ground stud and verify resistance to meet requirements.

Objective
Check resistance on a ground stud', Install a ground stud in two pieces of material

Name
The student will describe how to apply a fillet seal to a ground stud.

Objective
Check resistance on the direct ground stud', Explain how to apply a fillet seal on a direct ground stud installation

Name
The student will describe how to apply a fay seal to a ground stud assembly.

Objective
Explain how to check resistance on a direct ground stud installation with a fay seal', Explain how to apply a fay seal on a direct ground stud installation

Name
The student will complete the project/s associated with the course.

Objective
Project 1 - Universal Fasteners MS

Name
The student will demonstrate skills necessary to install ground studs.

Objective
Explain how to use the power tools to install ground studs', List the steps required to install a direct standard ground stud', List the steps required to install a preinstalled ground stud

Requirements

Simple Requirements

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

All of the following requirements

Enroll in the following Courses:
- AVC140 - Electrical Bonding & Grounding

AND

All of the following requirements

Earn a minimum grade (UG) of C in the following:
- AVC140 - Electrical Bonding & Grounding

A minimum grade of 'C' in Course AER165

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AER165 - Electrical Assembly Mechanic Orientation

AER168 - Wire Installation Drawings

Overview

Department
Aviation

Course Description
This course familiarizes with the various drawings utilized in aerospace wire bundle installation, includes engineering drawing review, wire bundle installation paperwork and electrical production illustrations.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to under different parts of electrical engineering drawings

Objective
List the main areas of an engineering drawing', Define the different engineering drawing views', Understand the difference between an orthographic projection drawing and an isometric drawing

Name
The student will be able to identify the different types of engineering documentation needed for wire bundle installation

Objective
Identify a module', Understand the module numbering system', Identify a module parts list', Read and interpret a module parts list', Recognize the different sections of an installation plan', Understand how to use an installation plan on a shop floor', Understand the function of the Airplane Specific Configuration Table

Name
The student will understand how to use Electrical Production Illustrations to install wire bundles in the Wire Bundle Installation project

Objective
Recognize different types of engineering drawings including Electrical Area Breakdown Drawings General Notes Drawings and Electrical Production Installation Drawings', List the sections of an electrical production illustration drawing', Understand what the symbols found on production illustration drawings represent', Understand the purpose of the tables found on an electrical production illustration drawing picture sheet', Read an electrical production illustration drawing

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC107

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC107 - Fundamentals for Aerospace Manufacturing

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

A minimum grade of 'C' in Course AVC112

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC112 - Blueprint Reading

A minimum grade of 'C' in Course AVC120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- AVC120 - Introduction to Sealing

A minimum grade of 'C' in Course AVC125

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC125 - Bonding and Grounding

A minimum grade of 'C' in Course AVC135

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC135 - Hand Tools

A minimum grade of 'C' in Course AVC105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC105 - Aircraft Familiarization

AER169 - Crimping & Cables

Overview

Department
Aviation

Course Description
This course familiarizes the student with specifications and skills required to strip insulation from wires, crimp connectors on wires, install connectors on coaxial cables, install connectors in plugs and manufacture a wire bundle according to a blueprint.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explain and demonstrate how wires are joined together with splices and how terminals are attached to wires

Objective
List the parts of a terminal', List the parts of a splice', Understand the differences between butt and parallel splices', Understand the meaning of restricted entry terminal', Understand the meaning of multiple conductor terminal

Name
The student will understand the correct terms for wire components and collections of wires

Objective
Understand the measurement unit CAU', Select terminal and splice sizes based on the CAU of wires', List the parts of a terminal crimping tool', Understand the importance of the location of the crimp

Name
The student will be able to select a terminal, prepare the wires and crimp the terminal onto the wires

Objective
Select the correct size terminal for the wires', Determine the correct length to strip wires', Select the correct crimping tool', Determine the correct setting for the insulation crimping adjustment pin

Name
The student will be demonstrate the ability to select a pre-insulated splice, prepare the wires and crimp the splice onto the wires

Objective
Select the correct size splice for the wires', Determine the correct length to strip wires', Select the correct crimping tool', Determine the correct setting for the insulation crimping adjustment pin', Calculate the size of additional material needed to build up a wire to meet the minimum CAU of a splice

Name
The student will be able to identify explain the use and parts of coaxial cables

Objective
List the parts of a coax cable', List some of the types of coax cables', Understand the history of coax cable

Name
The student will understand and recognize the special connectors required to connect coaxial cables to equipment

Objective
List the components required to connect a coax cable to equipment', List methods to install contacts', List the different types of mountings for coax cable connectors

Name
The student will become familiar with the selection and use of special tools for coaxial cable assembly

Objective
List the tools required to install coax connectors on a cable', List the parts of a coax stripping tool', List the parts of an outer sleeve crimping tool', List the parts of a contact crimping tool

Name
The student will prepare a coax cable, crimp a contact and crimp a connector

Objective
Determine the correct length to strip the sections on a coax cable', Select the correct size connector', Set the contact crimping tool to the correct settings

Name
The student will assemble a wire harness including crimping contacts on several gauges of wire, installing ground shields on cables and correctly insert contacts into plugs per blueprint

Objective
Assemble the tools required to manufacture a wire harness per blueprint', Correctly label wires with heat shrink tubing per blueprint', Correctly crimp pins on wires per blueprint', Correctly splice wires per blueprint', Correctly terminate shielded pair per blueprint', Correctly insert contacts into plugs per blueprint', Correctly ground shielded pair to Backshell per blueprint', Correctly strap and lace completed wire harness

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC140

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC140 - Electrical Bonding & Grounding

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

All of the following requirements

Enroll in the following Courses:
- AER175 - Wire Bundle Basics

AND

All of the following requirements

Earn a minimum grade (UG) of C in the following:

- AER175 - Wire Bundle Basics

A minimum grade of 'C' in Course AER165

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- AER165 - Electrical Assembly Mechanic Orientation

AER170 - Fiber Optics for Aerospace

Overview

Department
Aviation

Course Description
This course familiarizes the student with the advantages and disadvantages of the use of Fiber Optics in aircraft. Included are overviews how Fiber Optics works, manufacturing processes, handling of Fiber Optics and particulars of quality and safety.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explain how the possibility of replacing copper wire with Fiber Optics

Objective
Explain how light and optic fiber is measured', List forms of electromagnetic radiation', Identify the parts of a fiber optic system', Define frequency', Define wave length', List the components of an optic fiber', Understand how light behaves as it travels through different materials

Name
The student will become familiar with the manufacturing process for Optical Fiber and understand how this process is important in how light is transmitted through the fiber

Objective
Define preform', Understand how a preform is manufactured', Define tensile strength', List properties of an optical fiber that are tested

Name
: The student will be able to identify the types of fiber optic cable and the strength provided by the layers of a cable needed to withstand the forces of installation and nature

Objective
Define a single mode fiber', Define a multimode fiber', Identify the layers of a fiber optic cable', List the types of fiber optic cables

Name
The student will understand how the proper handling of Fiber Optic Cable is critical to the performance of the cable.

Objective
Define FOD', Calculate the minimum bend radius for a fiber optic cable', Understand how to properly handle fiber optic cable', Understand the importance of dust caps

Name
The student will be able understand how the quality of a Fiber Optic Cable and its installation are critical to the performance of the fiber optic system and also understand the safety requirements important to anyone working with fiber optics

Objective
List defects of a fiber optic cable', List the tasks performed on fiber optic cables that require certification', Understand your responsibility if you find a damaged cable', Understand the risks of working with fiber optic cables

Requirements

Simple Requirements

A minimum grade of 'C' in Course AER165

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AER165 - Electrical Assembly Mechanic Orientation

AER172 - Structural Assembly III, Fuselage Center Section

Overview

Department
Aviation

Course Description
Students will continue to develop proficiency in the techniques associated with aircraft assembly procedures as they build the Fuselage Center Section and Bulkhead. Students will review proper PPE and usage, hand and power tool shop safety practices, parts lists, and assembly drawings. In this section students will review and perform inventory procedures to document and pull parts from inventory and stage and prepare them for assembly. Students learn in an environment which combines interactive online delivery of content theory with hands on application in an assembly laboratory scenario.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply safety practices in the laboratory.

Objective
Explain and demonstrate the proper use of PPE', Explain FOD and the effect it can have on an aircraft', Explain Tool control and demonstrate proper toolbox inventory techniques', Demonstrate Good Shop Practices - breaking sharp edges use of eyehearing protection unplugging air hoses when changing drill bitsrivet sets etc

Name
The student will be able to identify and utilize industry specific processes, tools, fasteners, and materials.

Objective
Identify tools used for part layout', Utilize measurement tools caliper scale countersink gauge dial indicator grip gauges', Apply measurement readings to maintain symmetry and alignment during fabrication of aircraft structures and subassemblies', Identify fasteners used in aircraft - AN MS NAS Manufacturer specific part numbers', Identify rivet specifications lengths diameters and formula to determine diameters and lengths', Select correct fastener based on engineering drawings', Identify most common materials used in aircraft manufacturing', Identify parts of the drill and drill motors used in aircraft assembly', Identify the different rivet sets and parts of the rivet gun used in aircraft assembly', 210 Identify special fasteners and the tools used in aircraft assembly

Name
The student will be able to explain and identify the proper corrosion controls used in Aviation Manufacturing.

Objective
Explain why the need for Corrosion Control is so important', Identify the different types of corrosion', Identify different methods of corrosion control', Explain the techniques used in preventing corrosion in pre or post assembly processes', Demonstrate the process of preparing components for corrosion preventative measures', Observe and explain the application of different methods of corrosion control

Requirements

Simple Requirements

A minimum grade of 'C' in Course AER162

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AER162 - Structural Assembly II, Tailcone & Empennage

AER175 - Wire Bundle Basics

Overview

Department
Aviation

Course Description
This course familiarizes the student with wiring in airplanes, wire and cable basics, wire markings, documents used in wire bundle installation, circular connectors and contacts, connector installation, MTC connectors and tying wire bundles.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explain how wiring is used in airplanes

Objective
List the uses of wires in airplanes', List the components of wires', Understand the differences between material classes of wire', Define the material grades of wire

Objective
Recognize different types of cables', Understand the materials used in wires and cables', Understand the advantages of stranded wire over solid wire in airplanes', Recognize the importance of the plating on conductors', Understand the AWG wire sizes', Define CAU and perform CAU calculations

Name
The student will be able to explain the basic identifiers of wires, cables and wire bundles

Objective
Understand wire bundle wire and cable identifiers', Define the differences among colored flag markers', Understand markings for connectors', Understand how to determine when a splice is to be installed', Describe the uses of pink green and purple flag markers

Name
The student will be demonstrate a thorough understanding of the informational documents and their level of importance for the installation of wire bundles

Objective
Demonstrate an understanding of the document hierarchy', List good manufacturing processes', Demonstrate an understanding of the damage that some personal care products can have on airplane wiring

Name
The student will be able to identify and explain the use and parts of circular connectors and contacts

Objective
List the parts of a connector', Explain the purpose of a backshell', List the tools needed to strip insulation', List the parts of a wire stripper', Demonstrate an understanding of the difference between pin and socket contacts', List the parts of a contact crimping tool', Define clocking

Name
The student will understand the steps required to install a connector onto a wire

Objective
Explain how to strip different size wires', Explain how to crimp contact onto wires', Explain how to insert the contacts into a connector', Explain how to clock a connector and backshell

Name
The student will be able to demonstrate an understanding of MTC connectors

Objective
Describe an MTC connector', Demonstrate an understanding of the process of keying MTC connectors', List the parts of an MTC connector

Name
The student will learn the different methods, materials and tools used to tie wire bundles

Objective
Demonstrate an understanding of the areas of an airplane where cable ties are permitted', Demonstrate an understanding of the process of tying wire bundles with lacing material', Demonstrate an understanding of the process of tying wire bundles with cable ties', Explain the four different types of knots possible with lacing tape', List the parts and use of a cable tie gun

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC108

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC108 - Aircraft Systems & Components

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

A minimum grade of 'C' in Course AVC112

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC112 - Blueprint Reading

A minimum grade of 'C' in Course AVC120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC120 - Introduction to Sealing

A minimum grade of 'C' in Course AVC125

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC125 - Bonding and Grounding

A minimum grade of 'C' in Course AVC135

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- AVC135 - Hand Tools

A minimum grade of 'C' in Course AVC105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- AVC105 - Aircraft Familiarization

A minimum grade of 'C' in Course AVC107

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- AVC107 - Fundamentals for Aerospace Manufacturing

AER177 - Structural Assembly IV, Bulkheads & Support Structures

Overview

Department
Aviation

Course Description
Students will continue to develop proficiency in the techniques associated with aircraft assembly procedures as they build the Fuselage Center Section and Bulkhead. Students will review proper PPE and usage, shop safety practices related to hand and power tools, parts lists, and assembly drawings. In this section, students will review and perform inventory procedures to document and pull parts from inventory and stage and prepare them for assembly.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply safety practices in the laboratory

Objective
Explain and demonstrate the proper use of PPE', Explain FOD and the effect it can have on an aircraft', Explain Tool control and demonstrate proper toolbox inventory techniques', Demonstrate Good Shop Practices - breaking sharp edges use of eyehearing protection unplugging air hoses when changing drill bitsrivet sets etc

Name
The student will be able to identify and utilize industry specific processes, tools, fasteners, and materials

Objective
Identify tools used for part layout', Utilize measurement tools caliper scale countersink gauge dial indicator grip gauges', 23 Apply measurement readings to maintain symmetry and alignment during fabrication of aircraft structures and subassemblies', Identify fasteners used in aircraft - AN MS NAS Manufacturer specific part numbers', Identify rivet specifications lengths diameters and formula to determine diameters and lengths', Select correct fastener based on engineering drawings', Identify most common materials used in aircraft manufacturing', Identify parts of the drill and drill motors used in aircraft assembly', Identify the different rivet sets and parts of the rivet gun used in aircraft assembly', Identify special fasteners and the tools used in aircraft assembly

Objective
Explain why the need for Corrosion Control is so important', Identify the different types of corrosion', Identify different methods of corrosion control', Explain the techniques used in preventing corrosion in pre or post assembly processes', Demonstrate the process of preparing components for corrosion preventative measures', Observe and explain the application of different methods of corrosion control', Demonstrate the process of applying primers and or paint for corrosion prevention and cosmetic appearance measures', Identify the types of different sealants used in the aviation industry

Requirements

Simple Requirements

A minimum grade of 'C' in Course AER172

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AER172 - Structural Assembly III, Fuselage Center Section

AER180 - Soldering

Overview

Department
Aviation

Course Description
The soldering course acquaints the student with the proper way to safely perform soldering procedures in aviation applications. The importance of correct procedures is emphasized as the student performs wire stripping along with various soldering and de-soldering operations.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
1

Contact Hours

Contact Hours Min:
30

Billing Hours

Billing Hours Min:
1

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to describe personal protective equipment and safety hazards associated with soldering

Objective
Explain the different types of personal protection equipment required when soldering', Explain safety hazards associated with soldering

Name
The student will be able to identify various tools used in the soldering process

Objective
Identify wire strippers', Explain how to select a wire stripper based on the gauge of wire to be stripped', Identify a variable heat soldering iron along with different tips and how to set the appropriate heat range for various applications', Identify desoldering tools

Name
The student will be able to explain the importance of correct soldering procedures in aviation

Objective
Explain how a poorly soldered item can fail to provide electrical connectivity', Describe the various visible defects that indicate a poor solder joint

Name
The student will be able to identify the components that make up solder

Objective
Explain the different ratios of materials used in solder and how these ratios are identified

Name
The student will be able to identify the correct solder to use in electrical applications

Objective
Explain why rosin core solder as opposed to acid core solder is used in electrical applications', Explain how different sizes of solder can affect the finished product

Name
The student will be able to describe the purpose of flux

Objective
Explain why flux is used', Describe how flux is applied', Describe how flux is removed

Name
The student will be able to strip and tin wires

Objective
Perform stripping of various gauges of wires in preparation for tinning', Tin the soldering iron tip', Use a soldering iron at the proper setting to tin stripped wires without solder migrating under the wire insulation

Name
The student will be able to solder a wire/s to various components

Objective
Use a soldering iron at the proper setting to solder tinned wires of various gauges to a terminal post', Use a soldering iron at the proper setting to solder tinned wires of various gauges to a terminal', Use a soldering iron at the proper setting to solder tinned wires of various gauges to a solder cup

Name
The student will be able to de-solder previously soldered items

Objective
Desolder tinned wires of various gauges from terminal posts using desoldering wick and vacuum tool', Desolder tinned wires of various gauges from a terminal post using desoldering wick and vacuum tool', Desolder tinned wires of various gauges from terminals using desoldering wick and vacuum tool', Desolder tinned wires of various gauges from solder cups using desoldering wick and vacuum tool

Name
The student will be able to describe and perform flux removal

Objective
Explain the importance of cleanliness in the soldering process', Use an acid brush and isopropyl alcohol to clean items to be soldered', Explain the importance of flux removal', Use an acid brush and isopropyl alcohol to remove flux from soldered and desoldered items

Requirements

Simple Requirements

A minimum grade of 'C' in Course AER166

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AER166 - Electrical Hand Tools

AER182 - System Assembly V, Fuel System & Flight Controls

Overview

Department
Aviation

Course Description
Students will continue to develop proficiency in the techniques associated with aircraft assembly procedures as they fabricate, assemble, and install the different Flight, Fuel, and Engine Control Systems located in the Fuselage Center Section and other sections of the aircraft. Students will review the proper PPE, hand/power tools, shop safety practices, parts lists, and assembly drawing usage. Students will study and perform inventory procedures to document, retrieve parts from inventory to stage, and prepare them for assembly. Students learn in an environment that combines interactive online delivery of content theory with hands-on application in an assembly laboratory scenario.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply safety practices in the laboratory.

Objective
Explain and demonstrate the proper use of PPE', Explain FOD and the effect it can have on an aircraft', Explain Tool control and demonstrate proper toolbox inventory techniques Demonstrate Good Shop Practices - breaking sharp edges use of eyehearing protection unplugging air hoses when changing drill bitsrivet sets etc

Name
The student will be able to identify and utilize industry specific processes, tools, fasteners, and materials.

Objective
Identify tools used for part layout', Utilize measurement tools caliper scale countersink gauge dial indicator grip gauges', Apply measurement readings to maintain symmetry and alignment during fabrication of aircraft structures and subassemblies', Identify fasteners used in aircraft - AN MS NAS Manufacturer specific part numbers', Identify rivet specifications lengths diameters and formula to determine diameters and lengths', Select correct fastener based on engineering drawings', Identify the most common materials used in aircraft manufacturing', Identify parts of the drill and drill motors used in aircraft assembly', Identify the different rivet sets and parts of the rivet gun used in aircraft assembly Identify special fasteners and the tools used in aircraft assembly

Name
The student will be able to explain and identify the proper corrosion controls used in Aviation Manufacturing.

Objective
Explain why the need for Corrosion Control is so important', Identify the different types of corrosion', Identify different methods of corrosion control', Explain the techniques used in preventing corrosion in pre or post assembly processes', Demonstrate the process of preparing components for corrosion preventative measures', Observe and explain the application of different methods of corrosion control', Demonstrate the process of applying primers and or paint for corrosion prevention and cosmetic appearance measures

Name
The student will be able to explain and identify the different sealants used in Aviation Manufacturing.

Objective
Identify the different types of sealants', Explain the need for different types of sealants and why it is so important to use the proper one', Demonstrate the preparation of the aircraft for application of various types of sealants', Demonstrate the preparation of sealants to be applied to the aircraft', Explain and demonstrate the proper cleanup and disposal methods used for the different types of sealants

Name
The student will be able to explain and identify the different types of fuel systems used in Aviation Manufacturing.

Name
The student will be able to explain the different styles and operations of the aircraft Flight Control Systems.

Objective
Identify the FAA Regulation FARs that covers Fuel Systems for small aircraft', Identify the different configurations of and components used in aircraft fuel systems', Explain the operation of the different styles of fuel system configurations', Explain and Demonstrate the preparation of an aircraft rigid fuel line', Explain the need for the various types of seals and sealants used in the aircraft fuel system', Explain and demonstrate the proper techniques used during the fuel system fabrication and installation', Explain the importance of testing the fuel system after assembly and installation

Name
The student will be able to explain the different styles and operations of the aircraft Engine/Powerplant Control Systems.

Objective
Identify the FAA Regulation FAR that covers EnginePowerplant Control systems used on small aircraft', Explain the regulation that covers Engine or Powerplant Controls', Identify the EnginePowerplant Control system components used on an aircraft', Explain the operation of the EnginePowerplant Control systems', Explain and Demonstrate the assembly and installation of the different components used in aircraft EnginePowerplant control systems', Explain the process of setting or Rigging the various components used in aircraft EnginePowerplant control systems

Requirements

Simple Requirements

A minimum grade of 'C' in Course AER177

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AER177 - Structural Assembly IV, Bulkheads & Support Structures

AER185 - Wire Bundle Installation

Overview

Department
Aviation

Course Description
This course familiarizes with the requirements for wire bundle installation culminating in the installation of several wire bundles on a project board.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explain how electricity is used in and travels through an airplanes structure

Objective
List electrical resistance', Calculate electrical resistance', Explain why low resistance metals are important in airplane construction', List the electrical hazards that occur if electricity is no controlled', Explain Ohms Law', Explain how Ohms Law can be sued to calculate resistance

Name
The student will understand and perform the calculation of resistance measurement values and convert them to other units of measure

Objective
Explain how resistance is measured', Demonstrate converting ohms to other units of measure', List all of the units of measure for ohms', Explain the fundamental rules for unit conversion

Name
The student will be able to explain the possible hazards associated with checking resistance

Objective
Explain the potential hazards of resistance testing', List the correct ohmmeter to use in hazardous areas', List the correct ohmmeters and multimeters to use in nonhazardous areas', Define the equipment inspection steps you must perform before using an ohmmeter or multimeter

Name
The student will be able to recognize and explain the use of the Fluke multimeter to test resistance

Objective
List the major components of the Fluke multimeter', Explain how to prepare the Fluke multimeter for resistance testing', Explain how to use the Fluke multimeter to test resistance

Name
The student will be able to recognize and explain the use of the Biddle multimeter to test resistance

Objective
List the major components of the Biddle multimeter', Explain how to prepare the Biddle multimeter for resistance testing', Explain how to use the Biddle multimeter to test resistance

Name
The student will be able to recognize and explain the use of the Avtron Ohmmeter to test resistance

Objective
List the major components of the Avtron ohmmeter', Explain how to prepare the Avtron ohmmeter for resistance testing', Explain how to use the Avtron ohmmeter to test resistance

Name
The student will be able to recognize and explain the use of the Hewlett Packard Milliohmmeter to test resistance

Objective
List the major components of the Hewlett Packard Milliohmmeter', Explain how to prepare the Hewlett Packard Milliohmmeter for resistance testing', Explain how to use the Hewlett Packard Milliohmmeter to test resistance

Name
The student will be able to recognize and explain the use of the BCD Ohmeter to test resistance

Objective
List the major components of the BCD Ohmmeter', Explain how to prepare the BCD Ohmmeter for resistance testing', Explain how to use the BCD Ohmmeter to test resistance

Requirements

Simple Requirements

A minimum grade of 'C' in Course AER166

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AER166 - Electrical Hand Tools

A minimum grade of 'C' in Course AER175

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AER175 - Wire Bundle Basics

A minimum grade of 'C' in Course AER169

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AER169 - Crimping & Cables

AER187 - System Assembly VI, Landing Gear & Power Plant

Overview

Department
Aviation

Course Description
In this course, students will advance their skills in aircraft assembly techniques by focusing on the fabrication, assembly, and installation of critical components such as Landing Gear, Engine Mount, Cowling, Engine, Spinner & Propeller, Exhaust System, and Cooling & Heating Control Systems. Emphasis will be placed on components located forward and below the Fuselage Center Section and other sections of the aircraft. Additionally, students will revisit essential practices, including proper PPE usage, hand/power tool safety, and shop safety protocols. They will also learn to navigate parts lists, inventory sheets, and assembly drawings. Through hands-on training in an assembly laboratory setting, students will engage in interactive online theory sessions complemented by practical application, honing their abilities to perform inventory procedures, document parts, retrieve inventory items, stage components, and prepare them for assembly.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Requirements

Simple Requirements

A minimum grade of 'C' in Course AER182

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AER182 - System Assembly V, Fuel System & Flight Controls

AER192 - System Assembly VII, Avionics, Canopy, & Windows

Overview

Department
Aviation

Course Description
This comprehensive learning experience combines interactive online content delivery for theoretical knowledge with practical application in an assembly laboratory setting, providing students with a well-rounded understanding of aircraft assembly processes. Students will enhance their skills in aircraft assembly techniques by fabricating, assembling, and installing Avionics and Electrical Systems in the Fuselage Center Section and other aircraft segments, including the Tailcone Assembly. During the course, students will review and execute inventory procedures to effectively document and retrieve parts from inventory for staging and assembly preparation. Students will review concepts, including usage of assembly drawings and safety protocols.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply safety practices in the laboratory.

Objective
Explain and demonstrate the proper use of PPE', Explain FOD and the effect it can have on an aircraft', Explain Tool control and demonstrate proper toolbox inventory techniques', Demonstrate Good Shop Practices - breaking sharp edges use of eyehearing protection unplugging air hoses when changing drill bitsrivet sets etc

Name
The student will be able to identify and utilize industry specific processes, tools, fasteners, and materials

Objective
Identify tools used for part layout', Utilize measurement tools caliper scale countersink gauge dial indicator grip gauges', Apply measurement readings to maintain symmetry and alignment during fabrication of aircraft structures and subassemblies', Identify fasteners used in aircraft - AN MS NAS Manufacturer specific part numbers', Identify rivet specifications lengths diameters and formula to determine diameters and lengths', Select correct fastener based on engineering drawings', Identify the most common materials used in aircraft manufacturing', Identify parts of the drill and drill motors used in aircraft assembly', Identify the different rivet sets and parts of the rivet gun used in aircraft assembly', Identify special fasteners and the tools used in aircraft assembly

Name
The student will be able to explain and identify the proper corrosion controls used in Aviation Manufacturing

Objective
Explain why the need for Corrosion Control is so important', Identify the different types of corrosion', Identify different methods of corrosion control', Explain the techniques used in preventing corrosion in pre or post assembly processes', Demonstrate the process of preparing components for corrosion preventative measures', Observe and explain the application of different methods of corrosion control', Demonstrate the process of applying primers and or paint for corrosion prevention and cosmetic appearance measures

Name
The student will be able to explain and identify the different sealants used in Aviation Manufacturing

Objective
Identify the different types of sealants', Explain the need for different types of sealants and why it is so important to use the proper one', Demonstrate the preparation of the aircraft for application of various types of sealants', Demonstrate the preparation of sealants to be applied to the aircraft', Explain and demonstrate the proper cleanup and disposal methods used for the different types of sealants

Name
The student will be able to Inventory aircraft components using appropriate documents and note any discrepancies

Objective
Identify the proper documents needed to perform inventory on the assembly of a small aircraft', Explain the process of performing an inventory of parts and components used in aircraft assembly', Explain and Demonstrate the process of creating a kit or Kitting while performing an inventory', Explain why proper inventory methods are needed during the manufacturing process

Name
The student will Demonstrate an understanding of the Electrical System and installation aircraft electrical wiring, controls, switches, indicators, and protective devices in accordance with manufacturers specifications.

Objective
Explain the basic function of the electrical system used on small aircraft', Demonstrate an understanding of basic electricity fundamentals', Identify and Explain the function of a wiring schematicdiagram and how it is used during installation', Identify and Explain the operation of the different components in small aircraft electrical systems', Explain the process of assembly and installation of the wiring harness used in aircraft electrical systems', Explain the process of installing electrical pins sockets and connectors used in small aircraft', Identify and Explain the operation of the different circuit protective devices', Explain the process and importance of performing an operational checktest of the electrical system after installation on small aircraft', Explain the process of troubleshooting faults in aircraft electrical systems

Name
The student will be able to identify and explain the process of installing aircraft electronic Communication Instrument systems

Objective
Identify and explain the communication instrument systems in a small aircraft', Explain the difference between Analog and Electronic Instrument systems used in small aircraft', Identify and explain the Pitot andor Static instruments purpose operation and installation in small aircraft', Identify 14 CFR Parts 43 andor 91 requirements for static system checks on small aircraft', Identify and explain the different communication antennas used on aircraft', Identify and explain the different communication cables and connectors', Identify and explain the function of the Emergency locator Transmitter ELT andor ELT installation', Explain the process of installing the ELT and the importance of performing an operational checktest of the ELT', Identify the FAA Regulation FAR that covers Emergency Locator Transmitter ELT requirements', Explain the purpose of performing a functional check on aircraft electronic communication instrument systems after installation

Name
The student will be able to identify and explain the process of installing aircraft electronic Navigation Instrument systems.

Objective
Identify and explain the navigation instrument systems in a small aircraft', Explain the difference between Analog and Electronic Instrument systems used in small aircraft', Identify and explain the Pitot andor Static instruments purpose operation and installation in small aircraft', Identify 14 CFR Parts 43 andor 91 requirements for static system checks on small aircraft', Identify and explain the different navigation antennas used on aircraft', Identify and explain the different navigation cables and connectors', Identify and explain the Autopilot system basic components and operation on small aircraft', Explain the purpose of performing a functional check on aircraft electronic navigation instrument systems after installation

Name
The student will be able to identify and explain the process of airframe assembly and how the first person inspection process is used to verify proper assembly of the airframe.

Objective
Identify the airframe components', Identify the purpose of the airframe and associated components', Describe the construction techniques used for aircraft airframes', Identify an assembly process used to maintain structural integrity and safety of the airframe', Describe the first person inspection process

Requirements

Simple Requirements

A minimum grade of 'C' in Course AER187

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AER187 - System Assembly VI, Landing Gear & Power Plant

AER197 - System Assembly VIII, Final Assembly & Systems Test

Overview

Department
Aviation

Course Description
Students will enhance their skills in aircraft assembly techniques by fabricating, assembling, and installing Avionics and Electrical Systems in various aircraft sections, including the Fuselage Center Section and Tailcone Assembly. Students will also revisit safety protocols, including proper PPE and tool usage, while familiarizing themselves with parts lists, inventory management, and assembly drawings. Inventory procedures will be practiced to document and retrieve parts for staging and assembly preparation efficiently. Learning occurs through a blended approach, integrating interactive online theory with practical, hands-on experience in an assembly laboratory setting.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply safety practices in the laboratory.

Objective
Explain and demonstrate the proper use of PPE', Explain FOD and the effect it can have on an aircraft', Explain Tool control and demonstrate proper toolbox inventory techniques', Demonstrate Good Shop Practices - breaking sharp edges use of eyehearing protection unplugging air hoses when changing drill bitsrivet sets etc

Name
The student will be able to identify and utilize industry specific processes, tools, fasteners, and materials

Objective
Identify tools used for part layout', Utilize measurement tools caliper scale countersink gauge dial indicator grip gauges', Apply measurement readings to maintain symmetry and alignment during fabrication of aircraft structures and subassemblies', Identify fasteners used in aircraft - AN MS NAS Manufacturer specific part numbers', Identify rivet specifications lengths diameters and formula to determine diameters and lengths', Select correct fastener based on engineering drawings', Identify the most common materials used in aircraft manufacturing', Identify parts of the drill and drill motors used in aircraft assembly', Identify the different rivet sets and parts of the rivet gun used in aircraft assembly', Identify special fasteners and the tools used in aircraft assembly

Name
The student will be able to explain and identify the proper corrosion controls used in Aviation Manufacturing.

Objective
Explain why the need for Corrosion Control is so important', Identify the different types of corrosion', Identify different methods of corrosion control', Explain the techniques used in preventing corrosion in pre or post assembly processes', Demonstrate the process of preparing components for corrosion preventative measures', Observe and explain the application of different methods of corrosion control', Demonstrate the process of applying primers and or paint for corrosion prevention and cosmetic appearance measures

Name
The student will be able to explain and identify the different sealants used in Aviation Manufacturing

Objective
Identify the different types of sealants', Explain the need for different types of sealants and why it is so important to use the proper one', Demonstrate the preparation of the aircraft for application of various types of sealants', Demonstrate the preparation of sealants to be applied to the aircraft', Explain and demonstrate the proper cleanup and disposal methods used for the different types of sealants

Name
The student will be able to Inventory aircraft components using appropriate documents and note any discrepancies.

Objective
Identify the proper documents needed to perform inventory on the assembly of a small aircraft', Explain the process of performing an inventory of parts and components used in aircraft assembly', Explain and Demonstrate the process of creating a kit or Kitting while performing an inventory', Explain why proper inventory methods are needed during the manufacturing process

Name
The student will Demonstrate an understanding of the Aircraft Final assembly process, which includes empennage and wing attachment, installation of aircraft fuel system components, wiring, lights, etc. and perform functional test of all systems, and other devices in accordance with manufacturers specifications

Objective
Identify and explain the process of assembly and installation of the Transparencies Windows used in aircraft cabin window systems', Explain the need for different types of sealants and why it is so important to use the proper one for transparency window installation', Identify and explain the assembly and installation of the different components used in aircraft flight control systems', Identify and explain the process of setting or Rigging the various components used in aircraft flight control systems', Explain and demonstrate the proper techniques used during the fuel system fabrication and installation', Explain the importance of testing the fuel system after assembly and installation', Explain the process of assembly and installation of the aircraft wingflaperon assemblies', Identify and explain the process of trimming out the flaperonaileron system on small aircraft', Explain the basic function of the electrical system used on small aircraft', Identify and explain the function of a wiring schematicdiagram and how it is used during installation', Explain the process and importance of performing an operational checktest of the electrical system after final installation on small aircraft', Explain the process of troubleshooting faults in aircraft electrical systems', Identify and explain the different safety restraint devices in the cabin of small aircraft', Identify and explain the process of installing seat belts and shoulder harness assemblies used in small aircraft', Identify and explain the purpose of gap seals around the wing root and other surfaces on the aircraft

Name
The student will be able to Identify and Explain the process of assembly and installing the aircraft canopy system.

Objective
Identify and explain the different types of cabin transparencies windows used on small aircraft', Explain the difference between the two main classifications of Transparent Plastics thermoplastics and thermosetting plastics used in small aircraft', Identify and explain the Optical Considerations when assembling and installing transparencies in small aircraft', Identify the process for drilling and cutting transparent plastics used on small aircraft', Demonstrate a knowledge of proper sealer application to transparencies used on small aircraft', Identify and explain the different Installation Procedures of transparencies used on small aircraft', Identify and explain the process of cleaning and maintaining windows and canopy transparencies on small aircraft

Name
The student will be able to Identify and Explain the process of performing a final inspection (Production Acceptance Inspection) on the completed aircraft assembly.

Objective
Identify and explain requirements and application of identification markings and placards placed on and in small aircraft', Demonstrate a knowledge of the process of performing a weight and balance check on an aircraft after final assembly and before first flight', Explain the purpose and process of performing a final inspection on a small aircraft upon completion', Identify and explain the need to use a check list while performing new construction preflight inspection on small aircraft', Identify the various publications needed or used during an inspection on small aircraft', Explain and identify one or more of other RoutineRequired or other Inspections that are performed on small aircraft', Identify and explain the importance of the Airworthiness Certificate issued to small aircraft

Requirements

Simple Requirements

A minimum grade of 'C' in Course AER192

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AER192 - System Assembly VII, Avionics, Canopy, & Windows

AFV110 - Electrical I

Overview

Department
Applied Technologies

Course Description
In this course students will: Complete service work orders; describe the relationship between voltage, ohms and amperage; perform basic electrical circuit repairs; identify electrical system faults; identify basic wiring diagram symbols, components, and legend information; perform basic electrical circuit measurements using a DVOM; describe basic circuit characteristics of series, parallel and series parallel circuits through a variety of classroom and shop learning and assessment activities.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to complete service work orders.

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Research applicable vehicle and service information such as electricalelectronic system operation vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers

Name
The student will be able to describe the relationship between voltage, ohms and amperage.

Objective
Diagnose electricalelectronic integrity for series parallel and seriesparallel circuits using principles of electricity Ohms Law', Demonstrate the proper use of a digital multimeter DMM during diagnosis of electrical circuit problems including source voltage voltage drop current flow and resistance

Name
The student will be able to perform basic electrical circuit repairs.

Objective
Remove and replace terminal end from connector replace connectors and terminal ends', Perform solder repair of electrical wiring

Name
The student will be able to identify electrical system faults.

Objective
Identify and interpret electricalelectronic system concern determine necessary action', Check electrical circuits with a test light determine necessary action', Check electrical circuits using fused jumper wires determine necessary action', Inspect and test fusible links circuit breakers and fuses determine necessary action', Inspect and test switches connectors relays solid state devices and wires of electricalelectronic circuits perform necessary action

Name
The student will be able to identify basic wiring diagram symbols, components, and legend information.

Objective
Use wiring diagrams during diagnosis of electrical circuit problems

Name
The student will be able to perform basic electrical circuit measurements using a DVOM.

Objective
Demonstrate the proper use of a digital multimeter DMM during diagnosis of electrical circuit problems including source voltage voltage drop current flow and resistance', Check electrical circuits with a test light determine necessary action', Check electrical circuits using fused jumper wires determine necessary action', Inspect and test fusible links circuit breakers and fuses determine necessary action', Inspect and test switches connectors relays solid state devices and wires of electricalelectronic circuits perform necessary action

Name
The student will be able to describe basic circuit characteristics of series, parallel and series parallel circuits.

Objective
Identify and interpret electricalelectronic system concern determine necessary action', Diagnose electricalelectronic integrity for series parallel and seriesparallel circuits using principles of electricity Ohms Law

AFV120 - Electrical II

Overview

Department
Applied Technologies

Course Description
In this course students will: Perform battery diagnosis; perform battery service; perform starting system diagnosis; perform starting system repair; perform charging system diagnosis; perform charging system repair; identify current flow on starting and charging system diagrams through a variety of learning and assessment activities.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Perform battery diagnosis

Objective
Perform battery stateofcharge test determine necessary action', Perform battery capacity test confirm proper battery capacity for vehicle application determine necessary action', Maintain or restore electronic memory functions', Inspect clean fill andor replace battery battery cables connectors clamps and holddowns', Perform battery charge', Start a vehicle using jumper cables or an auxiliary power supply', Measure and diagnose the causes of excessive parasitic draw determine necessary action

Name
Perform battery service

Objective
Perform battery stateofcharge test determine necessary action', Perform battery capacity test confirm proper battery capacity for vehicle application determine necessary action', Maintain or restore electronic memory functions', Inspect clean fill andor replace battery battery cables connectors clamps and holddowns', Perform battery charge', Start a vehicle using jumper cables or an auxiliary power supply', Measure and diagnose the causes of excessive parasitic draw determine necessary action

Name
Perform starting system diagnosis

Objective
Perform starter current draw tests determine necessary action', Perform starter circuit voltage drop tests determine necessary action', Inspect and test starter relays and solenoids determine necessary action', Remove and install starter in a vehicle', Inspect and test switches connectors and wires of starter control circuits perform necessary action', Differentiate between electrical and engine mechanical problems that cause a slowcrank or nocrank condition

Name
Perform starting system repair

Objective
Perform starter current draw tests determine necessary action', Perform starter circuit voltage drop tests determine necessary action', Inspect and test starter relays and solenoids determine necessary action', Remove and install starter in a vehicle', Inspect and test switches connectors and wires of starter control circuits perform necessary action', Differentiate between electrical and engine mechanical problems that cause a slowcrank or nocrank condition

Requirements

Simple Requirements

A minimum grade of 'C' in Course AFV110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AFV110 - Electrical I

AFV130 - Suspension and Steering I

Overview

Department
Applied Technologies

Course Description
In this course students will: document fundamental suspension system concerns; perform fundamental diagnostics of steering systems; perform fundamental repairs of steering systems; perform fundamental diagnostics of suspension systems; perform fundamental repairs of suspension systems; determine the need for wheel alignment and adjustment; perform fundamental diagnostics of wheel and tire systems; perform fundamental repairs of wheel and tire systems through a variety of learning and assessment activities.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to document suspension system concerns

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Identify and interpret suspension and steering system concerns determine necessary action', Research applicable vehicle and service information such as suspension and steering system operation vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers

Name
The student will be able to perform diagnostics of steering systems

Objective
Diagnose steering column noises looseness and binding concerns including tilt mechanisms determine necessary action', Diagnose power steering gear nonrack and pinion binding uneven turning effort looseness hard steering and noise concerns determine necessary action', Diagnose power steering gear rack and pinion binding uneven turning effort looseness hard steering and noise concerns determine necessary action', Determine proper power steering fluid type inspect fluid level and condition', Diagnose power steering fluid leakage determine necessary action', Test and diagnose components of electronically controlled steering systems using a scan tool determine necessary action', Inspect and test electric power assist steering', Identify hybrid vehicle power steering system electrical circuits service and safety precautions', Diagnose inspect adjust repair or replace components of electronically controlled steering systems including sensors switches and actuators initialize system as required', Describe the function of the idle speed compensation switch

Name
The student will be able to perform repairs of steering systems

Objective
Disable and enable supplemental restraint system SRS', Remove and replace steering wheel centertime supplemental restraint system SRS coil clock spring', Inspect steering shaft universaljoints flexible couplings collapsible column lock cylinder mechanism and steering wheel perform necessary action', Adjust nonrack and pinion worm bearing preload and sector lash', Remove and replace rack and pinion steering gear inspect mounting bushings and brackets', Inspect and replace rack and pinion steering gear inner tie rod ends sockets and bellows boots', Flush fill and bleed power steering system', Remove inspect replace and adjust power steering pump belt', Remove and reinstall power steering pump', Remove and reinstall press fit power steering pump pulley check pulley and belt alignment', Inspect and replace power steering hoses and fittings', Inspect and replace pitman arm relay centerlinkintermediate rod idler arm and mountings and steering linkage damper', Inspect replace and adjust tie rod ends sockets tie rod sleeves and clamps', Diagnose inspect adjust repair or replace components of electronically controlled steering systems including sensors switches and actuators initialize system as required', Lubricate suspension and steering systems

Name
The student will be able to perform diagnostics of suspension systems

Objective
Diagnose short and long arm suspension system noises body sway and uneven ride height concerns determine necessary action', Diagnose strut suspension system noises body sway and uneven ride height concerns determine necessary action', Test and diagnose components of electronically controlled suspension systems using a scan tool determine necessary action

Name
The student will be able to perform repairs of suspension systems

Objective
Diagnose short and long arm suspension system noises body sway and uneven ride height concerns determine necessary action', Diagnose strut suspension system noises body sway and uneven ride height concerns determine necessary action', Remove inspect and install upper and lower control arms bushings shafts and rebound bumpers', Remove inspect and install strut rods and bushings', Remove inspect and install upper andor lower ball joints', Remove inspect and install steering knuckle assemblies', Remove inspect and install short and long arm suspension system coil springs and spring insulators', Remove inspect install and adjust suspension system torsion bars inspect mounts', Remove inspect and install stabilizer bar bushings brackets and links', Remove inspect and install strut cartridge or assembly strut coil spring insulators silencers and upper strut bearing mount', Remove inspect and install leaf springs leaf spring insulators silencers shackles brackets bushings and mounts', Inspect remove and replace shock absorbers', Remove inspect and service or replace front and rear wheel bearings', Lubricate suspension and steering systems

Name
The student will be able to determine the need for wheel alignment and adjustment

Objective
Diagnose vehicle wander drift pull hard steering bump steer memory steer torque steer and steering return concerns determine necessary action', Perform prealignment inspection and measure vehicle ride height perform necessary action', Prepare vehicle for wheel alignment on the alignment machine perform fourwheel alignment by checking and adjusting front and rear wheel caster camber and toe as required center steering wheel', Check toeoutonturns turning radius determine necessary action', Check SAI steering axis inclination and included angle determine necessary action', Check rear wheel thrust angle determine necessary action', Check for front wheel setback determine necessary action', Check front andor rear cradle subframe alignment determine necessary action

Name
The student will be able to perform diagnostics of wheel and tire systems

Objective
Diagnose wheeltire vibration shimmy and noise determine necessary action', Measure wheel tire axle flange and hub runout determine necessary action', Diagnose tire pull problems determine necessary action', Inspect diagnose and calibrate tire pressure monitoring system

Name
The student will be able to perform repairs of wheel and tire systems

Objective
Inspect tire condition identify tire wear patterns check and adjust air pressure determine necessary action', Rotate tires according to manufacturers recommendations', Dismount inspect and remount tire on wheel balance wheel and tire assembly static and dynamic', Dismount inspect and remount tire on wheel equipped with tire pressure monitoring system sensor', Reinstall wheel torque lug nuts', Inspect tire and wheel assembly for air loss perform necessary action', Repair tire using internal patch

AFV135 - Introduction to Alternative Fuels

Overview

Department
Applied Technologies

Course Description
Students will use various sources in the alternative fueled vehicle industry to learn what alternative fuels are available. Students will examine the need for alternative fuels including: Propane, Natural Gas, Ethanol and Biodiesel. Students will also learn about new technologies such as Electric Drive and Hydrogen fueled vehicles as well as Fuel Economy and Idle Reduction considerations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Distinguish between different types of alternative fuels

Name
Explain the Clean Air Act

Name
Explain how to perform the federal test procedure (FTP) for emissions testing

Name
Explain the health effects related to vehicular emissions

Name
Explain the economics of producing a domestic fuel source

Name
Discuss energy independence

Name
Explain how natural gas (NG) is extracted, processed, transported, and stored

Name
Explain ethanol production

Name
Discuss various OEM flex fueled vehicles

Name
Describe specialized emissions equipment on biodiesel fueled vehicles

Name
Compare and contrast diesel with green diesel and biodiesel

Name
Discuss farming issues related to bio fuels production

Name
Describe past electric vehicles and their performance characteristics; compare with present electric vehicles

Name
Explain hybrid vehicle operating characteristics

Name
Compare and contrast hybrid vehicles with dedicated electric vehicles

Name
Discuss the differences in fuel mileage

Name
Apply safety standards and properly use PPE

Requirements

Simple Requirements

A minimum grade of 'C' in Course AFV120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- AFV120 - Electrical II

AFV140 - Engine Repair

Overview

Department
Applied Technologies

Course Description
Through a variety of learning and assessment activities students can: explore the theory and operation of internal combustion engine; demonstrate the ability to remove an automotive engine; demonstrate the ability to install an automotive engine; demonstrate the basic ability to inspect and repair cylinder head, valve trains and timing defects; demonstrate the ability to disassemble short block; demonstrate the ability to inspect short block; demonstrate the ability to repair short block; demonstrate the ability to reassemble short block; demonstrate the basic ability to inspect and repair engine lubrication; demonstrate the basic ability to inspect and repair engine cooling systems; inspect a cylinder head and valve train; repair a cylinder head and valve train; perform advanced level engine diagnosis.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Explore the theory and operation of internal combustion engine

Name
Demonstrate the ability to remove an automotive engine

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Identify and interpret engine concern determine necessary action', Research applicable vehicle and service information such as internal engine operation vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers', Inspect engine assembly for fuel oil coolant and other leaks determine necessary action', Diagnose engine noises and vibrations determine necessary action', Perform cylinder cranking and running compression tests determine necessary action', Install engine covers using gaskets seals and sealers as required', Perform common fastener and thread repair to include remove broken bolt restore internal and external threads and repair internal threads with thread insert', Inspect remove and replace engine mounts

Name
Demonstrate the ability to install an automotive engine

Objective
Remove and reinstall engine in OBDII or newer vehicle reconnect all attaching components and restore the vehicle to running condition', Install engine covers using gaskets seals and sealers as required', Inspect remove and replace engine mounts

Name
Demonstrate the basic ability to inspect and repair cylinder head, valve trains and timing defects

Objective
Remove cylinder heads inspect gasket condition install cylinder head and gasket tighten according to manufacturers specifications and procedures', Clean and visually inspect a cylinder head for cracks check gasket surface areas for warpage and surface finish check passage condition', Inspect valve springs for squareness and free height comparison determine necessary action', Replace valve stem seals on an assembled engine inspect valve spring retainers lockskeepers and valve lockkeeper grooves determine necessary action', Inspect valve guides for wear check valve stemtoguide clearance determine necessary action', Inspect valves and valve seats determine necessary action', Check valve spring assembled height and valve stem height determine necessary action', Inspect pushrods rocker arms rocker arm pivots and shafts for wear bending cracks looseness and blocked oil passages orifices determine necessary action', Inspect valve lifters determine necessary action', Adjust valves mechanical or hydraulic lifters', Inspect and replace camshaft and drive beltchain includes checking drive gear wear and backlash end play sprocket and chain wear overhead cam drive sprockets drive belts belt tension tensioners camshaft reluctor ringtonewheel and variable valve timing components', Inspect andor measure camshaft for runout journal wear and lobe wear', Inspect camshaft bearing surface for wear damage outofround and alignment determine necessary action', Establish camshaft position sensor indexing', Adjust valves on engines with mechanical or hydraulic lifters', Remove and replace timing belt verify correct camshaft timing', Perform engine oil and filter change

Name
Demonstrate the ability to disassemble short block

Objective
Disassemble engine block clean and prepare components for inspection and reassembly', Inspect engine block for visible cracks passage condition core and gallery plug condition and surface warpage determine necessary action', Inspect and measure cylinder wallssleeves for damage wear and ridges determine necessary action', Deglaze and clean cylinder walls', Inspect and measure camshaft bearings for wear damage outofround and alignment determine necessary action', Inspect crankshaft for straightness journal damage keyway damage thrust flange and sealing surface condition and visual surface cracks check oil passage condition measure end play and journal wear check crankshaft position sensor reluctor ring where applicable determine necessary action', Inspect main and connecting rod bearings for damage and wear determine necessary action', Identify piston and bearing wear patterns that indicate connecting rod alignment and main bearing bore problems determine necessary action', Inspect and measure piston skirts and ring lands determine necessary action', Remove and replace piston pin', Determine pistontobore clearance', Inspect measure and install piston rings', Inspect auxiliary shafts balance intermediate idler counterbalance or silencer inspect shafts and support bearings for damage and wear determine necessary action reinstall and time', Remove inspect or replace crankshaft vibration damper harmonic balancer', Determine pistontobore clearance', Inspect measure and install piston rings', Inspect auxiliary shafts balance intermediate idler counterbalance or silencer inspect shafts and support bearings for damage and wear determine necessary action reinstall and time', Remove inspect or replace crankshaft vibration damper harmonic balancer

Name
Demonstrate the ability to inspect short block

Objective
Disassemble engine block clean and prepare components for inspection and reassembly', Inspect engine block for visible cracks passage condition core and gallery plug condition and surface warpage determine necessary action', Inspect and measure cylinder wallssleeves for damage wear and ridges determine necessary action', Deglaze and clean cylinder walls', Inspect and measure camshaft bearings for wear damage outofround and alignment determine necessary action', Inspect crankshaft for straightness journal damage keyway damage thrust flange and sealing surface condition and visual surface cracks check oil passage condition measure end play and journal wear check crankshaft position sensor reluctor ring where applicable determine necessary action', Inspect main and connecting rod bearings for damage and wear determine necessary action', Identify piston and bearing wear patterns that indicate connecting rod alignment and main bearing bore problems determine necessary action', Inspect and measure piston skirts and ring lands determine necessary action', Remove and replace piston pin', Determine pistontobore clearance', Inspect measure and install piston rings', Inspect auxiliary shafts balance intermediate idler counterbalance or silencer inspect shafts and support bearings for damage and wear determine necessary action reinstall and time', Remove inspect or replace crankshaft vibration damper harmonic balancer

Name
Demonstrate the ability to repair short block

Objective
Disassemble engine block clean and prepare components for inspection and reassembly', Inspect engine block for visible cracks passage condition core and gallery plug condition and surface warpage determine necessary action', Inspect and measure cylinder wallssleeves for damage wear and ridges determine necessary action', Deglaze and clean cylinder walls', Inspect and measure camshaft bearings for wear damage outofround and alignment determine necessary action', Inspect crankshaft for straightness journal damage keyway damage thrust flange and sealing surface condition and visual surface cracks check oil passage condition measure end play and journal wear check crankshaft position sensor reluctor ring where applicable determine necessary action', Inspect main and connecting rod bearings for damage and wear determine necessary action', Identify piston and bearing wear patterns that indicate connecting rod alignment and main bearing bore problems determine necessary action', Inspect and measure piston skirts and ring lands determine necessary action', Remove and replace piston pin', Determine pistontobore clearance', Inspect measure and install piston rings', Inspect auxiliary shafts balance intermediate idler counterbalance or silencer inspect shafts and support bearings for damage and wear determine necessary action reinstall and time', Remove inspect or replace crankshaft vibration damper harmonic balancer', Assemble engine block

Name
Demonstrate the ability to reassemble short block

Objective
Disassemble engine block clean and prepare components for inspection and reassembly', Inspect engine block for visible cracks passage condition core and gallery plug condition and surface warpage determine necessary action', Inspect and measure cylinder wallssleeves for damage wear and ridges determine necessary action', Deglaze and clean cylinder walls', Inspect and measure camshaft bearings for wear damage outofround and alignment determine necessary action', Inspect crankshaft for straightness journal damage keyway damage thrust flange and sealing surface condition and visual surface cracks check oil passage condition measure end play and journal wear check crankshaft position sensor reluctor ring where applicable determine necessary action', Inspect main and connecting rod bearings for damage and wear determine necessary action', Identify piston and bearing wear patterns that indicate connecting rod alignment and main bearing bore problems determine necessary action', Inspect and measure piston skirts and ring lands determine necessary action', Remove and replace piston pin', Determine pistontobore clearance', Inspect measure and install piston rings', Inspect auxiliary shafts balance intermediate idler counterbalance or silencer inspect shafts and support bearings for damage and wear determine necessary action reinstall and time', Remove inspect or replace crankshaft vibration damper harmonic balancer', Assemble engine block

Name
Demonstrate the basic ability to inspect and repair engine lubrication

Objective
Perform oil pressure tests determine necessary action', Inspect oil pump gears or rotors housing pressure relief devices and pump drive perform necessary action', Inspect auxiliary coolers determine necessary action', Inspect test and replace oil temperature and pressure switches and sensors', Perform oil and filter change', Identify causes of engine overheating

Name
Demonstrate the basic ability to inspect and repair engine cooling systems

Objective
Perform cooling system pressure tests check coolant condition inspect and test radiator pressure cap coolant recovery tank and hoses determine necessary action', Inspect replace and adjust drive belts tensioners and pulleys check pulley and belt alignment', Inspect and replace engine cooling and heater system hoses', Inspect test and replace thermostat and gasketseal', Test coolant drain and recover coolant flush and refill cooling system with recommended coolant bleed air as required', Inspect remove and replace water pump', Remove and replace radiator', Inspect and test fanss electrical or mechanical fan clutch fan shroud and air dams', Identify causes of engine overheating', Remove and replace thermostat and gasketseal

Name
Inspect a cylinder head and valve train

Objective
Remove cylinder heads inspect gasket condition install cylinder head and gasket tighten according to manufacturers specifications and procedures', Clean and visually inspect a cylinder head for cracks check gasket surface areas for warpage and surface finish check passage condition', Inspect valve springs for squareness and free height comparison determine necessary action', Replace valve stem seals on an assembled engine inspect valve spring retainers lockskeepers and valve lockkeeper grooves determine necessary action', Inspect valve guides for wear check valve stemtoguide clearance determine necessary action', Inspect valves and valve seats determine necessary action', Check valve spring assembled height and valve stem height determine necessary action', Inspect pushrods rocker arms rocker arm pivots and shafts for wear bending cracks looseness and blocked oil passages orifices determine necessary action', Inspect valve lifters determine necessary action', Adjust valves mechanical or hydraulic lifters', Inspect and replace camshaft and drive beltchain includes checking drive gear wear and backlash end play sprocket and chain wear overhead cam drive sprockets drive belts belt tension tensioners camshaft reluctor ringtonewheel and variable valve timing components', Inspect andor measure camshaft for runout journal wear and lobe wear', Inspect camshaft bearing surface for wear damage outofround and alignment determine necessary action', Establish camshaft position sensor indexing', Adjust valves on engines with mechanical or hydraulic lifters', Remove and replace timing belt verify correct camshaft timing', Remove and replace thermostat and gasketseal', Perform common fastener and thread repairs to include remove broken bolt restore internal and external threads and repair internal threads with a threaded insert

Name
Repair a cylinder head and valve train

Objective
Remove cylinder heads inspect gasket condition install cylinder head and gasket tighten according to manufacturers specifications and procedures', Clean and visually inspect a cylinder head for cracks check gasket surface areas for warpage and surface finish check passage condition', Inspect valve springs for squareness and free height comparison determine necessary action', Replace valve stem seals on an assembled engine inspect valve spring retainers lockskeepers and valve lockkeeper grooves determine necessary action', Inspect valve guides for wear check valve stemtoguide clearance determine necessary action', Inspect valves and valve seats determine necessary action', Check valve spring assembled height and valve stem height determine necessary action', Inspect pushrods rocker arms rocker arm pivots and shafts for wear bending cracks looseness and blocked oil passages orifices determine necessary action', Inspect valve lifters determine necessary action', Adjust valves mechanical or hydraulic lifters', Inspect and replace camshaft and drive beltchain includes checking drive gear wear and backlash end play sprocket and chain wear overhead cam drive sprockets drive belts belt tension tensioners camshaft reluctor ringtonewheel and variable valve timing components', Inspect andor measure camshaft for runout journal wear and lobe wear', Inspect camshaft bearing surface for wear damage outofround and alignment determine necessary action', Establish camshaft position sensor indexing', Adjust valves on engines with mechanical or hydraulic lifters', Remove and replace timing belt verify correct camshaft timing', Remove and replace thermostat and gasketseal', Inspect and test mechanicalelectrical fans fan clutch fan shroudducting air dams and fan control devices perform necessary action', Perform common fastener and thread repairs to include remove broken bolt restore internal and external threads and repair internal threads with a threaded insert', Perform engine oil and filter change', Identify hybrid vehicle internal combustion engine service precautions

Name
Perform advanced level engine diagnosis

Objective
Diagnose engine noises and vibrations determine necessary action', Inspect and test mechanicalelectrical fans fan clutch fan shroudducting air dams and fan control devices perform necessary action', Identify hybrid vehicle internal combustion engine service precautions', Diagnose the cause of excessive oil consumption coolant consumption unusual engine exhaust color and odor determine necessary action', Perform engine vacuum tests determine necessary action', Perform cylinder power balance tests determine necessary action', Perform cylinder cranking and running compression tests determine necessary action', Perform cylinder leakage tests determine necessary action', Remove and reinstall engine in OBDII or newer vehicle reconnect all attaching components and restore the vehicle to running condition', Install engine covers using gaskets seals and sealers as required', Perform common fastener and thread repair to include remove broken bolt restore internal and external threads and repair internal threads with thread insert', Inspect remove and replace engine mounts', Perform active tests of actuators using a scan tool determine necessary action

AFV145 - Hybrid Systems & Maintenance

Overview

Department
Applied Technologies

Course Description
This course introduces the student to the features of the Internal Combustion Engine (ICE) as they apply to the hybrid vehicle, hybrid drive systems (transaxles and gears), brake systems, HVAC systems, and cooling systems service. First responder, predictive maintenance procedures, hybrid trucks, and Belted Alternator System (BAS) are also examined.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Identify different types of hybrid electric vehicles

Name
Understand components and operating characteristics of hybrid electric vehicles

Name
Explain basic maintenance procedures

Name
Diagnose trouble codes and complete repairs

Name
Identify and disable the high voltage battery system

Name
Discuss vehicle charging times and procedures

Name
Explain local and federal legislation pertaining to electric vehicles

Name
Apply safety standards and properly use PPE

Requirements

Simple Requirements

A minimum grade of 'C' in Course AFV135

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AFV135 - Introduction to Alternative Fuels

AFV150 - Electric/Fuel Cell Technology

Overview

Department
Applied Technologies

Course Description
This course is designed to help prepare the student to enter the automotive repair and service industry in the area of alternative fuels and advanced technology vehicles. It is an intensive study of vehicle electric and fuel cell theory, application, installation, diagnosis, service and safety regulations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
1

Contact Hours

Contact Hours Min:
30

Billing Hours

Billing Hours Min:
1

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Explain how a fuel cell works

Name
Apply light and heavy duty fuel cell safety standards and properly use PPE

Name
Compare and contrast common components of fuel cells

Name
Explain the emissions footprint of fuel cell vehicles

Name
Compare and contrast various fuel cell technologies

Requirements

Simple Requirements

A minimum grade of 'C' in Course AFV135

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AFV135 - Introduction to Alternative Fuels

AFV155 - High Voltage Battery Technology & Management

Overview

Department
Applied Technologies

Course Description
This course introduces the student to high voltage battery technology: electrical service safety precautions and personal protection, high voltage tools and equipment usage, battery energy management hardware systems, battery removal and installation, and battery rebuilding. The student will also be introduced to AC induction electric machines, permanent magnet electric machines, power inverter systems, electric propulsion sensing systems, communication networks, and predictive maintenance.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Explain common battery technology

Name
Demonstrate how to safely remove the battery

Name
Demonstrate how to safely install the battery

Name
Demonstrate how to rebuild the battery

Name
Explain predictive maintenance as it applies to high voltage batteries

Requirements

Simple Requirements

A minimum grade of 'C' in Course AFV135

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AFV135 - Introduction to Alternative Fuels

AFV160 - Brakes I

Overview

Department
Applied Technologies

Course Description
In this course students will Perform system pressure and travel calculations utilizing Pascal's Law; Complete service work orders; Determine appropriate system pressure tests utilizing service specifications; Determine brake system concerns and necessary actions; Diagnose poor stopping, pulling or dragging concerns caused by malfunctions in the hydraulic system; Determine how to inspect, fabricate and/or replace brake lines and hoses; Determine the service specifications pertaining to the removal, cleaning and refinishing procedures on brake drums; Apply drum brake repair and replacement procedures; Diagnose poor stopping noise vibration, pulling, grabbing, dragging or pedal pulsation concerns on disc-brake vehicles; Determine disc brake repair and replacement procedures; Determine how to caliper piston retractions; Diagnose wheel bearing noise, wheel shimmy and vibration concerns; Determine how to remove, inspect and replace bearing and hub assemblies through a variety of classroom and lab/ shop learning and assessment activities.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Perform system pressure and travel calculations utilizing Pascal's Law

Name
Complete service work orders

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Research applicable vehicle and service information such as brake system operation vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers

Name
Determine appropriate system pressure tests utilizing service specifications

Objective
Diagnose pressure concerns in the brake system using hydraulic principles Paschals Law', Measure brake pedal height travel and free play as applicable determine necessary action', Check master cylinder for internalexternal leaks and proper operation determine necessary action', Remove bench bleed and reinstall master cylinder', Diagnose poor stopping pulling or dragging concerns caused by malfunctions in the hydraulic system determine necessary action', Inspect brake lines flexible hoses and fittings for leaks dents kinks rust cracks bulging or wear tighten loose fittings and supports determine necessary action', Replace brake lines hoses fittings and supports', Fabricate brake lines using proper material and flaring procedures double flare and ISO types', Select handle store and fill brake fluids to proper level', Inspect test andor replace metering holdoff proportioning balance pressure differential and combination valves', Inspect test andor replace components of brake warning light system', Bleed andor flush brake system', Test brake fluid for contamination

Name
Determine brake system concerns and necessary actions

Objective
Identify and interpret brake system concern determine necessary action', Research applicable vehicle and service information such as brake system operation vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers

Name
Diagnose poor stopping, pulling or dragging concerns caused by malfunctions in the hydraulic system

Objective
Measure brake pedal height travel and free play as applicable determine necessary action', Check master cylinder for internalexternal leaks and proper operation determine necessary action', Remove bench bleed and reinstall master cylinder', Diagnose poor stopping pulling or dragging concerns caused by malfunctions in the hydraulic system determine necessary action', Inspect brake lines flexible hoses and fittings for leaks dents kinks rust cracks bulging or wear tighten loose fittings and supports determine necessary action', Replace brake lines hoses fittings and supports', Fabricate brake lines using proper material and flaring procedures double flare and ISO types', Select handle store and fill brake fluids to proper level', Inspect test andor replace metering holdoff proportioning balance pressure differential and combination valves', Inspect test andor replace components of brake warning light system

Name
Determine how to inspect, fabricate and/or replace brake lines and hoses

Objective
Inspect brake lines flexible hoses and fittings for leaks dents kinks rust cracks bulging or wear tighten loose fittings and supports determine necessary action', Replace brake lines hoses fittings and supports', Fabricate brake lines using proper material and flaring procedures double flare and ISO types', Select handle store and fill brake fluids to proper level

Name
Determine the service specifications pertaining to the removal, cleaning and refinishing procedures on brake drums

Objective
Remove clean inspect and measure brake drums determine necessary action', Refinish brake drum measure final drum diameter

Name
Apply drum brake repair and replacement procedures

Objective
Remove clean and inspect brake shoes springs pins clips levers adjustersselfadjusters other related brake hardware and backing support plates lubricate and reassemble', Inspect and install wheel cylinders', Preadjust brake shoes and parking brake install brake drums or drumhub assemblies and wheel bearings', Install wheel torque lug nuts and make final checks and adjustments

Name
Diagnose poor stopping noise vibration, pulling, grabbing, dragging or pedal pulsation concerns on disc-brake vehicles

Objective
Diagnose poor stopping noise pulling grabbing dragging or pulsation concerns determine necessary action', Remove caliper assembly inspect for leaks and damage to caliper housing determine necessary action', Clean and inspect caliper mounting and slidespins for operation wear and damage determine necessary action

Name
Determine disc brake repair and replacement procedures

Objective
Remove inspect and replace pads and retaining hardware determine necessary action', Disassemble and clean caliper assembly inspect parts for wear rust scoring and damage replace seal boot and damaged or worn parts', Reassemble lubricate and reinstall caliper pads and related hardware seat pads and inspect for leaks', Clean inspect and measure rotor thickness lateral runout and thickness variation determine necessary action', Remove and reinstall rotor', Check brake pad wear indicator system operation determine necessary action

Name
Determine how to caliper piston retractions

Objective
Retract caliper piston on an integrated parking brake system

Name
Diagnose wheel bearing noise, wheel shimmy and vibration concerns

Objective
Diagnose wheel bearing noises wheel shimmy and vibration concerns determine necessary action

Name
Determine how to remove, inspect and replace bearing and hub assemblies

Objective
Remove clean inspect repack and install wheel bearings and replace seals install hub and adjust bearings', Check parking brake cables and components for wear binding and corrosion clean lubricate adjust or replace as needed', Check parking brake and indicator light system operation determine necessary action', Check operation of brake stop light system determine necessary action', Replace wheel bearing and race', Inspect and replace wheel studs', Remove and reinstall sealed wheel bearing assembly

Requirements

Simple Requirements

A minimum grade of 'C' in Course AFV120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AFV120 - Electrical II

AFV165 - Introduction to CNG and LPG Conversion, Installation & Maintenance

Overview

Department
Applied Technologies

Course Description
This course introduces students to CNG and LNG as forms of alternative fuels. It will teach them safety when fueling and servicing vehicles that use CNG or LNG. Students will be introduced to CNG conversions and factory installed use of CNG for duel fueled vehicles. Students will be introduced to fleet operations using LNG and how to service and maintain those vehicles.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
Apply safety standards and properly use PPE

Name
Compare and contrast local, state, and federal regulations pertinent to CNG and LPG fueling site safety

Name
Explain NFPA-52 rules and regulations applicable toward CNG and LPG site safety, fueling facilities, and home refueling

Name
Compare the physical properties of natural gas (NG) to those of gasoline, diesel, and methanol

Name
Identify the odorant used in NG

Name
Demonstrate how to perform a weekly vehicle inspection procedure

Name
Identify and describe the operation of CNG fuel storage vessels

Name
Identify CNG high pressure tubing

Name
Identify and describe the operation of high pressure regulators and coalescing filters

Name
Identify CNG in line low pressure filters

Name
Identify and describe the operation of CNG manual valves, computer controlled tank valves, turn valves, and secondary pressure regulators

Name
Describe the difference between aftermarket CNG systems and OEM installations

Name
Describe basic fuel system operating principles of light duty NG systems and heavy duty NG systems

Name
Describe basic maintenance procedures

Name
Identify pressure sensors, temperature sensors, and voltage producing sensors

Name
Describe tubing types and tubing installation

Name
Identify various types of high pressure stainless steel tubing

Name
Compare and contrast fastening systems

Name
Describe how to properly use fittings for installation

Name
Identify fast fill stations, slow fill stations, and home refueling stations

Name
Describe the operation and major components of fill stations and home refueling appliances

Name
Describe the operation of electrical/electronic tank valves and one way check valves

Name
Describe the operation of electrical/electronic tank valves and one way check valves

Earn a minimum grade (UG) of C in the following:
- AFV120 - Electrical II

Requirements

Simple Requirements

A minimum grade of 'C' in Course AFV120

Type
Prerequisite

AFV170 - Computer Systems for Alternative Fuels

Overview

Department
Applied Technologies

Course Description
In this course students will: Perform automotive computer system diagnosis; perform vehicle communication diagnosis; perform engine computer system diagnosis; transmission computer diagnosis; perform air bag system diagnosis; perform heating and air conditioning electronic diagnosing; perform electronic anti-lock brake/traction/stability diagnosis; perform driver assistance system diagnosis; identify computer systems through a variety of learning and assessment activities.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Missing Info

Objective
Use wiring diagrams during diagnosis of electrical circuit problems

Name
In-Vehicle Transmission/Transaxle Maintenance and Repair

Objective
Diagnose electronic transmission control systems using a scan tool determine necessary action

Name
Steering Systems Diagnosis and Repair

Objective
Disable and enable supplemental restraint system SRS', Remove and replace steering wheel centertime supplemental restraint system SRS coil clock spring

Name
Suspension Systems Diagnosis and Repair

Objective
Diagnose inspect adjust repair or replace components of electronically controlled steering systems including sensors switches and actuators initialize system as required', Describe the function of the idle speed compensation switch', Lubricate suspension and steering systems

Name
Electronic Brake, Traction and Stability Control Systems Diagnosis and Repair

Objective
Identify and inspect electronic brake control system components determine necessary action', Diagnose poor stopping wheel lockup abnormal pedal feel unwanted application and noise concerns associated with the electronic brake control system determine necessary action', Diagnose electronic brake control system electronic controls and components by retrieving diagnostic trouble codes andor using recommended test equipment determine necessary action', Remove and install electronic brake control system electricalelectronic and hydraulic components', Test diagnose and service electronic brake control system speed sensors digital and analog toothed ring tone wheel and circuits using a graphing multimeter GMMdigital storage oscilloscope DSO includes output signal resistance shorts to voltageground and frequency data', Identify traction controlvehicle stability control system components

Name
General Electrical System Diagnosis

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Identify and interpret electricalelectronic system concern determine necessary action', Research applicable vehicle and service information such as electricalelectronic system operation vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers', Diagnose electricalelectronic integrity of series parallel and seriesparallel circuits using principles of electricity Ohms Law', Use wiring diagrams during diagnosis of electrical circuit problems', Demonstrate the proper use of a digital multimeter DMM during diagnosis of electrical circuit problems including source voltage voltage drop current flow and resistance', Check electricalelectronic circuit waveforms interpret readings and determine needed repairs', Remove and replace terminal end from connector replace connectors and terminal ends', Repair wiring harness including CANBUS systems', Perform solder repair of electrical wiring', Identify location of hybrid vehicle high voltage circuit disconnect service plug location and safety procedures

Name
Gauges, Warning Devices, and Driver Information Systems Diagnosis and Repair

Objective
Inspect and test gauges and gauge sending units for cause of abnormal gauge readings determine necessary action', Inspect and test connectors wires and printed circuit boards of gauge circuits determine necessary action', Diagnose the cause of incorrect operation of warning devices and other driver information systems determine necessary action', Inspect and test sensors connectors and wires of electronic digital instrument circuits determine necessary action

Name
Accessories Diagnosis and Repair

Objective
Diagnose supplemental restraint system SRS concerns determine necessary action', Disarm and enable the airbag system for vehicle service', Diagnose radio static and weak intermittent or no radio reception determine necessary action', Diagnose body electronic system circuits using a scan tool determine necessary action', Check for module communication including CANBUS systems errors using a scan tool', Describe the operation of keyless entryremotestart systems', Perform software transfers software updates or flash reprogramming on electronic modules

Name
A/C System Diagnosis and Repair

Objective
Using scan tool observe and record related HVAC data and trouble codes

Name
Computerized Engine Controls Diagnosis and Repair

Objective
Retrieve and record diagnostic trouble codes OBD monitor status and freeze frame data clear codes when applicable', Diagnose the causes of emissions or driveability concerns with stored or active diagnostic trouble codes obtain graph and interpret scan tool data', Diagnose emissions or driveability concerns without stored diagnostic trouble codes determine necessary action', Check for module communication including CANBUS systems errors using a scan tool', Inspect and test computerized engine control system sensors powertrainengine control module PCMECM actuators and circuits using a graphing multimeter GMMdigital storage oscilloscope DSO perform necessary action', Access and use service information to perform stepbystep diagnosis', Diagnose driveability and emissions problems resulting from malfunctions of interrelated systems cruise control security alarms suspension controls traction controls AC automatic transmissions nonOEMinstalled accessories or similar systems determine necessary action', Perform active tests of actuators using a scan tool determine necessary action', Describe the importance of running all OBDII monitors for repair verification

Requirements

Simple Requirements

A minimum grade of 'C' in Course AFV120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AFV120 - Electrical II

AFV175 - Automatic Transmission Repair

Overview

Department
Applied Technologies

Course Description
This course contains competencies that can be used in their entirety within a single course or as needed for courses designed by a Kansas institution as Institutional Flexible Credit. Through a variety of learning and assessment activities students can: explore the concept of theory and operation of automatic transmissions/transaxles; perform maintenance on an automatic transmission/ transaxle; perform service on an automatic transmission/transaxle; diagnose automatic transmission/transaxles; inspect automatic transmission/transaxles; remove and reinstall automatic transmission; remove and reinstall automatic transaxles; disassemble automatic transmission and components; disassemble automatic transaxles and components; inspect automatic transmission components; inspect automatic transaxles and components; repair automatic transmission and components; repair automatic transaxles and components; reassemble automatic transmission and components; reassemble automatic transaxles and components.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explore the concept of theory and operation of automatic transmissions/transaxles

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Identify and interpret transmissiontransaxle concern differentiate between engine performance and transmissiontransaxle concerns determine necessary action', Research applicable vehicle and service information such as transmissiontransaxle system operation fluid type vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers', Diagnose transmissiontransaxle gear reductionmultiplication concerns using driving driven and held member power flow principles', Inspect measure clean and replace valve body includes surfaces bores springs valves sleeves retainers brackets checkvalvesballs screens spacers and gaskets', Inspect servo and accumulator bores pistons seals pins springs and retainers determine necessary action', Assemble transmissiontransaxle', Inspect leak test and flush or replace transmissiontransaxle oil cooler lines and fittings', Inspect converter flex drive plate converter attaching bolts converter pilot converter pump drive surfaces converter end play and crankshaft pilot bore', Install and seat torque converter to engage drivesplines', Inspect measure and reseal oil pump assembly and components', Measure transmissiontransaxle end play or preload determine necessary action', Inspect measure and replace thrust washers and bearings', Inspect oil delivery circuits including seal rings ring grooves and sealing surface areas feed pipes orifices and check valvesballs', Inspect bushings determine necessary action', Inspect and measure planetary gear assembly components determine necessary action', Inspect case bores passages bushings vents and mating surfaces determine necessary action', Inspect transaxle drive link chains sprockets gears bearings and bushings perform necessary action', Inspect measure repair adjust or replace transaxle final drive components', Inspect clutch drum piston checkballs springs retainers seals and friction and pressure plates determine necessary action', Measure clutch pack clearance determine necessary action', Air test operation of clutch and servo assemblies', Inspect roller and sprag clutch races rollers sprags springs cages and retainers determine necessary action', Inspect bands and drums determine necessary action', Describe the operational characteristics of a continuously variable transmission CVT', Describe the operational characteristics of a hybrid vehicle drive train

Name
The student will be able toperform maintenance on an automatic transmission/transaxle

Objective
Diagnose fluid loss and condition concerns check fluid level in transmissions with and without dipstick determine necessary action', Inspect adjust and replace manual valve shift linkage transmission range sensorswitch and parkneutral position switch', Inspect and replace external seals gaskets and bushings', Inspect test adjust repair or replace electricalelectronic components and circuits including computers solenoids sensors relays terminals connectors switches and harnesses', Diagnose electronic transmission control systems using a scan tool determine necessary action', Inspect replace and align powertrain mounts', Service transmission perform visual inspection replace fluids and filters', Inspect leak test and flush or replace transmissiontransaxle oil cooler lines and fittings

Name
The student will be able to perform service on an automatic transmission/ transaxle

Objective
Diagnose fluid loss and condition concerns check fluid level in transmissions with and without dipstick determine necessary action', Inspect adjust and replace manual valve shift linkage transmission range sensorswitch and parkneutral position switch', Inspect and replace external seals gaskets and bushings', Inspect test adjust repair or replace electricalelectronic components and circuits including computers solenoids sensors relays terminals connectors switches and harnesses', Diagnose electronic transmission control systems using a scan tool determine necessary action', Inspect replace and align powertrain mounts', Service transmission perform visual inspection replace fluids and filters', Inspect leak test and flush or replace transmissiontransaxle oil cooler lines and fittings

Name
The student will be able to diagnose automatic transmission/transaxles

Objective
Diagnose fluid loss and condition concerns check fluid level in transmissions with and without dipstick determine necessary action', Inspect adjust and replace manual valve shift linkage transmission range sensorswitch and parkneutral position switch', Inspect and replace external seals gaskets and bushings', Inspect test adjust repair or replace electricalelectronic components and circuits including computers solenoids sensors relays terminals connectors switches and harnesses', Diagnose electronic transmission control systems using a scan tool determine necessary action', Inspect replace and align powertrain mounts', Service transmission perform visual inspection replace fluids and filters', Inspect leak test and flush or replace transmissiontransaxle oil cooler lines and fittings

Objective
Perform pressure tests including transmissiontransaxles equipped with electronic pressure control determine necessary action', Perform stall test determine necessary action', Perform lockup converter system tests determine necessary action', Diagnose noise and vibration concerns determine necessary action', Diagnose transmissiontransaxle gear reductionmultiplication concerns using driving driven and held member power flow principles', Diagnose pressure concerns in a transmission using hydraulic principles Pascals Law', Diagnose electronic transmissiontransaxle control systems using appropriate test equipment and service information', Inspect adjust and replace manual valve shift linkage transmission range sensorswitch and parkneutral position switch', Inspect and replace external seals gaskets and bushings', Inspect test adjust repair or replace electricalelectronic components and circuits including computers solenoids sensors relays terminals connectors switches and harnesses

Name
The student will be able toinspect automatic transmission/transaxles

Objective
Perform pressure tests including transmissiontransaxles equipped with electronic pressure control determine necessary action', Perform stall test determine necessary action', Perform lockup converter system tests determine necessary action', Diagnose noise and vibration concerns determine necessary action', Diagnose transmissiontransaxle gear reductionmultiplication concerns using driving driven and held member power flow principles', Diagnose pressure concerns in a transmission using hydraulic principles Pascals Law', Diagnose electronic transmissiontransaxle control systems using appropriate test equipment and service information', Inspect adjust and replace manual valve shift linkage transmission range sensorswitch and parkneutral position switch', Inspect and replace external seals gaskets and bushings', Inspect test adjust repair or replace electricalelectronic components and circuits including computers solenoids sensors relays terminals connectors switches and harnesses

Name
The student will be able toremove and reinstall automatic transmission

Objective
Remove and reinstall transmissiontransaxle and torque converter inspect engine core plugs rear crankshaft seal dowel pins dowel pin holes and mating surfaces', Inspect replace and align powertrain mounts

Name
The student will be able toremove and reinstall automatic transaxles

Objective
Remove and reinstall transmissiontransaxle and torque converter inspect engine core plugs rear crankshaft seal dowel pins dowel pin holes and mating surfaces', Inspect replace and align powertrain mounts

Name
The student will be able to disassemble automatic transmission and components

Objective
Diagnose electronic transmission control systems using a scan tool determine necessary action', Disassemble clean and inspect transmissiontransaxle', Inspect measure clean and replace valve body includes surfaces bores springs valves sleeves retainers brackets checkvalvesballs screens spacers and gaskets', Inspect servo and accumulator bores pistons seals pins springs and retainers determine necessary action', Assemble transmissiontransaxle', Inspect converter flex drive plate converter attaching bolts converter pilot converter pump drive surfaces converter end play and crankshaft pilot bore', Install and seat torque converter to engage drivesplines', Inspect measure and reseal oil pump assembly and components', Measure transmissiontransaxle end play or preload determine necessary action', Inspect measure and replace thrust washers and bearings', Inspect oil delivery circuits including seal rings ring grooves and sealing surface areas feed pipes orifices and check valvesballs', Inspect bushings determine necessary action', Inspect and measure planetary gear assembly components determine necessary action', Inspect case bores passages bushings vents and mating surfaces determine necessary action', Inspect transaxle drive link chains sprockets gears bearings and bushings perform necessary action', Inspect measure repair adjust or replace transaxle final drive components', Inspect clutch drum piston checkballs springs retainers seals and friction and pressure plates determine necessary action', Measure clutch pack clearance determine necessary action', Air test operation of clutch and servo assemblies', Inspect roller and sprag clutch races rollers sprags springs cages and retainers determine necessary action', Inspect bands and drums determine necessary action

Name
The student will be able to disassemble automatic transaxles and components

Objective
Diagnose electronic transmission control systems using a scan tool determine necessary action', Disassemble clean and inspect transmissiontransaxle', Inspect measure clean and replace valve body includes surfaces bores springs valves sleeves retainers brackets checkvalvesballs screens spacers and gaskets', Inspect servo and accumulator bores pistons seals pins springs and retainers determine necessary action', Assemble transmissiontransaxle', Inspect converter flex drive plate converter attaching bolts converter pilot converter pump drive surfaces converter end play and crankshaft pilot bore', Install and seat torque converter to engage drivesplines', Inspect measure and reseal oil pump assembly and components', Measure transmissiontransaxle end play or preload determine necessary action', Inspect measure and replace thrust washers and bearings', Inspect oil delivery circuits including seal rings ring grooves and sealing surface areas feed pipes orifices and check valvesballs', Inspect bushings determine necessary action', Inspect and measure planetary gear assembly components determine necessary action', Inspect case bores passages bushings vents and mating surfaces determine necessary action', Inspect transaxle drive link chains sprockets gears bearings and bushings perform necessary action', Inspect measure repair adjust or replace transaxle final drive components', Inspect clutch drum piston checkballs springs retainers seals and friction and pressure plates determine necessary action', Measure clutch pack clearance determine necessary action', Air test operation of clutch and servo assemblies', Inspect roller and sprag clutch races rollers sprags springs cages and retainers determine necessary action', Inspect bands and drums determine necessary action

Name
The student will be able to inspect automatic transmission components

Objective
Diagnose electronic transmission control systems using a scan tool determine necessary action', Disassemble clean and inspect transmissiontransaxle', Inspect measure clean and replace valve body includes surfaces bores springs valves sleeves retainers brackets checkvalvesballs screens spacers and gaskets', Inspect servo and accumulator bores pistons seals pins springs and retainers determine necessary action', Assemble transmissiontransaxle', Inspect converter flex drive plate converter attaching bolts converter pilot converter pump drive surfaces converter end play and crankshaft pilot bore', Install and seat torque converter to engage drivesplines', Inspect measure and reseal oil pump assembly and components', Measure transmissiontransaxle end play or preload determine necessary action', Inspect measure and replace thrust washers and bearings', Inspect oil delivery circuits including seal rings ring grooves and sealing surface areas feed pipes orifices and check valvesballs', Inspect bushings determine necessary action', Inspect and measure planetary gear assembly components determine necessary action', Inspect case bores passages bushings vents and mating surfaces determine necessary action', Inspect transaxle drive link chains sprockets gears bearings and bushings perform necessary action', Inspect measure repair adjust or replace transaxle final drive components', Inspect clutch drum piston checkballs springs retainers seals and friction and pressure plates determine necessary action', Measure clutch pack clearance determine necessary action', Air test operation of clutch and servo assemblies', Inspect roller and sprag clutch races rollers sprags springs cages and retainers determine necessary action', Inspect bands and drums determine necessary action

Name
The student will be able to inspect automatic transaxles and components

Objective
Diagnose electronic transmission control systems using a scan tool determine necessary action', Disassemble clean and inspect transmissiontransaxle', Inspect measure clean and replace valve body includes surfaces bores springs valves sleeves retainers brackets checkvalvesballs screens spacers and gaskets', Inspect servo and accumulator bores pistons seals pins springs and retainers determine necessary action', Assemble transmissiontransaxle', Inspect converter flex drive plate converter attaching bolts converter pilot converter pump drive surfaces converter end play and crankshaft pilot bore', Install and seat torque converter to engage drivesplines', Inspect measure and reseal oil pump assembly and components', Measure transmissiontransaxle end play or preload determine necessary action', Inspect measure and replace thrust washers and bearings', Inspect oil delivery circuits including seal rings ring grooves and sealing surface areas feed pipes orifices and check valvesballs', Inspect bushings determine necessary action', Inspect and measure planetary gear assembly components determine necessary action', Inspect case bores passages bushings vents and mating surfaces determine necessary action', Inspect transaxle drive link chains sprockets gears bearings and bushings perform necessary action', Inspect measure repair adjust or replace transaxle final drive components', Inspect clutch drum piston checkballs springs retainers seals and friction and pressure plates determine necessary action', Measure clutch pack clearance determine necessary action', Air test operation of clutch and servo assemblies', Inspect roller and sprag clutch races rollers sprags springs cages and retainers determine necessary action', Inspect bands and drums determine necessary action

Name
The student will be able to repair automatic transaxles and components

Objective
Disassemble clean and inspect transmissiontransaxle', Inspect measure clean and replace valve body includes surfaces bores springs valves sleeves retainers brackets checkvalvesballs screens spacers and gaskets', Inspect servo and accumulator bores pistons seals pins springs and retainers determine necessary action', Assemble transmissiontransaxle', Inspect converter flex drive plate converter attaching bolts converter pilot converter pump drive surfaces converter end play and crankshaft pilot bore', Install and seat torque converter to engage drivesplines', Inspect measure and reseal oil pump assembly and components', Measure transmissiontransaxle end play or preload determine necessary action', Inspect measure and replace thrust washers and bearings', Inspect oil delivery circuits including seal rings ring grooves and sealing surface areas feed pipes orifices and check valvesballs', Inspect bushings determine necessary action', Inspect and measure planetary gear assembly components determine necessary action', Inspect case bores passages bushings vents and mating surfaces determine necessary action', Inspect transaxle drive link chains sprockets gears bearings and bushings perform necessary action', Inspect measure repair adjust or replace transaxle final drive components', Inspect clutch drum piston checkballs springs retainers seals and friction and pressure plates determine necessary action', Measure clutch pack clearance determine necessary action', Air test operation of clutch and servo assemblies', Inspect roller and sprag clutch races rollers sprags springs cages and retainers determine necessary action', Inspect bands and drums determine necessary action

Name
The student will be able toreassemble automatic transmission and components

Objective
Diagnose electronic transmission control systems using a scan tool determine necessary action', Disassemble clean and inspect transmissiontransaxle', Inspect measure clean and replace valve body includes surfaces bores springs valves sleeves retainers brackets checkvalvesballs screens spacers and gaskets', Inspect servo and accumulator bores pistons seals pins springs and retainers determine necessary action', Assemble transmissiontransaxle', Inspect converter flex drive plate converter attaching bolts converter pilot converter pump drive surfaces converter end play and crankshaft pilot bore', Install and seat torque converter to engage drivesplines', Inspect measure and reseal oil pump assembly and components', Measure transmissiontransaxle end play or preload determine necessary action', Inspect measure and replace thrust washers and bearings', Inspect oil delivery circuits including seal rings ring grooves and sealing surface areas feed pipes orifices and check valvesballs', Inspect bushings determine necessary action', Inspect and measure planetary gear assembly components determine necessary action', Inspect case bores passages bushings vents and mating surfaces determine necessary action', Inspect transaxle drive link chains sprockets gears bearings and bushings perform necessary action', Inspect measure repair adjust or replace transaxle final drive components', Inspect clutch drum piston checkballs springs retainers seals and friction and pressure plates determine necessary action', Measure clutch pack clearance determine necessary action', Air test operation of clutch and servo assemblies', Inspect roller and sprag clutch races rollers sprags springs cages and retainers determine necessary action', Inspect bands and drums determine necessary action

Name
The student will be able to reassemble automatic transaxles and components

Objective
Diagnose electronic transmission control systems using a scan tool determine necessary action', Disassemble clean and inspect transmissiontransaxle', Inspect measure clean and replace valve body includes surfaces bores springs valves sleeves retainers brackets checkvalvesballs screens spacers and gaskets', Inspect servo and accumulator bores pistons seals pins springs and retainers determine necessary action', Assemble transmissiontransaxle', Inspect converter flex drive plate converter attaching bolts converter pilot converter pump drive surfaces converter end play and crankshaft pilot bore', Install and seat torque converter to engage drivesplines', Inspect measure and reseal oil pump assembly and components', Measure transmissiontransaxle end play or preload determine necessary action', Inspect measure and replace thrust washers and bearings', Inspect oil delivery circuits including seal rings ring grooves and sealing surface areas feed pipes orifices and check valvesballs', Inspect bushings determine necessary action', Inspect and measure planetary gear assembly components determine necessary action', Inspect case bores passages bushings vents and mating surfaces determine necessary action', Inspect transaxle drive link chains sprockets gears bearings and bushings perform necessary action', Inspect measure repair adjust or replace transaxle final drive components', Inspect clutch drum piston checkballs springs retainers seals and friction and pressure plates determine necessary action', Measure clutch pack clearance determine necessary action', Air test operation of clutch and servo assemblies', Inspect roller and sprag clutch races rollers sprags springs cages and retainers determine necessary action', Inspect bands and drums determine necessary action

Requirements

Simple Requirements

A minimum grade of 'C' in Course AFV120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AFV120 - Electrical II

AFV180 - Heating & Air Conditioning

Overview

Department
Applied Technologies

Course Description
This course contains competencies that can be used in their entirety within a single course or as needed for courses designed by a Kansas institution as Institutional Flexible Credit. Through a variety of learning and assessment activities students can: explore the fundamentals of automotive HVAC operations and environmental concerns, identify the appropriate refrigerant recovery and recycling guidelines; service refrigerant, recycling and handling systems; document fundamental heating and air conditioning system concerns; perform fundamental diagnostics of A/C systems; perform fundamental diagnostics of refrigeration systems components; perform fundamental repairs of refrigeration systems components; perform fundamental diagnostics of heating, ventilation, and engine cooling systems; perform fundamental repairs of heating, ventilation, and engine cooling systems; perform fundamental diagnostics of operating systems and related controls; perform fundamental repairs of operating systems and related controls; perform complex diagnostics of A/C Systems; document complex heating and air conditioning system concerns; perform complex diagnostics of refrigeration system components; perform complex repairs of refrigeration system components; perform complex diagnostics of heating, ventilation, and engine cooling systems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explore the fundamentals of automotive HVAC operations and environmental concerns

Name
The student will be able to identify the appropriate refrigerant recovery and recycling guidelines

Objective
Perform correct use and maintenance of refrigerant handling equipment according to equipment manufacturers standards', Identify and recover AC system refrigerant', Recycle label and store refrigerant', Evacuate and charge AC system add refrigerant oil as required

Name
The student will be able to service refrigerant, recycling and handling systems

Objective
Perform correct use and maintenance of refrigerant handling equipment according to equipment manufacturers standards', Identify and recover AC system refrigerant', Recycle label and store refrigerant', Evacuate and charge AC system add refrigerant oil as required

Name
The student will be able to document fundamental heating and air conditioning system concerns

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Identify and interpret heating and air conditioning concern determine necessary action', Research applicable vehicle and service information such as heating and air conditioning system operation vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers

Name
The student will be able to perform fundamental diagnostics of A/C systems

Objective
Performance test AC system identify AC system malfunctions', Identify abnormal operating noises in the AC system determine necessary action', Identify refrigerant type select and connect proper gauge set record temperature and pressure readings', Leak test AC system determine necessary action', Inspect the condition of refrigerant oil removed from the system determine necessary action', Determine recommended oil and oil capacity for system application', Using scan tool observe and record related HVAC data and trouble codes

Name
The student will be able to perform fundamental diagnostics of refrigeration systems components

Objective
Diagnose AC system conditions that cause the protection devices pressure thermal and PCM to interrupt system operation determine necessary action', Remove inspect and reinstall AC compressor and mountings determine required oil quality', Identify hybrid vehicle AC system electrical circuits service and safety precautions', Determine the need for an additional AC system filter perform necessary action', Inspect AC condenser for airflow restrictions perform necessary action', Inspect evaporator housing water drain perform necessary action

Name
The student will be able to perform fundamental repairs of refrigeration systems components

Objective
Inspect and replace AC compressor drive belts pulleys and tensioners determine necessary action', Inspect test and replace AC compressor clutch components andor assembly check compressor clutch air gap and adjust as needed', Remove and inspect AC system mufflers hoses lines fittings Orings seals and service valves perform necessary action', Inspect AC condenser for airflow restrictions perform necessary action', Remove inspect and install receiverdrier or accumulatordrier determine required oil quantity', Remove inspect and install expansion valve or orifice expansion tube', Inspect evaporator housing water drain perform necessary action', Remove inspect and reinstall evaporator determine required oil quantity', Remove inspect and reinstall condenser determine required oil quantity

Name
The student will be able to perform fundamental diagnostics of heating, ventilation, and engine cooling systems

Objective
Diagnose temperature control problems in the heaterventilation system determine necessary action', Perform cooling system pressure tests check coolant condition inspect and test radiator cap pressurevacuum coolant recovery tank and hoses perform necessary action', Inspect engine cooling and heater system hoses and belts perform necessary action', Inspect test and replace thermostat and gasketseal', Determine coolant condition and coolant type for vehicle application drain and recover coolant', Inspect and test cooling fan fan clutch fan shroud and air dams perform necessary action', Inspect and test electric cooling fan fan control system and circuits determine necessary action', Inspect and test heater control valves perform necessary action

Name
The student will be able to perform fundamental repairs of heating, ventilation, and engine cooling systems

Objective
Perform cooling system pressure tests check coolant condition inspect and test radiator cap pressurevacuum coolant recovery tank and hoses perform necessary action', Inspect engine cooling and heater system hoses and belts perform necessary action', Inspect test and replace thermostat and gasketseal', Determine coolant condition and coolant type for vehicle application drain and recover coolant', Flush system refill system with recommended coolant bleed system', Inspect and test cooling fan fan clutch fan shroud and air dams perform necessary action', Inspect and test electric cooling fan fan control system and circuits determine necessary action', Inspect and test heater control valves perform necessary action', Remove and reinstall heater core

Name
The student will be able to perform fundamental diagnostics of operating systems and related controls

Objective
Diagnose malfunctions in the electrical controls of heating ventilation and AC HVAC systems determine necessary action', Inspect and test ACheater blower motors resistors switches relays wiring and protection devices perform necessary action', Test and diagnose AC compressor clutch control systems determine necessary action', Diagnose malfunctions in the vacuum mechanical and electrical components and controls of the heating ventilation and AC HVAC system determine necessary action', Inspect and test ACheater control panel assembly determine necessary action', Inspect and test ACheater control cables motors and linkages perform necessary action', Inspect ACheater ducts doors hoses cabin filters and outlets perform necessary action', Identify the source of AC system odors', Check operation of automatic or semiautomatic heating ventilation and airconditioning HVAC control systems determine necessary action

Name
The student will be able to perform fundamental repairs of operating systems and related controls

Objective
Inspect and test ACheater blower motors resistors switches relays wiring and protection devices perform necessary action', Inspect and test ACheater control cables motors and linkages perform necessary action', Inspect ACheater ducts doors hoses cabin filters and outlets perform necessary action

Name
The student will be able to perform complex diagnostics of A/C Systems

Objective
Performance test AC system identify AC system malfunctions', Identify abnormal operating noises in the AC system determine necessary action', Identify refrigerant type select and connect proper gauge set record temperature and pressure readings', Leak test AC system determine necessary action', Inspect the condition of refrigerant oil removed from the system determine necessary action', Determine recommended oil and oil capacity for system application', Using scan tool observe and record related HVAC data and trouble codes

Name
The student will be able to document complex heating and air conditioning system concerns

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Identify and interpret heating and air conditioning concern determine necessary action', Research applicable vehicle and service information such as heating and air conditioning system operation vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers

Name
The student will be able to perform complex diagnostics of refrigeration system components

Objective
Diagnose AC system conditions that cause the protection devices pressure thermal and PCM to interrupt system operation determine necessary action', Remove inspect and reinstall AC compressor and mountings determine required oil quality', Identify hybrid vehicle AC system electrical circuits service and safety precautions', Determine the need for an additional AC system filter perform necessary action', Inspect AC condenser for airflow restrictions perform necessary action', Inspect evaporator housing water drain perform necessary action

Name
The student will be able to perform complex repairs of refrigeration system components

Objective
Inspect and replace AC compressor drive belts pulleys and tensioners determine necessary action', Inspect test and replace AC compressor clutch components andor assembly check compressor clutch air gap and adjust as needed', Remove and inspect AC system mufflers hoses lines fittings Orings seals and service valves perform necessary action', Inspect AC condenser for airflow restrictions perform necessary action', Remove inspect and install receiverdrier or accumulatordrier determine required oil quantity', Remove inspect and install expansion valve or orifice expansion tube', Inspect evaporator housing water drain perform necessary action', Remove inspect and reinstall evaporator determine required oil quantity', Remove inspect and reinstall condenser determine required oil quantity

Name
The student will be able to perform complex diagnostics of heating, ventilation, and engine cooling systems

Objective
Diagnose temperature control problems in the heaterventilation system determine necessary action', Perform cooling system pressure tests check coolant condition inspect and test radiator cap pressurevacuum coolant recovery tank and hoses perform necessary action', Inspect engine cooling and heater system hoses and belts perform necessary action', Inspect test and replace thermostat and gasketseal', Determine coolant condition and coolant type for vehicle application drain and recover coolant', Inspect and test cooling fan fan clutch fan shroud and air dams perform necessary action', Inspect and test electric cooling fan fan control system and circuits determine necessary action', Inspect and test heater control valves perform necessary action

Name
The student will be able to perform complex repairs of heating, ventilation, and engine cooling systems

Objective
Perform cooling system pressure tests check coolant condition inspect and test radiator cap pressurevacuum coolant recovery tank and hoses perform necessary action', Inspect engine cooling and heater system hoses and belts perform necessary action', Inspect test and replace thermostat and gasketseal', Determine coolant condition and coolant type for vehicle application drain and recover coolant', Flush system refill system with recommended coolant bleed system', Inspect and test cooling fan fan clutch fan shroud and air dams perform necessary action', Inspect and test electric cooling fan fan control system and circuits determine necessary action', Inspect and test heater control valves perform necessary action', Remove and reinstall heater core

Name
The student will be able to perform complex diagnostics of operating systems and related controls

Objective
Diagnose malfunctions in the electrical controls of heating ventilation and AC HVAC systems determine necessary action', Inspect and test ACheater blower motors resistors switches relays wiring and protection devices perform necessary action', Test and diagnose AC compressor clutch control systems determine necessary action', Diagnose malfunctions in the vacuum mechanical and electrical components and controls of the heating ventilation and AC HVAC system determine necessary action', Inspect and test ACheater control panel assembly determine necessary action', Inspect and test ACheater control cables motors and linkages perform necessary action', Inspect ACheater ducts doors hoses cabin filters and outlets perform necessary action', Identify the source of AC system odors', Check operation of automatic or semiautomatic heating ventilation and airconditioning HVAC control systems determine necessary action

Name
The student will be able toperform complex repairs of operating systems and related controls

Objective
Inspect and test ACheater blower motors resistors switches relays wiring and protection devices perform necessary action', Inspect and test ACheater control cables motors and linkages perform necessary action', Inspect ACheater ducts doors hoses cabin filters and outlets perform necessary action

Requirements

Simple Requirements

A minimum grade of 'C' in Course AFV120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AFV120 - Electrical II

AFV206 - PowerTrain Systems

Overview

Department
Applied Technologies

Course Description
This course contains competencies that can be used in their entirety within a single course or as needed for courses designed by a Kansas institution as Institutional Flexible Credit. Through a variety of learning and assessment activities students can: determine the general drive train diagnosis procedures; explore the fundamentals of clutch operation; explore the fundamentals of clutch removal, inspection and repair; determine the powerflow of the manual transmission and transaxle; perform fundamental manual transmission and transaxle inspection and repair according to service specifications; perform fundamental differential inspection and repair according to service specifications; perform fundamental diagnosis, inspection and replacement of drive axle shafts and supporting components; perform fundamental diagnosis, inspection, adjustment and repair of four- and all-wheel drive components; diagnose drive train issues; diagnose clutch concerns; perform the removal, inspection and/or repair of the clutch and its components; conduct a transmission and transaxle inspection and repair according to service specifications; conduct a differential inspection and repair according to service specifications; conduct the diagnosis, inspection and replacement of drive axle shafts and supporting components; conduct the diagnosis, inspection, adjustment and repair of four- and all-wheel drive components.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to determine the general drive train diagnosis procedures.

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Remove and reinstall transmissiontransaxle', Disassemble clean and reassemble transmissiontransaxle components', Inspect transmissiontransaxle case extension housing case mating surfaces bores bushings and vents perform necessary action', Diagnose noise concerns using transmissiontransaxle powerflow principles', Diagnose hard shifting and jumping out of gear concerns determine necessary action', Inspect adjust and reinstall shift linkages brackets bushings cables pivots and levers', Inspect replace and align powertrain mounts', Inspect and replace gaskets seals and sealants inspect sealing surfaces', Remove and replace transaxle final drive', Inspect adjust and reinstall shift cover forks levers grommets shafts sleeves detent mechanism interlocks and springs', Measure end play or preload shim or spacer selection procedure on transmissiontransaxle shafts perform necessary action', Inspect and reinstall synchronizer hub sleeve keys inserts springs and blocking rings', Diagnose transaxle final drive assembly noise and vibration concerns determine necessary action', Remove inspect measure adjust and reinstall transaxle final drive pinion gears spiders shaft side gears side bearings thrust washers and case assembly', Inspect lubrication devices oil pump or slingers perform necessary action', Inspect test and replace transmissiontransaxle sensors and switches', Describe the operational characteristics of an electronically controlled manual transmissiontransaxle', Identify and interpret drive train concern determine necessary action', Research applicable vehicle and service information such as drive train system operation fluid type vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers', Diagnose fluid loss level and condition concerns determine necessary action', Drain and fill manual transmissiontransaxle and final drive unit

Name
The student will be able to explore the fundamentals of clutch operation.

Objective
Diagnose clutch noise binding slippage pulsation and chatter determine necessary action

Name
The student will be able to explore the fundamentals of clutch removal, inspection and repair.

Objective
Inspect clutch pedal linkage cables automatic adjuster mechanisms brackets bushings pivots and springs perform necessary action', Inspect hydraulic clutch slave and master cylinders lines and hoses determine necessary action', Inspect and replace clutch pressure plate assembly clutch disc release throwout bearing and linkage and pilot bearingsbushing as applicable', Bleed clutch hydraulic system', Inspect flywheel and ring gear for wear and cracks determine necessary action', Inspect engine block core plugs rear main engine oil seal clutch bell housing transmissiontransaxle case mating surfaces and alignment dowels determine necessary action', Measure flywheel runout and crankshaft end play determine necessary action

Name
The student will be able to determine the powerflow of the manual transmission and transaxle.

Objective
Remove and reinstall transmissiontransaxle', Diagnose noise concerns using transmissiontransaxle powerflow principles

Name
The student will be able to perform fundamental manual transmission and transaxle inspection and repair according to service specifications.

Objective
Disassemble clean and reassemble transmissiontransaxle components', Inspect transmissiontransaxle case extension housing case mating surfaces bores bushings and vents perform necessary action', Diagnose noise concerns using transmissiontransaxle powerflow principles', Diagnose hard shifting and jumping out of gear concerns determine necessary action', Inspect adjust and reinstall shift linkages brackets bushings cables pivots and levers', Inspect replace and align powertrain mounts', Inspect and replace gaskets seals and sealants inspect sealing surfaces', Remove and replace transaxle final drive', Inspect adjust and reinstall shift cover forks levers grommets shafts sleeves detent mechanism interlocks and springs', Measure end play or preload shim or spacer selection procedure on transmissiontransaxle shafts perform necessary action', Inspect and reinstall synchronizer hub sleeve keys inserts springs and blocking rings', Diagnose transaxle final drive assembly noise and vibration concerns determine necessary action', Remove inspect measure adjust and reinstall transaxle final drive pinion gears spiders shaft side gears side bearings thrust washers and case assembly', Inspect lubrication devices oil pump or slingers perform necessary action', Inspect test and replace transmissiontransaxle sensors and switches', Describe the operational characteristics of an electronically controlled manual transmissiontransaxle

Name
The student will be able to perform fundamental differential inspection and repair according to service specifications.

Objective
Diagnose noise and vibration concerns determine necessary action', Diagnose fluid leakage concerns determine necessary action', Inspect and replace companion flange and pinion seal measure companion flange runout', Inspect ring gear and measure runout determine necessary action', Remove inspect and reinstall drive pinion and ring gear spacers sleeves and bearings', Measure and adjust drive pinion depth', Measure and adjust drive pinion bearing preload', Measure and adjust side bearing preload and ring and pinion gear total backlash and backlash variation on a differential carrier assembly threaded cup or shim types', Check ring and pinion tooth contact patterns perform necessary action', Disassemble inspect measure and adjust or replace differential pinion gears spiders shaft side gears side bearings thrust washers and case', Reassemble and reinstall differential case assembly measure runout determine necessary action', Limited Slip Differential', Diagnose noise slippage and chatter concerns determine necessary action', Clean and inspect differential housing refill with correct lubricant andor additive', Inspect and reinstall limited slip differential components', Measure rotating torque determine necessary action

Name
The student will be able to perform fundamental diagnosis, inspection and replacement of drive axle shafts and supporting components.

Objective
Diagnose drive axle shafts bearings and seals for noise vibration and fluid leakage concerns determine necessary action', Diagnose constantvelocity CV joint noise and vibration concerns determine necessary action', Diagnose universal joint noise and vibration concerns perform necessary action', Remove and replace front wheel drive FWD front wheel bearing', Inspect service and replace shafts yokes boots and CV joints', Inspect service and replace shaft center support bearings', Check shaft balance and phasing measure shaft runout measure and adjust driveline angles', Inspect and replace drive axle shaft wheel studs', Remove and replace drive axle shafts', Inspect and replace drive axle shaft seals bearings and retainers', Measure drive axle flange runout and shaft end play determine necessary action

Name
The student will be able to perform fundamental diagnosis, inspection, adjustment and repair of four- and all-wheel drive components.

Objective
Diagnose noise vibration and unusual steering concerns determine necessary action', Inspect adjust and repair shifting controls mechanical electrical and vacuum bushings mounts levers and brackets', Remove and reinstall transfer case', Disassemble service and reassemble transfer case and components', Inspect frontwheel bearings and locking hubs perform necessary action', Check drive assembly seals and vents check lube level', Diagnose test adjust and replace electricalelectronic components of fourwheel drive systems

Name
The student will be able to diagnose drive train issues.

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Identify and interpret drive train concern determine necessary action', Research applicable vehicle and service information such as drive train system operation fluid type vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers', Diagnose fluid loss level and condition concerns determine necessary action', Drain and fill manual transmissiontransaxle and final drive unit

Name
The student will be able to diagnose clutch concerns.

Objective
Diagnose clutch noise binding slippage pulsation and chatter determine necessary action

Name
The student will be able to perform the removal, inspection and/or repair of the clutch and its components.

Objective
Inspect clutch pedal linkage cables automatic adjuster mechanisms brackets bushings pivots and springs perform necessary action', Inspect hydraulic clutch slave and master cylinders lines and hoses determine necessary action', Inspect and replace clutch pressure plate assembly clutch disc release throwout bearing and linkage and pilot bearingsbushing as applicable', Bleed clutch hydraulic system', Inspect flywheel and ring gear for wear and cracks determine necessary action', Inspect engine block core plugs rear main engine oil seal clutch bell housing transmissiontransaxle case mating surfaces and alignment dowels determine necessary action', Measure flywheel runout and crankshaft end play determine necessary action

Name
The student will be able to conduct a transmission and transaxle inspection and repair according to service specifications.

Objective
Disassemble clean and reassemble transmissiontransaxle components', Inspect transmissiontransaxle case extension housing case mating surfaces bores bushings and vents perform necessary action', Diagnose noise concerns using transmissiontransaxle powerflow principles', Diagnose hard shifting and jumping out of gear concerns determine necessary action', Inspect adjust and reinstall shift linkages brackets bushings cables pivots and levers', Inspect replace and align powertrain mounts', Inspect and replace gaskets seals and sealants inspect sealing surfaces', Remove and replace transaxle final drive', Inspect adjust and reinstall shift cover forks levers grommets shafts sleeves detent mechanism interlocks and springs', Measure end play or preload shim or spacer selection procedure on transmissiontransaxle shafts perform necessary action', Inspect and reinstall synchronizer hub sleeve keys inserts springs and blocking rings', Diagnose transaxle final drive assembly noise and vibration concerns determine necessary action', Remove inspect measure adjust and reinstall transaxle final drive pinion gears spiders shaft side gears side bearings thrust washers and case assembly', Inspect lubrication devices oil pump or slingers perform necessary action', Inspect test and replace transmissiontransaxle sensors and switches', Describe the operational characteristics of an electronically controlled manual transmissiontransaxle

Name
The student will be able to conduct a differential inspection and repair according to service specifications.

Objective
Ring and Pinion Gears and Differential Case Assembly', Diagnose noise and vibration concerns determine necessary action', Diagnose fluid leakage concerns determine necessary action', Inspect and replace companion flange and pinion seal measure companion flange runout', Inspect ring gear and measure runout determine necessary action', Remove inspect and reinstall drive pinion and ring gear spacers sleeves and bearings', Measure and adjust drive pinion depth', Measure and adjust drive pinion bearing preload', Measure and adjust side bearing preload and ring and pinion gear total backlash and backlash variation on a differential carrier assembly threaded cup or shim types', Check ring and pinion tooth contact patterns perform necessary action', Disassemble inspect measure and adjust or replace differential pinion gears spiders shaft side gears side bearings thrust washers and case', Reassemble and reinstall differential case assembly measure runout determine necessary action', Limited Slip Differential', Diagnose noise slippage and chatter concerns determine necessary action', Clean and inspect differential housing refill with correct lubricant andor additive', Inspect and reinstall limited slip differential components', Measure rotating torque determine necessary action', Drive Axle Shaft', Diagnose drive axle shafts bearings and seals for noise vibration and fluid leakage concerns determine necessary action', Inspect and replace drive axle shaft wheel studs', Remove and replace drive axle shafts', Inspect and replace drive axle shaft seals bearings and retainers', Measure drive axle flange runout and shaft end play determine necessary action

Name
The student will be able to conduct the diagnosis, inspection and replacement of drive axle shafts and supporting components.

Objective
Diagnose drive axle shafts bearings and seals for noise vibration and fluid leakage concerns determine necessary action', Diagnose constantvelocity CV joint noise and vibration concerns determine necessary action', Diagnose universal joint noise and vibration concerns perform necessary action', Remove and replace front wheel drive FWD front wheel bearing', Inspect service and replace shafts yokes boots and CV joints', Inspect service and replace shaft center support bearings', Check shaft balance and phasing measure shaft runout measure and adjust driveline angles', Inspect and replace drive axle shaft wheel studs', Remove and replace drive axle shafts', Inspect and replace drive axle shaft seals bearings and retainers', Measure drive axle flange runout and shaft end play determine necessary action

Name
The student will be able to conduct the diagnosis, inspection, adjustment and repair of four- and all-wheel drive components.

Objective
Diagnose noise vibration and unusual steering concerns determine necessary action', Diagnose constantvelocity CV joint noise and vibration concerns determine necessary action', Diagnose universal joint noise and vibration concerns perform necessary action', Remove and replace front wheel drive FWD front wheel bearing', Inspect service and replace shafts yokes boots and CV joints', Inspect service and replace shaft center support bearings', Check shaft balance and phasing measure shaft runout measure and adjust driveline angles', Inspect adjust and repair shifting controls mechanical electrical and vacuum bushings mounts levers and brackets', Remove and reinstall transfer case', Disassemble service and reassemble transfer case and components', Inspect frontwheel bearings and locking hubs perform necessary action', Check drive assembly seals and vents check lube level', Diagnose test adjust and replace electricalelectronic components of fourwheel drive systems

AFV225 - Electrical III

Overview

Department
Applied Technologies

Course Description
In this course students will: perform charging system diagnosis; perform charging system repair; identify current flow on starting and charging system diagrams through a variety of learning and assessment activities.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
2

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Perform charging system diagnosis

Objective
Perform charging system output test determine necessary action', Diagnose charging system for the cause of undercharge nocharge and overcharge conditions', Inspect adjust or replace generator alternator drive belts pulleys and tensioners check pulley and belt alignment', Remove inspect and install generator alternator', Perform charging circuit voltage drop tests determine necessary action

Name
Perform charging system repair

Objective
Perform charging system output test determine necessary action', Diagnose charging system for the cause of undercharge nocharge and overcharge conditions', Inspect adjust or replace generator alternator drive belts pulleys and tensioners check pulley and belt alignment', Remove inspect and install generator alternator', Perform charging circuit voltage drop tests determine necessary action

Name
Identify current flow on starting and charging system diagrams

Objective
Use wiring diagrams during diagnosis of electrical circuit problems

Requirements

Simple Requirements

A minimum grade of 'C' in Course AFV120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- AFV120 - Electrical II

ALH101 - Medical Terminology

Overview

Department
General Education

Course Description
Presents basic principles of medical word-building. The study develops competencies in the basic elements forming medical words, categorizing major suffixes and group prefixes. Anatomical, physiological and pathological terms are reviewed so students better understand special medical procedures. This is the introductory course in medical terminology and is intended for all who desire knowledge in this subject.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Interpret medical terms based on word elements

Objective
Explain the method of which basic elements form medical words', Apply knowledge of operative diagnostic and symptomatic suffixes', Apply knowledge of adjective diminutive and noun suffixes and the rules for changing singular words to plural words', Apply knowledge of prefixes of position number and measurement negation and direction', Recognize medical words by analyzing their Greek and Latin parts

Name
Identify and define medical word roots, prefixes and suffixes utilized in building medical terms

Objective
Identify combining forms suffixes and prefixes related to body structure

Name
Apply medical terms in the proper context

Objective
Demonstrate a functional use of medical terminology', Recall acceptable abbreviations and their meanings for Medical Terms and phrases

Name
Communicate and spell medical terms accurately

Objective
Spell and pronounce medical words correctly', Use a medical dictionary

Name
Identify terms and abbreviations related to basic anatomy, physiology and pathology

Objective
Demonstrate an understanding of medical terms associated with pathology', Demonstrate an understanding of body imaging by defining terms associated with radiology computed tomography magnetic resonance imaging and ultrasonography', Describe and define all major systems in the body

Name
Describe organization components of the body, directional terms, anatomic planes, regions and quadrants

Objective
List and define the levels of organization in the human body', Define and identify four body planes', List two dorsal cavities and two ventral cavities and identify at least one organ within each cavity', List and locate nine abdominopelvic regions and the four quadrants of the same area', Define directional terms and be able to use them correctly

ALH105 - First Aid & CPR

Overview

Department
General Education

Course Description
This course is designed to show the student how to deal with respiratory emergencies that could lead to cardiac arrest, how to give first aid for cardiac emergencies, also to obtain knowledge for prevention and first aid treatment of common emergencies as outlined by The American Red Cross.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to gain an understanding of personal skills and time management

Objective
Set priorities in which several tasks will be accomplished', Attend class regularly and arrive on time for class

Name
The student will be able to gain an ability to more effectively interact with others

Objective
Speak effectively to give instructions for life saving and nonlife savings techniques', Stay abreast of the new techniques available

Name
The student will develop enhanced abilities to interact with others

Objective
Work in groups of two or more in performing skills

Name
Recognize an emergency, assess the scene and develop and appropriate plan of action

Objective
Able to help others who require basic emergency treatment', Set priorities in which several tasks will be accomplished', Attend class regularly and arrive on time for class

Name
Demonstrate the knowledge and skills necessary to provide emergency assistance in cases such as chocking, rescue breathing, CPR and use of AED for adults, children, and infants

Objective
Perform lifesaving and non lifesaving techniques in case the need arises', Perform life threatening and nonlife threatening techniques on infants children and adults

Name
Demonstrate and explain how to provide care for life-threating emergencies including breathing, shock, head and spinal injuries, sudden illness, stroke, soft tissues and musculoskeletal injuries

Objective
Speak effectively to give instruction for life saving and nonlife savings techniques

Name
Identify and describe how to respond effectively to a variety of environmental, man-made and/or national security emergencies

Objective
Able to communicate and carry out effective emergency responsive plans in the event of manmade or natural disasters', Able to instruct individuals on how to respond in the event of a manmade or natural disaster

ALH110 - Principles of Nutrition

Overview

Department
General Education

Course Description
Designed to help students increase their knowledge concerning their personal state of nutrition using self-studies and computer analysis. Upon completion of this course the student will be able to evaluate a person’s state of nutrition considering the impact of social, scientific, psychological, political, and environmental influences upon eating patterns and habits.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Identify the six classes of nutrients and their sources

Objective
List the six classes of nutrition including which are organic and which are energy producing', Identify nutrient categories and sub categories', Explain the role of carbohydrates protein and fats in the body', Explain the importance of water and fluid balance in the body', Identify the major and trace minerals of the body their functions and sources', Identify the fatsoluble and watersoluble vitamins their functions and sources', Estimate nutrients in foods', Understand personal needs for nutrients and the combination of foods to meet the needs', Identify combinations of foods to meet individual needs', Set goals for meeting RDA of nutrients', Identify nutrient fallacies and facts', Identify and list characteristics of foodrelated illness and disorder', Compare and contrast various nutrition guidelines established by the FDA and USDA', Compare the positive health aspects of a vegetarian diet with those of a diet that includes meat and describe ways each diet can include adequate nutrients', Identify and evaluate personal nutrition standard and guidelines', Differentiate between those diseases that are strongly influenced by diet and those not responsive to nutrition', Distinguish valid nutrition information from misinformation', Identify foods to provide nutrients for disease prevention', Determine nutritional RDA needs to maximize disease prevention

Name
Demonstrate an understanding of the processes of digestion, absorption, and metabolism of nutrients

Objective
Identify and describe three factors necessary to ensure efficient circulation of fluids to all body cells', Differentiate between functions of glands and hormones', Differentiate between mechanical and chemical aspects of digestion', Identify the basic needs of cells and describe how cells are organized into tissues organs and systems', Describe the major functions of the cardiovascular hormonal nervous digestive and excretory systems', Discuss the mechanicalchemical digestive processes and the absorption transportation and storage of nutrients

Name
Employ available resources to make sound nutritional choices

Objective
Plan and analyze 24 hour Three day and Seven day nutrition journals to meet daily nutrient needs', Implement a variety of nutritional applications and software to plan and analyze individual nutrient intakes', Identify and evaluate personal nutrition standards and guidelines', Utilize Nutritiongov Choose My Plate USDA Healthgov and CDC websites as resources for evidencebased nutritionInformation', Distinguish valid information from misinformation', Compare and contrast various nutrition guidelines established by various food guides myPlate My Fitness Pal

Name
Explain energy balance and weight control as it relates to nutrition and wellness

Objective
Calculate individuals body mass index BMI', Calculate adequate energy needs', Compute nutrients received', Computer physical activities expended', Recommend action to bring nutrients and actives into balance', List and define the components of the bodys energy budget', Summarize the recommended strategies to promote weight control', Identify personal guidelines for regular physical activity', Define and describe eating disorders and explain the physical harm that results from these behaviors

Name
Describe nutritional needs throughout the lifespan

Objective
Compare and contrast nutrient needs for different age groups', Set goals or standards for health maintenance by nutritional standards', Determine specific activities to accomplish a task and order of procedures to accomplish the task', Explain how supply and demand of food impacts optimal health', Explain how lifestyles influence eating habitstrends', Recognize or identify the existence of a nutritional problem given a specific set of facts', Ask appropriate questions to identify or verify the existence of a problem', Enumerate the possible causes of a problem', Identify methods of eliminating the causes of a problem', Identify important information needed to solve a problem and generate alternative solutions to a problem', Select a solution that represent the best course of action to pursue', Assess and evaluate the effective effectiveness of the chosen solution', Research of problemconflict conditions identify interest of parties involved clarify the problem conflict resolve the problemconflict by a mutually agreeable solution evaluate the solution', Describe special nutritional needs of older adults and the suspected connections to better health', Discuss the strategies that can be used to reduce the risks of cardiovascular disease and hypertension', Describe the process by which cancer develops and explain known effects of food constituents on cancer development

Name
Recognize global food safety, security, and sustainability issues

Objective
Demonstrate food safety procedures', Identify errors in food preparation', Demonstrate proper safety measures', Analyze the role of chemicalsadditives in the food supply', Describe how microbial food poisoning can be prevented and indicate which foods are particularly troublesome', List major food processing techniques and explain the effect they have on the nutrient content of foods', List the arguments for and against the use of new food technologies', Examine US Foodways', Evaluate global nutrition

ALH115 - Pharmacology

Overview

Department
General Education

Course Description
This course will provide the basic pharmacology principles with an emphasis on a broad discussion of the primary medications in each of the pharmaceutical classification categories. This course is designed to meet the pharmacology needs of students enrolled in pre-allied health majors and would be beneficial for others in the allied health field who desire a greater understanding or pharmacological principles related to diseases, effects of drugs on different systems of the body, interaction of drugs, side effects, contraindications and effectiveness in relation to dosages.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Hybrid

Effective Start Term
Fall 2016

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to gain an understanding of the various aspects that affect human pharmacology

Objective
Define basic pharmacology terminology', Discuss the metric and apothecary system used in pharmacology', Review the pertinent anatomy and physiology of each major body system', Discuss the general properties of medications', List the major properties of an ideal medication', Discuss responsibilities regarding the administration of medications', Explain the role of patient education in medication administration', Identify authoritative and legislative sources for drug information', Describe the regulation and schedules of medications', Discuss investigational medications including the Food and Drug Administration FDA approval process and the FDA classifications for newly approved drugs', Demonstrate an understanding of drug interactions', Discuss idiosyncratic drug variations', Differentiate between physical and psychological dependence', Discuss special considerations in drug treatment with regard to pregnancy breast feeding and geriatric patients', Explain drug therapy in pediatric patients', Describe the risks and benefits of herbal supplements

Name
The student will be able to gain an understanding of how medications enter the body, cause pharmacological effects and exit the body

Objective
Explain and differentiate the four processes of pharmacokinetics', Calculate drug halflife', Discuss the mechanisms of pharmacodynamics', Determine the therapeutic index for various medications

Name
The student will be able to gain a basic understanding of how to calculate pharmacological doses

Objective
Calculate intravenous flow rates', Calculate medication infusion flow rates', Calculate intravenous medication dosages', Given a medication order calculate the proper amount of medication to be administered to the patient

Name
The student will be able to gain an understanding of medications by classification

Objective
Discuss the pharmacological properties including pharmacokinetics pharmacodynamics classification clainical indications medication administration side effects adverse reactions dosages contraindications interactions overdose and toxicity of the common medications in each of the following classifications', Muscarinic agonists and antagonists', Cholinesterase inhibitors', Neuromuscular blocking agents and ganglionic blocking agents', Indirect acting antiadrenergic agents', Medications for Parkinsons disease', Medications for Alzheimers disease', Medications for epilepsy', Antispasmotics', Local and general anesthetics', Opoid analgesics and antagonists', Nonopoid analgesics', Psychotherapeutic medications to include antipsychotic antidepressant mood stabilizing and sedativehypnotic agents', Diuretics', Cardiovascular medication to include calcium channel blockers antihypertensive agents medications used to treat heart failure antidysrhythmic agents cholesterol lowering agents antianginal medications anticoagulants fibrinolytics antiplatelet medications and hematopoietic growth factors', Endocrine medications utilized to treat the following conditions diabetes mellitus thyroid pituitary and adrenal disorders and androgens', Womens health medications to include estrogens progestins birth control and medications affecting uterine health', Childhood immunizations', Immunosuppressants', Respiratory mediations to include antihistamines medications for reactive lung disease and medications for the treatment of allergic rhinitis cough and colds', Nonsteroidal antiinflammatory medications and acetaminophen', Glucorticoids', Medications used to treat rheumatoid arthritis and gout', Gastrointestinal medications to include those used to treat peptic ulcer disease motion sickness and irritable bowel syndrome and laxatives emetics and antidiarrheal agents', Medications for the eyes ears and skin', Anticancer medications', Antimicrobial antifungal and antiviral agents

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- ALH101 - Medical Terminology

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- BIO150 - Human Anatomy & Physiology

ALH121 - Legal and Ethical Issues in Healthcare

Overview

Department
General Education

Course Description
This course introduces various ethical and moral issues in the context of healthcare and medical professions. This course will examine ethical issues related to healthcare such as: beginning of life issues, healthcare policy/ distribution, healthcare law, at risk populations, doctor-patient relationships, healthcare research/technology, and end of life decision making in consideration of various sociocultural, socioeconomic, and lifestyle factors. This course will also overview moral theories such as: utilitarianism, deontology, and virtue ethics and relate these theories to decision making processes at global and local levels.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the relationship between the law and healthcare professional

Objective
Describe the legal system in the United States', Describe the use of the health records as a legal document', Examine the concept of patients rights and the role that healthcare professionals play in protecting these rights', Distinguish among the variety of regulations affecting health care including HIPAA AIDSHIV mental health and drug and alcohol health records', Explore the role that health professionals play in the legal environment', Explain the different types of consents', Identify the essential elements for establishing negligence', Justify various positions on ethical issues in healthcare', Summarize the legal and ethical issues involving electronic health records

Name
The learner will understand various moral theories and logical arguments

Objective
Compare and contrast Utilitarianism Deontology and virtue ethics', Describe fallacies in arguments', Explain the criterion of logical arguments

Name
The learner will develop knowledge of sociocultural, socioeconomic, and diversity factors that apply to medical practitioners and the general public.

Objective
Identify the significance of landmark cases and studies on social injustice human rights womens rights childrens rights minority rights and the rights of the mentally handicapped', Explain how socioeconomic and geographic factors affect decisions on healthcare and clinical trials', Describe the rights of the general public

Name
The learner will demonstrate knowledge and understanding of global social issues affecting medical care and health

Objective
Compare and contrast different models of healthcare distribution', Articulate the pros and cons of technologies such as gene therapy stem cell therapy and advanced diagnostic procedures', Describe different instances of how various populations have been put at risk and identify ways to prevent and detect such instances in the future

Name
The learner will develop a general understanding of several topics in medical ethics including but not limited to: autonomy, paternalism, truth telling, confidentiality, informed consent, human research, abortion, reproductive technology, genetic choices, euthanasia, and the division of healthcare resources

Objective
The learner will articulate the circumstances and explore various scenarios in medical situations', The learner will demonstrate knowledge of the evolution of medical practice

ALH130 - Emergency Preparedness for Health Professionals

Overview

Department
General Education

Course Description
This course is designed to provide health care professionals with an orientation for their possible future roles in disaster response and the importance of staying within the scope of practice of the profession. Students will be prepared to meet the expectations of their employers, to volunteer effectively, and to be confident and safe responders.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2015

Credits

Credit Hours

Credit Hours Min:
1

Contact Hours

Contact Hours Min:
15

Billing Hours

Billing Hours Min:
1

Lecture Hours

Lecture Hours Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the context of emergency preparedness

Objective
Identify how health professionals are preparing for their role in emergency response', Identify ways that disasters impact public health', Identify ways that disasters challenge the healthcare system and health professionals', List possible hazards in the community and discuss past disasters that have affected your region

Name
The student will be able to identify how an emergency response is organized

Objective
Identify the four phases of comprehensive emergency management mitigation preparedness response and recovery', Identify the leading role of the Local Emergency Management Agency', Discus how Incident Command Systems clarify roles and authority at a disaster site', Identify how federal disaster aid is initiated and organized federal resources including the National Disaster Medical System', Identify what hospitals and other healthcare facilities cover in their emergency operations plans

Name
The student will be able to identify how their skills will apply before and after an emergency

Objective
Identify what you need to know and how you can apply your professional skills to emergency situations', Identify your role and responsibilities in your employers emergency action plan and disaster training procedures', Identify what is entailed in volunteering for emergency and disaster work', Recognizing the sources and signs of stress and learning how to cope with stress', Identify information on emergency preparedness for yourself your family and your neighborhood

Name
The student will be able to identify and describe emergency response procedures commonly followed in a medical facility and at an emergency site

Objective
Identify what triage is and how it is conducted', Identify the setup and staffing of a Point of Distribution site', Describe how to control contamination by applying precautions using personal protective equipment and isolating patients', Identify how the Laboratory Response Network investigates suspicious specimens', Identify procedures for evacuating a healthcare facility', Describe the vulnerability of medical records and ways to protect them', Identify the ways facilities cope with challenges such as power outages', Identify how to communicate effectively with patients in the aftermath of a disaster

Name
The student will be able to apply their knowledge to advise people with chronic illnesses and those who are not able to care for themselves, so that they can be prepared to deal with disasters

Objective
Advise patients with chronic diseases to prepare for and cope with disasters', Identify special needs shelters how they are staffed and how they operate', Identify the healthcare needs of other vulnerable groups

Name
The student will be able to identify how the skills of different allied health professionals apply to emergency response

Objective
Identify the role of Emergency medical technician', Identify the role of Health information technician', Identify the role of Laboratory technician', Identify the role of Medical assistant', Identify the role of Medical imaging and radiation therapist', Identify the role of Pharmacy technician', Identify the role of Physical therapist assistant', Identify the role of Respiratory therapist', Identify the role of Surgical technologist

ALH131 - Diseases, Disorders & Diagnostic Procedures

Overview

Department
General Education

Course Description
Course focuses on diseases and disorders by body systems that are frequently diagnosed and treated in the medical setting as well as the common diagnostic procedures used in the diagnostic process.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the signs and symptoms of integumentary system diseases and disorders

Objective
List the major components of the integumentary system', Describe the functions of the integument', Recognize common diseases and disorders of the integumentary system', Identify the most common tests performed to diagnose diseases and disorders of the integumentary system

Name
The student will be able to identify the signs and symptoms of nervous system diseases and disorders

Objective
List the major components of the nervous system', Describe the functions of the nerves', Recognize common diseases and disorders of the nerves system', Identify the most common tests performed to diagnose diseases and disorders of the nervous system

Name
The student will be able to identify the signs and symptoms of sensory system diseases and disorders

Objective
List the major components of the sensory system', Describe the functions of the ear eye nose and tongue', Recognize common diseases and disorders of the sensory system', Identify the most common tests performed to diagnose diseases and disorders of the sensory system

Name
The student will be able to identify the signs and symptoms of endocrine system diseases and disorders

Objective
List the major components of the endocrine system', Describe the functions of the endocrine system', Recognize common diseases and disorders of the endocrine system', Identify the most common tests performed to diagnose diseases and disorders of the endocrine system

Name
The student will be able to identify the signs and symptoms of immune system diseases and disorders

Objective
List the major components of the immune system', Describe the functions of the immune system', Recognize common diseases and disorders of the immune system', Identify the most common tests performed to diagnose diseases and disorders of the immune system

Name
The student will be able to identify the signs and symptoms of cardiovascular system diseases and disorders

Objective
List the major components of the cardiovascular system', Describe the functions of the cardiovascular system', Recognize common diseases and disorders of the cardiovascular system', Identify the most common tests performed to diagnose diseases and disorders of the cardiovascular system', Perform a 12 lead3channel ECG and procedural documentation', Provide instructions to patient on maintaining the holter monitor diary', Provide instructions to patient on prepost cardiac stress testing

Name
The student will be able to identify the signs and symptoms of respiratory system diseases and disorders

Objective
List the major components of the respiratory system', Describe the functions of the respiratory system', Recognize common diseases and disorders of the respiratory system', Identify the most common tests performed to diagnose diseases and disorders of the respiratory system', Perform Pulmonary Function Testing and procedure documentation

Name
The student will be able to identify signs and symptoms of gastrointestinal system diseases and disorders

Objective
List the major components of the gastrointestinal system', Describe the functions of the gastrointestinal system', Recognize common diseases and disorders of the gastrointestinal system', Identify the most common tests performed to diagnose diseases and disorders of the gastrointestinal system

Name
The student will be able to identify signs and symptoms of urinary system diseases and disorders

Objective
List the major components of the urinary system', Describe the functions of the urinary system', Recognize common diseases and disorders of the urinary system', Identify the most common tests performed to diagnose diseases and disorders of the urinary system

Name
The student will be able to identify signs and symptoms of male and female reproductive system diseases and disorders.

Objective
List the major components of the male and female reproductive system', Describe the functions of the male and female reproductive system', Recognize common diseases and disorders of the male and female reproductive system', Identify the most common tests performed to diagnose diseases and disorders of the male and female reproductive system

Name
The student will be able to identify the signs and symptoms of musculoskeletal system diseases and disorders

Objective
List the major components of the musculoskeletal system', Describe the functions of the muscles and bones', Recognize common diseases and disorders of the musculoskeletal system', Identify the most common tests performed to diagnose diseases and disorders of the musculoskeletal system

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

ALH135 - Spanish Language for Health Care Providers

Overview

Department
General Education

Course Description
This workshop is designed to provide health care providers with basic and practical knowledge of the Spanish language as applied in the medical field. Students will be prepared to facilitate medical care delivery to their Spanish speaking clients. Emphasis will be placed on ability to communicate and develop a vocabulary according to the needs of each participant.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to read basic Spanish

Objective
Pronounce the alphabet', Pronounce the vowels', Pronounce consonants and vowels diphtongs and read words

Name
The student will be able to understand what they read

Objective
List general and medical terms read them and learn them using the SpanishEnglish Dictionary

Name
The student will be able to communicate time, colors and numbers

Objective
Identify and pronounce numbers in Spanish', Identify and pronounce colors in Spanish', Identify and tell time in Spanish

Name
The student will be able to Recognize a Spanish vocabulary

Objective
Build up a vocabulary of up to 1000 to 1500 general and medical terms

Name
The student will be able to acquire the ability to interview patients in Spanish

Objective
Take a medical history', Conduct a physical examination', Give prescriptions and followup instructions

Name
The student will be able obtain some degree of cultural competency

Objective
Identify cultural differences concerning time', Identify cultural differences concerning personal space', Identify cultural differences in family dynamics', Identify cultural differences in foodsdiet', Identify cultural differences in health and particularly medical care

ALH155 - Pharmacology for Allied Health

Overview

Department
General Education

Course Description
Focuses on knowledge and skills necessary for safe and therapeutic drug therapy. Emphasis is placed on drug identification and classification, pharmacological actions, side effects, as well as the legal and ethical considerations of pharmacology.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to recognize appropriate care accordance with regulations, policies, laws, and patient rights

Objective
Explain what is meant by drug standards', Name the first drug law passed in this country for consumer safety and give the year it was passed', Summarize the provisions of the Federal Food Drug and Cosmetic Act of 1938 and identify the government agency that enforces the act', Interpret what is meant by USPNF', Summarize the provisions of the Controlled Substance act of 1970', Explain what is meant by a DEA number', Define schedules of controlled substances and differentiate between CI and CV', Define the key terms and concepts associated with consumer safety and drug regulations

Name
The student will be able to differentiate among the 4 different names associated with any drug

Objective
Classify drug names by Generic name Official name Trade name and Chemical name', Explain what is indicated by a number included in a drug trade name eg Tylenol No3', Define and explain the restrictions of drug sales implied by the following OTC Legend drug Controlled substance', List at least two drug references available today', Discuss several characteristics that you consider important in choosing the best drug reference', Identify the types of information listed on drug cards', Define the following side effects Ototoxicity Nephrotoxicity Tinnitis Photosensitivity', Define the key terms and concepts associated with drug names and references

Name
The student will be able to identify the 5 sources of drugs and the effects that have on the human body

Objective
Differentiate between the following Drug actions and drug effects Systemic effects and local effects loading dose and maintenance dose Toxic dose and lethal dose', Define the following processes as they relate to the passage of drugs through the body and give conditions that may decrease the effectiveness of each Absorption Distribution Metabolism and Excretion', Define the following Selective distribution Toxicity Placebo Synergism Potentiation and Antagonism', Identify the fastest rout of drug administration', Define the following undesirable drug effects Teratogenic Idiosyncrasy Tolerance Dependence Hypersensitivity and Anaphylactic reaction', Define the key terms and concepts associated with drug sources and the effect they have on the human body

Name
The student will be able to identify common poisoning situations

Objective
Identify four routes by which poisons may be taken into the body', List five conditions in which vomiting after the ingestion of poisons could be injurious to the patient', Describe the first step to take in the event of any poisoning and the procedure to follow', Explain the purpose of activated charcoal and when it is given', Describe appropriate therapy for poisoning by inhalation external poison and insect sting', Identify specific groups of people that are at a higher risk of poisoning', List 10 recommendations for patient education to help prevent poisoning', Define the key terms and concepts associated with poisoning

Name
The student will be able to categorize substances as either a vitamin, mineral or herb

Objective
List vitamins and their sources function signs of deficiency and symptoms of overdose', Identify vitamins by name as well as letter', List minerals and their sources function and signs of deficiency', Identify the chemical symbol for each mineral', Describe conditions that may require vitamin andor mineral supplements', Explain the role of antioxidants in nutrition therapy', Describe why and how consumers should be more vigilant in the use of herbal products

Name
The student will be able to state the primary uses of skin medications

Objective
Describe application procedures for various skin medications', Identify side effects of the seven major categories of skin medications and contraindications when appropriate', Compare and contrast scabicides and pediculicides', Explain the factors that influence the absorption of skin medications', Classify drugs according to their action Antipruritic Emollient Keratolytic Enzymatic Antifungal Antiinfective and Agents to treat acne', List five possible side effects of longterm topical corticosteroid therapy', Describe important patient education for all skin medications in the chapter

Name
The student will be able to list the frequently used drugs based on classification

Objective
Autonomic Nervous System Drugs', Antineoplastic Drugs', Urinary Drugs', Gastrointestinal Drugs', AntiInfective Drugs', Eye Medications', Analgesics Sedatives and Hypnotic', Psychotropic Medications Alcohol and Drug Abuse', Musculoskeletal and Antiinflammatory Drugs', Anticonvulsants', Antiparkinsonian', Agents for Alzheimers Disease', Endocrine System Drugs', Reproductive System Drugs', Cardiovascular Drugs', Respiratory System Drugs and Antihistamines', Autonomic Nervous System Drugs', Antineoplastic Drugs', Urinary Drugs', Gastrointestinal Drugs', AntiInfective Drugs', Eye Medications', Analgesics Sedatives and Hypnotic', Psychotropic Medications Alcohol and Drug Abuse', Musculoskeletal and Antiinflammatory Drugs', Anticonvulsants', Antiparkinsonian', Agents for Alzheimers Disease', Endocrine System Drugs', Reproductive System Drugs', Cardiovascular Drugs', Respiratory System Drugs and Antihistamines

Name
The student will be able to state the desired effects of medication based on classification

Objective
Autonomic Nervous System Drugs', Antineoplastic Drugs', Urinary Drugs', Gastrointestinal Drugs', AntiInfective Drugs', Eye Medications', Analgesics Sedatives and Hypnotic', Psychotropic Medications Alcohol and Drug Abuse

Objective
Musculoskeletal and Antiinflammatory Drugs', Anticonvulsants', Antiparkinsonian', Agents for Alzheimers Disease', Endocrine System Drugs', Reproductive System Drugs', Cardiovascular Drugs', Respiratory System Drugs and Antihistamines

Name
The student will be able list possible side effects of medications based on classification

Objective
Autonomic Nervous System Drugs', Antineoplastic Drugs', Urinary Drugs', Gastrointestinal Drugs', AntiInfective Drugs', Eye Medications', Analgesics Sedatives and Hypnotic', Psychotropic Medications Alcohol and Drug Abuse', Musculoskeletal and Antiinflammatory Drugs', Anticonvulsants', Antiparkinsonian', Agents for Alzheimers Disease', Endocrine System Drugs', Reproductive System Drugs', Cardiovascular Drugs', Respiratory System Drugs and Antihistamines

Name
The student will be able to differentiate between different drug classifications

Objective
Autonomic Nervous System Drugs', Antineoplastic Drugs', Urinary Drugs', Gastrointestinal Drugs', AntiInfective Drugs', Eye Medications', Analgesics Sedatives and Hypnotic', Psychotropic Medications Alcohol and Drug Abuse', Musculoskeletal and Antiinflammatory Drugs', Anticonvulsants', Antiparkinsonian', Agents for Alzheimers Disease', Endocrine System Drugs', Reproductive System Drugs', Cardiovascular Drugs', Respiratory System Drugs and Antihistamines

Name
The student will be able to state the special needs of older adults on medications

Objective
List drugs that are inappropriate for older adults', Describe four factors that may lead to cumulative effects in older adults', Name at least five categories of drugs that frequently cause adverse side effects in older adults', List at least 10 drugs that can cause mental problems in older adults', Describe the dangers and side effects associated with NSAID therapy', List side effects and cautions for gastrointestinal drugs', Explain patient education for nonsteroidal antiinflammatory drugs NSAIDS and GI drugs', Describe patient education for all patients on longterm drug therapy

ALH175 - Introduction to Pathophysiology

Overview

Department
General Education

Course Description
This course provides an introductory study of the fundamental changes in body physiology due to disease. Covers the basics of cell biology, inflammation, mechanisms of body defense, specific body systems, and common disorders with emphasis placed on disease processes, manifestations, and treatment. Presents the health professional with usable and practical information that can be used in the clinical or laboratory experience, or use as a basic pathophysiology course requirement.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will gain a basic knowledge of pathophysiology

Objective
Explain the role of pathophysiology in the diagnosis and treatment of disease', Describe common cellular adaptations and possible reasons for the occurrence of each', Identify precancerous cellular changes', List common causes of cell damage', Describe common types of cell necrosis and possible outcomes

Name
The student will gain an understanding of inflammation and how it affects healing

Objective
Describe the types of healing and the disadvantages of each', Describe the vascular response to inflammation and injury', Explain the role of normal defenses in preventing disease', Explain the effects of chronic inflammation', Describe the local and systemic effects of inflammation and their treatment', Identify the classifications of burns their complications and the effects of burns

Name
The student will learn about immunity and how diseases are transmitted to others

Objective
Describe the normal immune response', List the components of the immune system and the purpose of each', Explain the four methods of acquiring immunity', Describe the mechanism and clinical effects of each of the four types of hypersensitivity reactions', Explain the effects of anaphylaxis', Discuss the mechanism of autoimmune disorders', Describe the disorder of systemic lupus erythematosus its pathophysiology clinical manifestations diagnostic tests and treatment', Describe the course effects and complications of HIVAIDS

Name
The student will gain an understanding of the general issues that concern human infections

Objective
Describe the basic characteristics of bacteria viruses chlamydiaerickettsiae mycoplasmas fungi and parasites', Discuss the locations advantages and disadvantages of resident normal flora', Describe the methods of transmitting microbes their pathogenicity and virulence', List the factors determining host resistance', Discuss methods of preventing and controlling infection', Describe the stages in the development and course of an infection', Describe typical local and systemic signs of infection', Describe the respiratory infection influenza including the cause transmission immunization incidence manifestations and possible complications

Name
The student will learn about various types of neoplasms

Objective
Distinguish between benign and malignant tumors their characters and terminology', List the warning signs of cancer', Explain the local and systemic effects of cancer', Discuss the spread of malignant tumors by invasion metastasis and seeding and relate them to the staging of cancer', Describe the stages involved in carcinogenesis specific risk factorsand possible preventive measures', Discuss possible treatment measures including radiation and chemotherapy as well as nutrition', Describe and differentiate among three examples of malignant tumors skin cancer ovarian cancer and brain cancer

Name
The student will gain an understanding of fluid, electrolyte and acid-base abnormalities

Objective
Explain the movement of water between body compartments that results in edema', Describe the causes and effects of dehydration', Explain the meaning of thirdspacing', Discuss the causes and signs of hyponatremia and hypernatremia', Explain the causes and signs of hypokalemia and hyperkalemia', Describe the causes and signs of hypocalcemia and hypercalcemia', Describe the causes and effects of hypomagnesemia hypophosphatemia hypochloremia and hyperchloremia', Explain how metabolic acidosis metabolic alkalosis respiratory acidosis and respiratory alkalosis develop and their effects on the body', Explain how decompensation develops and its effects on the central nervous system

Name
The student will learn about inherited genetic disorders

Objective
Differentiate among the terms congenital genetic chromosomal developmental and multifactorial defects', Describe patterns of recessive and dominant Mendelian inheritance', Explain the common causes of developmental disorders and their relationship to fetal development', Discuss the purposes of genetic engineering and current concerns', Describe the genetic defect in a child with Down syndrome and the effects on the child

Name
The student will gain an increased appreciation of how pain adversely affects the life of the ill

Objective
State the causes of pain', Describe the pain pathway', Relate the methods of pain control to the gatecontrol theory', Discuss the signs and symptoms of pain in adults and young children', Explain the factors that may alter pain perception', Compare acute and chronic pain', Discuss the types of headache', Describe methods of pain management

Name
The student will gain an broad understanding of the many blood and lymphatic disorders that affect humans

Objective
Describe the terms describing abnormalities in the blood', Describe and compare the pathophysiology etiology manifestations diagnostic tests and treatment for each of the selected anemias irondeficiency pernicious aplastic sickle cell and thalassemia', Differentiate between primary and secondary polycythemia and describe the effects on the blood and circulation', Describe hemophilia A its pathophysiology signs and treatment', Discuss the disorder disseminated intravascular coagulation its pathophysiology etiology manifestations and treatment', Compare acute and chronic leukemia the incidence onset and course pathophysiology signs diagnostic tests and treatment', Compare Hodgkins disease and nonHodgkins lymphomas including pathophysiology signs and treatment of multiple myeloma', Describe the pathophysiology signs and treatment of multiple myeloma

Name
The student will learn about various cardiovascular disorders

Objective
Describe the common diagnostic tests for cardiovascular function', Describe the dietary and lifestyle changes used in the treatment of cardiovascular disease', Explain the role of cholesterol and lipoproteins in the development of atheromas', Describe the common dysrhythmias and cardiac arrest', Discuss the causes of congestive heart failure and the effects of leftsided and rightsided failure', Explain the changes in the blood flow and their effects in common congenital heart defects', Discuss the development of rheumatic fever and rheumatic heart disease', Describe the etiology and pathophysiology of infectious endocarditis and pericarditis', Explain the development and possible effects of essential hypertension', compare the arterial peripheral vascular diseases atherosclerosis Buergers disease Raynauds disease and aneurysms', Describe the development and effects of the venous disorders varicose veins phlebothrombosis and thrombophlebitis', Discuss the types of shock and the initial and progressive effects of shock on the body

Name
The student will gain an understanding of respiratory disease

Objective
Describe the common upper respiratory tract infections', Describe the possible outcomes of aspiration', Compare the different types of pneumonia', Differentiate the effects of primary from secondary tuberculosis', Describe the pathophysiology and complications of cystic fibrosis', Describe the etiology and pathophysiology of bronchogenic carcinoma', Compare the types of asthma and describe the pathophysiology and manifestations of an acute attack', Compare and contrast emphysema and chronic bronchitis', Describe the causes of pulmonary edema and explain how it affects blood oxygen tension levels', Compare the effects of small moderate and large-sized pulmonary emboli', Describe the causes of atelectasis and the resulting effects on ventilation and oxygen levels', Compare the types of pneumothorax and hemothorax', Explain how a flail chest injury affects ventilation oxygen levels and circulation', Describe the types of pathophysiology and signs of infant respiratory distress syndrome', Describe the possible causes of adult respiratory distress syndrome and the pathophysiology', Describe the etiology and changes in blood gases with acute respiratory failure

Name
The student will gain an understanding of the diseases that affect the digestive system

Objective
Describe the various causes of vomiting and the vomiting process', Differentiate diarrhea from constipation', Describe the common oral infections and periodontal disease', Explain the common causes of dysphagia', Differentiate the types of hiatal hernias and explain their effects', List the causes and effects of acute gastritis chronic gastritis and gastroenteritis and their common signs', Describe the etiology the signs and possible complications of peptic ulcers', Describe the pathophysiology etiology and early signs of gastric cancer', Explain how pyloric stenosis interferes with normal function and list the common manifestations', Describe how gallstones develop and the signs of obstruction', Compare the types of infectious hepatitis and common manifestations of hepatitis', Differentiate the types of cirrhosis and their pathophysiology and manifestations', Describe the pathophysiology the signs and possible complications of acute pancreatitis', Describe the signs of malabsorption', Compare and contrast Crohns disease with ulcerative colitis', Describe the stages in the development of acute appendicitis and the signs associated with each stage', Explain how diverticulosis and diverticulosis develop', Describe the causes and possible characteristics of colorectal cancer

Name
The student will gain an understanding of the diseases that affect the urinary system

Objective
Compare the etiology pathophysiology and manifestations of cystitis and pyelonephritis', Explain the development of acute postStreptoccal glomerulonephritis its signs and symptoms including laboratory tests and possible complications', Describe the etiology and significant manifestations of nephritic syndrome', Explain how hydronephrosis develops and the effects on the kidney', Explain the common signs and symptoms of urinary tract obstruction', List common causes of urinary calculi', Describe the incidence and early signs of adenocarcinoma of the kidney bladder cancer and Wilms tumor', Explain how nephrosclerosis effects renal and systemic blood pressure', Describe the etiology usual age at onset manifestations and outcome of adult polycystic disease', Compare acute and chronic renal failure with regard to common causes pathophysiology signs and symptoms and possible complications', Describe how dialysis substitutes for a nonfunctioning kidney

Name
The student will gain an understanding of the acute diseases that affect the neurological system

Objective
Relate the focal effect of a lesion to the specific area of damage in the brain', Describe the possible effects of increases in intracranial pressure on a level of consciousness motor and sensory functions vital signs vision and language', Explain the effects of increased intracranial pressure on brain herniation', Compare the effects f brain tumors in different areas of the brain', Compare and contrast transient ischemic attacks TIAs to cerebrovascular accidents CVAs', List and describe the causes of CVAs and their immediate and longterm effects', Explain how cerebral aneurysms develop their effects and possible complications', Describe the cause pathophysiology and manifestations of bacterial meningitis', Compare the types of head injuries their possible manifestations and complications', Describe the factors contributing to primary and secondary brain damage after head injury', Differentiate the types of hematomas and describe the effect of a hematoma on the brain', Explain how seizures may be related to infection or injury', Describe how various types of spinal cord injury may occur', Explain how the effects of spinal cord injury depend on the location of the damage', Compare the signs of spinal shock with the permanent effects of spinal cord injury', Describe the possible complications of spinal cord injury

Name
The student will gain an understanding of the chronic diseases that affect the neurological system

Objective
Describe the pathophysiology of hydrocephalus differentiating the communicating from the noncommunicating types', Describe the signs of increasing intracranial pressure in the neonate', Describe the major types of spina bifida and the effects on a child who has the defect', Describe the etiology of cerebral palsy the types and their signs', Differentiate the types of seizures how they develop and the precipitating factors', Describe the pathophysiology and course of multiple sclerosis and the common effects', Explain how amyotrophic lateral sclerosis affects motor function and how this relates to the signs of progression', Describe the pathophysiology of myasthenia gravis and its effects on the body', Describe the inheritance of Huntingtons disease to include the onset and early signs', Describe the changes in the brain as Alzheimers disease develops and the effects on function', Describe the etiology and pathophysiology of herniated intervertebral disc and the early signs', Compare the disorders of schizophrenia depression and panic disorder with regard to the pathophysiology and effects on behavior', Relate the pathophysiology to the signs of Parkinsons disease

Name
The student will gain an understanding of the diseases that affect the eyes and ears

Objective
Describe the common structural defects impairing vision hyperopia presbyopia myopia astigmatism amblyopia and nystagmus

Objective
Describe the common infections in the eye and their possible effects on vision', Explain how intraocular pressure may become elevated and how it may affect vision', List and compare the signs of chronic glaucoma acute glaucoma cataract macular degeneration and detached retina', Describe how the retina may become detached and the possible effects on vision should it occur', Describe otitis media and its cause pathophysiology and signs', Describe the pathophysiology and signs of otosclerosis and Menieres syndrome', Explain how permanent hearing loss is caused by acute otitis media chronic otitis media Menieres syndrome and damage to the auditory area of the brain

Name
The student will gain an understanding of the diseases that affect the endocrine system

Objective
Explain how hormone levels in the blood are controlled by negative feedback by the hypothalamicpituitary system under normal and abnormal conditions', Differentiate type 1 and type 2 diabetes mellitus and the early signs of diabetes', Compare the causes and development of hypoglycemia and hyperglycemia', Describe the common degenerative effects of diabetes mellitus', Explain the relationship between parathyroid hormone and calcium and their changes with various disorders', Describe the possible effects of a pituitary tumor', Compare the effects of an excess and a deficit of growth hormone in a child and in an adult', List the causes and effects of diabetes insipidus and inappropriate ADH syndrome', Describe the causes of goiter', Explain the effects of an excess and a deficit of thyroid hormones', Define and list the possible causes of Cushings syndrome', Define and list the effects of Addisons disease

Name
The student will gain an understanding of the diseases and traumatic conditions that affect the musculoskeletal system

Objective
Describe the types of fractures the healing process in bone and potential complications', State the etiology and common signs of gout', Compare and contrast dislocations sprains and stains', Describe the pathophysiology of osteoporosis the predisposing factors and possible complications', Compare the causes and effects of rickets osteomalacia and Pagets disease', Describe the common bone tumors', Describe the characteristics of Duchennes muscular dystrophy', Describe the effects of fibromyalgia', Compare and contrast osteoarthritis rheumatoid arthritis and ankylosing spondylitis with regard to pathophysiology etiology manifestations and possible complications', Describe the distinguishing features of infectious septic arthritis

Name
The student will gain an understanding of the diseases that affect the integumentary system

Objective
Describe common skin lesions', Describe the causes typical lesions and location of contact dermatitis urticaria and atopic dermatitis', Describe the cause and lesions associated with the inflammatory conditions psoriasis lichen planus discoid lupus erythematosus pemphigus and scleroderma', Distinguish between the bacterial infections impetigo and furuncles', Describe the effect of Streptococcus pyogenes on connective tissue in acute necrotizing fasciitis', Describe the viral infections herpes simplex herpes zoster and warts', Describe the forms of tinea and fungal infection', Describe the agent the infection and manifestations of scabies and pediculosis', Compare the skin cancers describing the lesion predisposing factors and spread of squamous cell carcinoma malignant melanoma and Kaposis sarcoma

Name
The student will learn about common reproductive system disorders

Objective
Describe the causes of infertility in males and females', Describe the common congenital abnormalities in males and females', Compare and contrast benign prostatic hypertrophy with cancer of the prostate', Describe the incidence and pathophysiology of testicular cancer', Compare the common menstrual disorders', Describe endometriosis and its complications', Explain how pelvic inflammatory disease develops and its effects', Describe breast lesions fibrocystic breast disease and breast cancer', Compare and contrast the common benign and malignant tumors in the cervix uterus and ovaries', Describe common sexually transmitted diseases

Requirements

Simple Requirements

A minimum grade of 'C' in Course BIO150

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- BIO150 - Human Anatomy & Physiology

AMF191 - General

Overview

Department
Aviation

Course Description
This course is designed to develop correct and safe usage of aircraft hardware with specific emphasis on Federal Aviation Administration Regulations that pertain to the Airframe and Powerplant mechanic. Academic standard for passing this course is a minimum of 70%.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
75

Course Learning Outcomes

Learning Outcomes

Name
The student will review material within the general program within this time period in preparation for Oral & Practical exams.

Requirements

Simple Requirements

8610-2 Form Signed by FAA

Type
Prerequisite

8610-2 Form Signed by FAA

8610-2 Form Signed by FAA

Fulfill ALL of the following requirements:

AMF240 - Airframe

Overview

Department
Aviation

Course Description
This course is designed to develop correct safety practices, comprehensive knowledge, and technical skills required to perform maintenance procedures relevant to airframe inspection. The curriculum is designed to meet specific Federal Aviation Administration Regulations that pertain to Airframe Subject #28. Academic standard for passing this course is a minimum of 70%.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
75

Course Learning Outcomes

Learning Outcomes

Name
The student will review material within the airframe program within this time period in preparation for Oral & Practical exams.

Requirements

Simple Requirements

8610-2 Form Signed by FAA

Type
Prerequisite

8610-2 Form Signed by FAA

8610-2 Form Signed by FAA

Fulfill ALL of the following requirements:

AMF258 - Powerplant

Overview

Department
Aviation

Course Description
This course is designed to develop correct safety practices and technical skills required to perform maintenance procedures relevant to aircraft powerplant systems. The curriculum is designed to meet specific Federal Aviation Administration Regulations that pertain to the Aircraft Powerplant Mechanic rating.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
75

Course Learning Outcomes

Learning Outcomes

Name
The student will review material within the powerplant program within this time period in preparation for Oral & Practical exams.

Requirements

Simple Requirements

8610-2 Form Signed by FAA

Type
Prerequisite

8610-2 Form Signed by FAA

8610-2 Form Signed by FAA

Fulfill ALL of the following requirements:

AMT187 - General I

Overview

Department
Aviation

Course Description
This course develops correct safety practices, comprehensive knowledge, and technical skills required to perform aviation maintenance procedures that align with the current Airmen Certification Standards. This course includes human factors, regulations, maintenance forms & records. Students will learn to properly: document a major repair or alteration (FAA form 337), complete airworthiness directive(AD) searches and determine applicability to aircraft, determine aircraft inspection status by reviewing maintenance records, file a malfunction defect report (MDR), interpret aircraft drawings, create a drawing of repair of alteration, interpret graphs and charts used in aviation.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify and relate to Human Factors as it applies to aviation.

Name
The student will be able to demonstrate ability to read, comprehend, and apply information contained in FAA and manufacturers' aircraft maintenance specifications, data sheets, manuals, publications, and related Federal Aviation Regulations, Airworthiness Directives, and Advisory material.

Name
The student will be able to use aircraft drawings, symbols, and system schematics & Charts

Name
The student will be able to draw sketches of repairs and alterations

AMT188 - General II

Overview

Department
Aviation

Course Description
This course develops correct safety practices, comprehensive knowledge, and technical skills required to perform aviation maintenance procedures that align with the current Airmen Certification Standards. Students will learn to properly: determine cubic inch displacement of aircraft engines, calculate and prove a mechanical advantage in relation to aircraft systems, weigh aircraft, determine aircraft center of gravity, determine useful fuel load, aircraft required equipment, adverse loading center of gravity, and ballast placement.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to determine cubic inch displacement of aircraft engines

Name
The student will be able to calculate and prove mechanical advantage in relation to aircraft systems

Name
The student will be able to perform complete weight and balance checks and record data.

Name
The student will be able to weigh an aircraft.

AMT189 - General III

Overview

Department
Aviation

Course Description
This course develops correct safety practices, comprehensive knowledge, and technical skills required to perform aviation maintenance procedures that align with the current Airmen Certification Standards. Students will learn to utilize hand tools, hardware & measuring devices used in the aviation industry. Students will learn the proper techniques employed in inspecting aircraft corrosion and the proper ways to prevent corrosion. In addition, students will learn how to measure, bend, and terminate fluid lines utilizing aviation fitting.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify materials and hardware used in aviation.

Name
Students will be able to perform precision measuring and proper torque techniques on aircraft hardware and components.

Name
Students will be able to identify, fabricate, secure and inspect aircraft control cables.

Name
Students will be able to identify and inspect solder and welds in aviation.

Name
The student will be able to inspect, identify, remove, and treat aircraft corrosion.

Name
The student will be able to identify and select cleaning materials and perform aircraft cleaning

Name
Students will be able to identify the requirements for aircraft registration markings and placards.

Name
The students will be able to identify the proper inspections required on various types of aircraft.

AMT190 - General IV

Overview

Department
Aviation

Course Description
This course develops correct safety practices, comprehensive knowledge, and technical skills required to perform aviation maintenance procedures that align with the current Airmen Certification Standards. Students will learn to properly: tow aircraft, tie-down aircraft, store aircraft, fuel aircraft, identify fire hazards, fire prevention, FOD Prevention, perform circuit continuity testing, measure voltage, current, and resistance, troubleshoot circuits, and inspect and service aircraft batteries.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify, interpret, explain and apply basic electricity concepts as it relates to aviation.

Name
The student will be able to measure resistance/continuity, voltage, current, capacitance, inductance and power in an electrical circuit.

Name
The student will be able to identify, inspect, service and properly handle aircraft batteries.

Name
The student will be able to start, ground operate, move, service, and secure aircraft and identify typical ground operation hazards.

Name
The student will be able to identify and inspect aviation fuels, fueling/ defueling procedures and safety precautions.

AMT191 - General

Overview

Department
Aviation

Course Description
This course is designed to develop correct and safe usage of aircraft hardware with specific emphasis on Federal Aviation Administration Regulations that pertain to the Airframe and Powerplant mechanic. Academic standard for passing this course is a minimum of 70%.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will pass the General section of the O & P exam

Name
The student will review material within the general program within this time period in preparation for Oral & Practical exams.

AMT233 - Airframe I

Overview

Department
Aviation

Course Description
This course develops correct safety practices, comprehensive knowledge, and technical skills required to perform aviation maintenance procedures that align with the current Airmen Certification Standards. Students will learn to properly: tension flight control cables, identify hardware used in rigging, weigh and balance surfaces, adjust various flight control systems, document component removal, and identify airframe styles and components.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to exhibit knowledge relating to aircraft metallic structures.

Name
Student will be able to identify, inspect and troubleshoot fixed wing flight control systems and components.

Name
Student will be able to identify, inspect and troubleshoot rotorcraft system and components.

Requirements

Simple Requirements

AMT General Technical Certificate

Type
Prerequisite

Complete ALL of the following Programs:
- TC-AMT_GNRL - Aviation Maintenance General

AMT234 - Airframe II

Overview

Department
Aviation

Course Description
This course develops correct safety practices, comprehensive knowledge, and technical skills required to perform aviation maintenance procedures that align with the current Airmen Certification Standards. Students will learn to properly: inspect aviation welds, identify defects in welds, determine the airworthiness of welds, install and remove aviation fasteners, and design, prepare, and install a repair patch on an aircraft or component.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify, inspect, troubleshoot and repair metallic structures

Name
The student will be able to exhibit knowledge relating to the welding of aircraft metallic structures.

Requirements

Simple Requirements

AMT General Technical Certificate

Type
Prerequisite

Complete ALL of the following Programs:
- TC-AMT_GNRL - Aviation Maintenance General

AMT235 - Airframe III

Overview

Department
Aviation

Course Description
This course develops correct safety practices, comprehensive knowledge, and technical skills required to perform aviation maintenance procedures that align with the current Airmen Certification Standards. Students will learn to correctly: identify woods used in aviation, inspect fabric coverings, clean and inspect acrylics, inspect composite materials, perform a tap test, and complete a layup for a composite repair.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify wood structures and coverings used in older aircraft.

Name
The student will be able to inspect, test, and repair fiberglass, plastics, honeycomb, composite, and laminated primary and secondary structures.

Name
The student will be able to inspect, check, service, and repair aircraft windows.

Name
The student will be able to inspect aircraft restraints and upholstery.

Requirements

Simple Requirements

AMT General Technical Certificate

Type
Prerequisite

Complete ALL of the following Programs:
- TC-AMT_GNRL - Aviation Maintenance General

AMT236 - Airframe IV

Overview

Department
Aviation

Course Description
This course develops correct safety practices, comprehensive knowledge, and technical skills required to perform aviation maintenance procedures that align with the current Airmen Certification Standards. Students will learn to properly: remove and install a selector valve; inspect, remove, and clean a hydraulic system filter; remove, install, and operationally check a hydraulic pump and inspect and troubleshoot pneumatic systems. In addition, students will inspect, repair, and troubleshoot fuel systems; service a fuel system strainer; and inspect fuel tanks.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify, inspect, service, troubleshoot and repair an aircraft hydraulic system or any component thereof.

Name
The student will be able to identify, inspect, service, troubleshoot and repair an aircraft pneumatic system or any component thereof.

Name
The student will be able to inspect, check and service fuel transfer and dump systems, including indicating and warning systems.

Requirements

Simple Requirements

AMT General Technical Certificate

Type
Prerequisite

Complete ALL of the following Programs:
- TC-AMT_GNRL - Aviation Maintenance General

AMT237 - Airframe V

Overview

Department
Aviation

Course Description
This course is designed to develop correct safety practices, comprehensive Knowledge, and technical skills required to perform aviation maintenance procedures that align with the current Airmen Certification Standards. Students will learn to properly: Inspect land gear, service land gear, Inspect wheels, Inspect brakes, Inspect bearing, inspect tires, remove and replace brake linings, service landing gear air/oil shocks struts, bleed hydraulic brake systems, trouble shoot a hydraulic brake system, service a nose wheel shimmy damper, troubleshoot oxygen systems, operation of oxygen generators, inspect combustion heater fuel systems, troubleshoot air-cycle air-conditioning systems, service outflow pressurization valves, and operate and service waste water systems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify, inspect, check, service, troubleshoot, and repair aircraft landing gear systems or any component part thereof.

Name
The student will be able to identify, inspect, service, troubleshoot and repair an aircraft environmental system or any component part thereof.

Name
The student will be able to identify, inspect, and explain service procedures for Water/Waste Management systems.

Requirements

Simple Requirements

AMT General Technical Certificate

Type
Prerequisite

Complete ALL of the following Programs:
- TC-AMT_GNRL - Aviation Maintenance General

AMT238 - Airframe VI

Overview

Department
Aviation

Course Description
This course is designed to develop correct safety practices, comprehensive Knowledge, and technical skills required to perform aviation maintenance procedures that align with the current Airmen Certification Standards. Students will learn to properly: Install airframe electrical wiring, switches, and devices, secure wire bundles, wire termination, determine electrical load, check output voltage of a system, inspect and service landing and operational lighting, trouble shoot electrically heated pitot-static system, inspect thermal anti-ice systems, inspect and operate a deicer boot, inspect and operate electrically heated windshields.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
1. The student will be able to identify, inspect, check, service, troubleshoot, and repair aircraft electrical systems or any component part thereof.

Name
2. The student will be able to identify, inspect, check, service, troubleshoot, and repair aircraft ice and rain control systems or any component part thereof.

Requirements

Simple Requirements

AMT General Technical Certificate

Type
Prerequisite

Complete ALL of the following Programs:
- TC-AMT_GNRL - Aviation Maintenance General

AMT239 - Airframe VII

Overview

Department
Aviation

Course Description
This course is designed to develop correct safety practices, comprehensive Knowledge, and technical skills required to perform aviation maintenance procedures that align with the current Airmen Certification Standards. Students will learn to properly: perform a static system leak test, remove and install instruments, inspect and operate a magnetic compass, perform VHF communications checks, inspect and service emergency locator transmitters, troubleshoot fire detection systems, perform operational checks on fire detection and extinguishing systems. Perform 100-hour inspections on an airframe.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify, inspect, service, troubleshoot and repair an aircraft instrument system or any component part thereof.

Name
The student will be able to identify, inspect and troubleshoot an aircraft communication system or any component part thereof.

Name
The student will be able to identify, inspect, and troubleshoot an aircraft navigation system or any component part thereof.

Name
The student will be able to identify, inspect and troubleshoot an aircraft autopilot system or any component part thereof.

Name
The student will be able to identify, inspect, check, service, troubleshoot, and repair airframe fire protection systems or any component part thereof.

Name
The student will be able to conduct a 100-Hour Inspection on an airframe.

Requirements

Simple Requirements

AMT General Technical Certificate

Type
Prerequisite

Complete ALL of the following Programs:
- TC-AMT_GNRL - Aviation Maintenance General

AMT240 - Airframe

Overview

Department
Aviation

Course Description
This course is designed to develop correct safety practices, comprehensive knowledge, and technical skills required to perform maintenance procedures relevant to airframe inspection. The curriculum is designed to meet specific Federal Aviation Administration Regulations that pertain to Airframe Subject #28. Academic standard for passing this course is a minimum of 70%.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will review material within the airframe program within this time period in preparation for Oral & Practical exams.

Name
The student will pass the Airframe O & P exam

AMT253 - Powerplant I

Overview

Department
Aviation

Course Description
This course develops correct safety practices, comprehensive knowledge, and technical skills required to perform aviation maintenance procedures that align with the current Airmen Certification Standards. Students will learn to properly: troubleshoot, inspect, and install fuel pressure indicators, fuel flow transmitters, tachometer, oil pressure, temperature, EGT, EPR, manifold warning system, low-pressure warning gauges, troubleshoot and repair an engine fire extinguishing system, perform a cylinder compression check, perform an engine start, inspect engine mounts, perform the engine portion of a 100-hour inspection.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify, inspect, check, troubleshoot, service and repair as necessary aircraft engine instrument systems.

Name
The student will be able to identify, inspect, check, troubleshoot, service and repair as necessary aircraft engine fire protection systems.

Name
The student will be able to perform powerplant conformity and airworthiness inspections.

Requirements

Simple Requirements

AMT General Technical Certificate

Type
Prerequisite

Complete ALL of the following Programs:
- TC-AMT_GNRL - Aviation Maintenance General

AMT254 - Powerplant II

Overview

Department
Aviation

Course Description
This course develops correct safety practices, comprehensive knowledge, and technical skills required to perform aviation maintenance procedures that align with the current Airmen Certification Standards. Students will learn to properly: install pistons and wrist pins, install a cylinder, operate and troubleshoot a reciprocating engine, inspect and rig engine controls, remove and install a propeller, measure propeller blade angle, repair a propeller blade, adjust propeller governors, inspect and service a propeller anti-icing system.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify, inspect, check, service, remove, repair and install reciprocating engines and engine installations.

Name
The student will be able to identify, inspect, check, balance, service and repair fixed-pitch, constant-speed, and feathering propellers, and associated propeller control systems.

Requirements

Simple Requirements

AMT General Technical Certificate

Type
Prerequisite

Complete ALL of the following Programs:
- TC-AMT_GNRL - Aviation Maintenance General

AMT255 - Powerplant III

Overview

Department
Aviation

Course Description
This course develops correct safety practices, comprehensive knowledge, and technical skills required to perform aviation maintenance procedures that align with the current Airmen Certification Standards. Students will learn to properly: Inspect, troubleshoot, and repair a continuous flow fuel injection system; remove, inspect, and install a turbine engine fuel nozzle; remove and install a carburetor metering jet; remove and install a float type carburetor, remove and install a fuel pump, adjust fuel pump pressure, inspect fuel selector valve. Students will inspect and troubleshoot oil system components and perform oil pressure adjustments. Students will also inspect turbochargers and air intake manifolds and repair cylinder baffles.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify, inspect, check, service, troubleshoot and repair engine fuel and fuel metering systems, including components thereof.

Name
The student will be able to identify, inspect, check, service, troubleshoot and repair engine lubrication systems and components.

Name
The student will be able to identify, inspect, check, service, troubleshoot and repair reciprocating engine induction and cooling systems, including components thereof.

Requirements

Simple Requirements

AMT General Technical Certificate

Type
Prerequisite

Complete ALL of the following Programs:
- TC-AMT_GNRL - Aviation Maintenance General

AMT256 - Powerplant IV

Overview

Department
Aviation

Course Description
This course develops correct safety practices, comprehensive knowledge, and technical skills required to perform aviation maintenance procedures that align with the current Airmen Certification Standards. Students will learn to properly: perform turbine engine inlet, and compressor guide vain inspections, map airflow and direction changes inside a turbine engine inspect a combustion liner, troubleshoot causes of engine performance loss, inspect a particle separator, check a bleed air system, perform an induction and cooling system inspection, inspect turbine engine exhaust system and components.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
6

Contact Hours

Contact Hours
Min:
120

Billing Hours

Billing Hours
Min:
6

Lecture Hours

Lecture Hours
Min:
60

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify, inspect, check, service, remove, repair and install turbine engines and engine installations.

Name
The student will be able to identify, inspect, check, service, troubleshoot and repair turbine engine air systems, including components thereof.

Name
The student will be able to identify, inspect, check, service, troubleshoot and repair turbine exhaust and reverser systems, including components thereof.

Requirements

Simple Requirements

AMT General Technical Certificate

Type
Prerequisite

Complete ALL of the following Programs:
- TC-AMT_GNRL - Aviation Maintenance General

AMT257 - Powerplant V

Overview

Department
Aviation

Course Description
This course develops correct safety practices, comprehensive knowledge, and technical skills required to perform aviation maintenance procedures that align with the current Airmen Certification Standards. Students will learn to properly: troubleshoot an aircraft's electrical generating system, remove and install an engine direct drive electric starter, repair engine electrical systems, fabricate bonding jumpers, Inspect engine electrical connectors, set magneto internal timing, time magneto to aircraft engine, troubleshoot and repair ignition systems, Inspect ignition harness, troubleshoot engine ignitors, Inspect turbine engine ignition systems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify, inspect, check, troubleshoot, service and repair as necessary aircraft engine electrical systems.

Name
The student will be able to identify, inspect, check, service, troubleshoot and repair engine ignition and starting systems, including components thereof.

Requirements

Simple Requirements

AMT General Technical Certificate

Type
Prerequisite

Complete ALL of the following Programs:
- TC-AMT_GNRL - Aviation Maintenance General

AMT258 - Powerplant

Overview

Department
Aviation

Course Description
This course is designed to develop correct safety practices, comprehensive knowledge, and technical skills required to perform maintenance procedures relevant to aircraft Induction & Airflow systems, Cooling systems, Exhaust Systems, Reverser Systems and engine fire detection and extinguishing systems. The curriculum is designed to meet specific Federal Aviation Administration Regulations that pertain to the Aircraft Powerplant Mechanic rating. Academic standard for passing this course is a minimum of 70%.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will pass the O & P Powerplant practical exam

Name
The student will review material within the powerplant program within this time period in preparation for Oral & Practical exams.

ART100 - Art Appreciation

Overview

Department
General Education

Course Description
This course is designed to develop a personal appreciation of art. By combining a study of concepts and artist's work, the student should improve one's judgment and ability to understand art critically.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate an understanding of the terminology and characteristics of visual expression.

Name
Critically interpret and analyze works of art in terms of form and content

Objective
Discuss form and content', List and apply the visual elements of design', Compare and contrast various approaches to style including representational abstract and non representational', Discuss and utilize formal elements subject matter symbols and concepts in relation to historical and cultural context to critically evaluate art

Name
Communicate knowledge of art practices, meaning, values, and methods relevant to diverse historical and cultural contexts.

Name
Participate in the current discourse of visual arts.

AVC102 - Precision Instruments

Overview

Department
Aviation

Course Description
This course provides students with the knowledge and skills needed to utilize precision measurement tools in the manufacturing and aerospace environment. In an online interactive environment students will learn to utilize the different types of tools, interpret the measurement results and apply those results to industry specific scenarios.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply basic concepts and terminology to precision instruments

Objective
Define terminology associated with instrumentation precision accuracy calibration setting master zero setting tool discrimination resolution', Identify the impact of weather cleanliness instrument quality tool usage on precision and accuracy', Identify the role of NIST national Institute for Standards and Technology', Identify the three principles of measurement reference point measurement point measurement distance', Describe the relationship between the principles of measurement and the blueprint or engineering specifications', Identify the basics of using precision measurement tools

Name
The student will be able to utilize a precision rule

Objective
Define terminology rule measurement scale graduation line secondary graduation lines', Compare and contrast rule and ruler', Identify the key components of the precision rule', Interpret a rules graduation lines', Identify rules based upon their measurement scale', Choose which type of precision rule to measure a length', Utilize a precision rule to measure a length', Identify steps to care for a precision rule

Name
The student will be able to utilize a dial caliper

Objective
Define the role of dial caliper', Identify the components of a the dial caliper and its role moveable body and stationary body left external and internal jaw revolution scale dial indicator dial face needle lock depth blade thumbwheel', Describe how the components work together to measure', Interpret the graduation scales on the dial caliper', Zero set a dial caliper', Use a dial caliper to measure a length external and internal and depth', Identify the steps to care for a dial caliper

Name
The student will be able to utilize vernier micrometer

Objective
Define the role of micrometers', Compare and contrast vernier micrometer and regular micrometer', Identify all the components of a vernier micrometer anvil lock level frame sleeve spindle thimble micrometer screw', Describe how the components work together to measure a product', Interpret the graduation scales primary graduation line secondary graduation line vernier graduation scale', Use a vernier micrometer to accurately measure a distance', Check the calibration on vernier micrometer', Identify the steps to care for a vernier micrometer

Name
The student will be able utilize small hole gauge

Objective
Define the role of full ball and half ball small hole gauges and their roles', Identify all the components of a small hole gauge ball handle wedge thimble', Describe how the components work together to measure', Use the small hole gauge to measure a diameter and a width', Identify the steps to care for a small hole gauge

Name
The student will be able utilize countersink gauge

Objective
Define counter sink counter sink gauge countersink angle', Identify the components of a countersink gauge body setting ring plunger dial indicator dial face dial needle dial lock', Describe how the components work together to measure a product', Zero set countersink gauge', Use the countersink gauge to measure a diameter', Identify the step to care for a countersink gauge

Name
The student will be able to utilize grip gauges

Objective
Identify a grip gauge and its role', Identify rivet terminology including clinch grip range and grip and grip range value', Identify all the components of a grip gauge body measurement slide measurement point measurement scale rivet diameter measurement holes lip graduation lines', Describe how the components work together to determine', Utilize the grip gauge to calculate CherryMax rivet length', Identify the steps to care for a grip gauge

Name
The student will be able to utilize rivet height gauges

Objective
Identify the role of rivet height gauge', Identify rivet height and tolerance', Identify the components of a rivet height gauge plunger body dial indicator dial face needle lock', Describe how the components work together to determine rivet height', Zero set rivet height gauge', Utilize the rivet height gauge to measure rivet height', Identify the steps to care for a rivet height gauge

Name
The student will be able to utilize Go and NoGo Gauges

Objective
Identify the role of Go and NoGo gauges in inspecting the dimensional characteristics of a hole including diameter roundness depth', Identify types of Go and NoGo guages', Identify the components of a Go and NoGo gauge', Use a Go and NoGo gauge to inspect hole features', Identify the role of pin protrusion gauges', Identify the different types of pin protrusion gauges', Use pin protrusion gauges to inspect lock bolt length

Requirements

Simple Requirements

A minimum grade of 'C' in Course MTH020

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MTH020 - Math Fundamentals (Inactive)

AVC103 - Geometric Dimensioning & Tolerancing

Overview

Department
Aviation

Course Description
Provides an understanding of the basic terms and principles of Geometric Dimensioning and Tolerancing. The course provides students with the skills and knowledge necessary to identify GD&T symbols and how to interpret those symbols. This course is taught using an interactive online environment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to define the basic principles of Geometric Dimensioning & Tolerancing (GD&T)

Objective
Define Geometric Dimensioning Tolerancing', Define ASME Y 145M1994', Define Geometric Tolerance', Define Datums and Datum Targets', Identify Basic Dimensions', Identify Maximum Material Condition', Identify Least Material Condition', Define Types of Fit

Name
The student will be able to identify GD&T symbols

Objective
Identify Format of Feature Control Frame', Identify Geometric Characteristics', Identify Tolerance Zone', Identify Maximum Material Condition Principle', Identify Least Material Condition Principle', Identify Regardless of Feature Size Principle', Identify Datum Reference

Name
The student will be able to interpret form and orientation tolerances

Objective
Interpret Flatness', Interpret Straightness', Interpret Circularity', Interpret Cylindricity', Interpret Overview of Orientation Tolerances', Interpret Perpendicularity', Interpret Angularity', Interpret Parallelism

Name
The student will be able to interpret profile, runout and location tolerances

Objective
Interpret Profile of a Surface', Interpret Profile of a Line', Interpret Methods of Specifying Profile Tolerances', Interpret Overview of Runout Tolerances', Interpret Circular Runout', Interpret Total Runout', Interpret Overview of Location Tolerances', Interpret Position', Interpret Concentricity', Interpret Symmetry

AVC104 - Quality Control Concepts

Overview

Department
Aviation

Course Description
This course covers quality assurance principles, including the history of the quality movement, group problem solving, data collection, control charts, statistical methods such as statistical process control (SPC), process capability studies, and the concepts associated with lean manufacturing.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Hybrid

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
1

Contact Hours

Contact Hours Min:
15

Billing Hours

Billing Hours Min:
1

Lecture Hours

Lecture Hours Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the usage of statistical process control in relationship to quality concepts in the aerospace industry.

Objective
Discuss the theory of Statistical Process Control SPC', Relate the application of SPC to aerospace manufacturing', Identify different types of data gathering techniques', Identify data on different types of control charts

Name
The student will be able to describe the history of the quality movement

Objective
Describe the quality condition of the United States before and after the 1950s', Discuss the quality condition of the United States from the 1990s to the present', Describe the quality condition of other industrialized nations', Discuss the elements of change in both the United States and other nations

Name
The student will be able to describe the teams role in quality improvement

Objective
Define synergy', Describe the four Cs of successful teamwork', Describe the stages of team growth

Name
The student will be able to describe the impact of lean manufacturing concepts on the aerospace industry

Objective
Define Lean Manufacturing in the aerospace environment', Describe the history of lean manufacturing in Aerospace industries', Identify tools used in lean manufacturing', Describe the impact of lean on the aerospace industries', Apply lean manufacturing tools to industry based scenarios

AVC105 - Aircraft Familiarization

Overview

Department
Aviation

Course Description
This course is designed to provide an introduction to the world of aviation. Using an interactive online environment, students will be introduced to basic aerospace concepts, including the history of flight, principles of flight, and the role of regulation in the industry and the primary assemblies and structures of an airplane.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Hybrid

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
1

Contact Hours

Contact Hours Min:
15

Billing Hours

Billing Hours Min:
1

Lecture Hours

Lecture Hours Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to describe the timeline of aviation history

Objective
Identify the key milestones in aviation history', Explain the historical importance of Wichita Kansas in aviation history

Name
The student will be able to describe primary assembles/structures and their functions

Objective
Identify the primary assemblies including fuselage wings empennage power plant', Identify the components of the fuselage cockpit cabin cargo area', Identify the components of the wings leading edge training edge ailerons flaps', Identify the components of the empennage vertical stabilizer rudder horizontal stabilizer elevators', Identify the common types of power plants reciprocating engines with propellers turbine engines with propellers turbine engines', Identify the common configurations of the power plant nose mount wing mount mounted on pylons', Identify the components and function of the primary assemblies', Identify the relationship between the primary assemblies

Name
The student will be able to describe the principles of flight

Objective
Explain how planes fly', Identify the four forces which impact flight lift thrust gravity and drag', Explain the impact of atmospheric pressure on an airplane', Explain Bernoullis principle', Explain the Bernoullis principles impact on lift', Identify airfoil', Explain the relationship between airfoil and wing design', Identify airfoil shapes and their components', Identify angle of attack and its impact', Identify angle of incidence and its impact', Compare and contrast angle of attack and angel of incident', Identify dihedral and its role

Name
The student will be able to describe how the mechanical systems and the design of an airplane impact flight characteristics

Objective
Explain the center of gravity of an airplane', Identify the three axes of control vertical axis lateral axis longitudinal axis', Define pitch roll and yaw and their relationship to the three axes of control', Identify how pitch roll and yaw are controlled pitchelevators rollailerons yawrudder', Identify the primary and secondary flight control systems and their impact on the three axes', Define stability', Identify the nine types of stability static positive neutral and negative dynamic positive neural and negative longitudinal directional and lateral', Identify stabilitys area of impact maneuverability and controllability

Name
The student will be able to identify airplane based on their configuration

Objective
Identify airplanes based upon their commercial purposes', Identify airplanes based upon their wing location', Identify airplanes based upon their tail configuration', Identify airplanes based upon their engine type and location', Identify airplanes based upon type of landing gear', Explain the advantages of each configuration

Name
The student will be able to identify the types of materials used on an airplane

Objective
Identify the 5 common types of materials used in aircraft construction metals composites plastics woods fabrics', Identifythe properties of each material', Explain the strengths and weaknesses of each type of material', Identify the process of selecting the proper materials strength weight cost appearance usability', Identify the 4 measures of material strength tensile yield shear and bearing', Identify the strength to weight ratio', Identify the evolution of aircraft materials', Compare and contrast aluminum vs composites', Identify the common aircraft fasteners bolts rivets and their roles', Describe how rivets work', Identify mechanical lock blind fasteners Cherrymax Rivets their components and how they work', Describe the installation process of Cherrymax Rivet', Discuss the lifespan of aluminum and composite airplanes

Name
The student will be able to identify the methods of airplane construction

Objective
Identify the key construction considerations when designing and airplane strength aerodynamics weight', Identify the 4 types of fuselage construction truss semi monocoque monocoque composite', Identify the airframe components longerons stringers upright members diagonal members cross members bulkheads formers and airframe skin', Identify the components found in each major type of airplane construction

Name
The student will be able to identify the impact of corrosion on airplane

Objective
Define Corrosion', Define terms associated with the corrosion process anode cathode electrolyte electrolysis galvanic table and grouping of metals', Explain the corrosion process', Identify the conditions that must exist for corrosion to occur', Identify the factors that influence corrosion and the rate of corrosion', Recognize different types of corrosion including uniform etching pitting galvanic concentric cell intergranular filiform fretting', Identify common corrosive agents', Identify metals that are subject to corrosion', Identify preventative measures for corrosion

Name
The student will be able describe the purpose and importance of regulation in the aviation industry

Objective
Define the purpose of regulations', Identify why aviation is regulated', Recognize different regulator bodies and their roles in aviation DOT Department of Transportation DOT US Federal Aviation Administration FAA European Aviation Safety Agency EASA', Identify the regulatory standards organization and their role Code of Federal Regulations International Organization for Standardization ISO International Traffic in Arms Regulations ITAR Society of Automotive Engineers and the European Association of Aerospace Industries AS9100 and National Aerospace and Defense Contractors Accreditation Program NADCAP', Identify the culture and behavior of regulation including cost of regulation working in a regulated industry negligence', Define the purpose of inspection in the aviation industry', Identify certification and qualification proceduresprocesses for tools operators airplanes', Identify the role of documentation in the aerospace industry

AVC107 - Fundamentals for Aerospace Manufacturing

Overview

Department
Aviation

Course Description
This course provides an overview of the materials and processes used in manufacturing high performance, lightweight, and reliable structures for aerospace products. Emphasis is placed on process evaluation techniques that can be extrapolated to other system areas such as new products and new technology. Instruction will take place using an interactive online environment.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Hybrid

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
1

Contact Hours

Contact Hours Min:
15

Billing Hours

Billing Hours Min:
1

Lecture Hours

Lecture Hours Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the manufacturing cost concepts as they relate to aviation

Objective
Identify the relationship between cost and materials', Identify the relationship between cost and tolerance', Identify the relationship between cost and production volume', Identify activity based costing

Name
The student will be able to identify manufacturing systems management and control

Objective
Identify production systems as they are applied to aviation', Identify just in time manufacturing concepts', Identify statistical quality control SPC', Identify manufacturing system control strategies as they are applied to aviation', Identify the close relationship that exists between the manufacturing environment and the product domain of the industry

Name
The student will be able to identify manufacturing processes and technologies control

Objective
Identify common manufacturing processes and technologies used in aviation manufacturing', Identify machinery utilized in aviation manufacturing', Identify systems and processes uses in the manufacturing of specific components and subsystems of aviation manufacturing', Identify selection processes used to determine appropriate manufacturing processes for each part

Name
The student will be able to identify producibility concepts in aviation manufacturing

Objective
Identify concurrent systems engineering', Identify quality function deployment', Identify design for manufacturability concepts', Identify CADCAM integration in aviation manufacturing

AVC108 - Aircraft Systems & Components

Overview

Department
Aviation

Course Description
This course is designed to provide the aviation student with an in-depth knowledge of the major systems and components of the aircraft. Using an interactive online environment, students will learn the operation of each of the major systems.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Hybrid

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the role of the electrical systems in aircraft

Objective
Identify the electrical systems', Identify the components of electrical systems', Identify how the electrical systems are integrated into the aircraft', Identify the operation of the electrical systems', Review safety issues commonly found with electrical systems', Define Electrostatic Discharge ESD', Describe ESD impact on the aircraft', Identify ESD product characteristics handling and packaging', Identify the routing concepts on wire systems including bend radius clamping and chafing', Identify appropriate handling procedures of this system including appropriate placement of temporary covers or protective devices', Identify electrical bonding and grounding in both mechanical and composites parts', Identify the impact of moisture on this system

Name
The student will be able to identify the role of the avionics systems in aircraft

Objective
Identify the avionic systems', Identify the components of avionic systems', Identify how avionic systems are integrated into the aircraft', Identify the operation of the avionic systems', Review safety issues commonly found with avionic systems', Identify the providers of avionic systems', Identify the components of the avionics package', Identify appropriate handling procedures of this system including appropriate use and placement of temporary covers or protective devices', Identify the documentation procedures associated with this system including installation removal and repair', Identify the impact of moisture on this system

Name
The student will be able to identify the role of the flight control system in aircraft

Objective
Identify different types of flight controls including flaps ailerons speed breaks and wing slates', Identify the different systems within flight controls', Identify the components of flight systems', Identify how flight control systems are integrated into the aircraft', Identify the operation of the flight control system', Identify rigging of flight controls', Identify the role of tension tools and temperature in flight control systems', Identify the role of friction and forces in flight control systems', Identify the role of functional test in flight controls', Identify the documentation procedures associated with this system including installation removal and repair', Review safety issues commonly found with flight control systems

Name
The student will be able to identify the role of the environmental control systems in aircraft

Objective
Identify the environmental systems including heat air and pressurization', Identify the components of environmental systems', Identify how environmental systems are integrated into the aircraft', Identify the operation of the environmental systems', Identify the impact of moisture on this system', Review safety issues commonly found with environmental systems

Name
The student will be able to identify the role of the door systems in aircraft

Objective
Identify the door systems', Identify the components of door systems', Identify how door systems are integrated into the aircraft', Identify the operation of the door systems', Review safety issues commonly found with door systems

Name
The student will be able to identify the role of the hydraulic systems in aircraft

Objective
Identify the hydraulic systems and the different types used in aircraft', Identify the components of hydraulic systems', Identify how hydraulic systems are integrated into the aircraft', Identify the operation of the hydraulic systems', Review safety issues commonly found with hydraulic systems', Identify appropriate handling procedures of this system including appropriate placement of temporary covers or protective devices', Identify the documentation procedures associated with this system including installation removal and repair

Name
The student will be able to identify the role of the pneumatic systems in aircraft

Objective
Identify the pneumatic systems', Identify the components of pneumatic systems', Identify how pneumatic systems are integrated into the aircraft', Identify the operation of the pneumatic systems', Review safety issues commonly found with pneumatic systems', Identify appropriate handling procedures of this system including appropriate use and placement of temporary covers or protective devices', Identify the documentation procedures associated with this system including installation removal and repair

Name
The student will be able to identify the role of the mechanical components in aircraft

Objective
Identify the mechanical components', Identify the components of mechanical systems', Identify how mechanical components are integrated into the aircraft', Identify the operation of the mechanical components', Review safety issues commonly found with mechanical components

Name
The student will be able to identify the role of the landing gear systems in aircraft

Objective
Identify the landing systems including steering and brakes', Identify the components of landing systems', Identify how landing systems are integrated into the aircraft', Identify the operation of the landing systems', Review safety issues commonly found with landing systems

Name
The student will be able to identify the role of the windows systems in aircraft

Objective
Identify the windows systems', Identify the components of windows systems', Identify the operation of the windows systems', Review safety issues commonly found with windows systems', Identify how windows systems are integrated into the aircraft

Name
The student will be able to identify the role of the fuel systems in aircraft

Objective
Identify the fuel systems', Identify the components of fuel systems', Identify how fuel systems are integrated into the aircraft', Identify the operation of the fuel systems', Identify the impact of moisture on this system', Review safety issues commonly found with fuel systems

Name
The student will be able to identify the role of the propulsion systems in aircraft

Objective
Identify the propulsion systems including radial turbine and reciprocating', Identify the components of propulsion systems', Identify how propulsion systems are integrated into the aircraft', Identify the operation of the propulsion systems', Review safety issues commonly found with propulsion systems

Name
The student will be able to identify the role of the Anti - Ice and Deice systems in aircraft

Objective
Identify the anti - ice and deice systems', Identify the components of anti - ice and deice system', Identify how anti - ice and deice systems are integrated into the aircraft', Identify the operation of the anti - ice and deice systems', Identify the impact of moisture on this system', Review safety issues commonly found with anti - ice and deice systems

AVC110 - Safety/OSHA 10

Overview

Department
Aviation

Course Description
The 10- Hour General Industry Outreach training Program is intended to provide entry-level general industry workers broad awareness on recognizing and preventing hazards on a general industry site. The training covers a variety of safety and health hazards which a worker may encounter at a general industry site. OSHA recommends this training as an orientation to occupational safety and health. Workers must receive additional training on hazards specific to their job. Training will emphasize hazard identification, avoidance, control and prevention, not OSHA standards. Instructional time will be a minimum of 10 hours.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to recall a basic introduction to OSHA Safety Standards and practice

Objective
Recall the OSHA Act', Recall the General Duty Clause', Recall employer and employee rights and responsibilities', Recall Whistleblower rights', Recall basic recordkeeping practices', Recall the protocol for inspections citations and penalties', Recognize the value of Safety and Health', Recall the OSHA 800 Number

Name
The student will be able to identify common safety hazards of walking and working surfaces on the job

Objective
Identify hazards', Practice precautions', Recall procedures for accidents should they occur

Name
The student will be able to identify the importance of safety precautions and preventative measures

Objective
Recall postings for exits routes', Recall the procedures for following an emergency action plan', Identify the specifics for fire prevention', Identify the specifics for fire protection

Name
The student will be able to identify hazards when working with electricity and recall the proper procedural precautions for safe handling of electricity

Objective
Recall the OSHA regulations for work with electricity', Identify whether or not you are qualified to work with electricity', Identify ways to prevent electrical accidents', Identify safe work practices for handling electricity

Name
The student will be able to identify proper usage procedures and requirements for PPE

Objective
Identify proper usage procedures and requirements for eye and face protection', Identify proper usage procedures and requirements for head protection', Identify proper usage procedures and requirements for foot and leg protection', Identify proper usage procedures and requirements for hand and arm protection', Identify proper usage procedures and requirements for body protection', Identify proper usage procedures and requirements for hearing protection

Name
The student will be able to identify proper procedures and requirements for Hazard Communication

Objective
Recall the OSHA Hazard Communications regulations', Define hazardous chemicals', Define physical hazards', Define health hazards', Utilize the SDS safety data sheet', Recall labels and labeling requirements', Recall the written hazard communication program

Name
The student will be able to demonstrate a fundamental knowledge of safety hazards and practices relating to the following topics

Objective
Hazardous Materials', Machine Guarding', Blood borne Pathogens', Fall Protection

AVC112 - Blueprint Reading

Overview

Department
Aviation

Course Description
This course is an introduction to reading and interpreting blueprints. Topics include blueprint views, lines, dimensions and tolerances, and blueprint symbols. Working in an interactive online environment, students learn a systematic approach to reading blueprints.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the basics concepts associated with blueprints

Objective
Define blueprint engineering drawing blueprint line blueprint symbol', Describe the blueprint cycle', Describe the history of blueprints', Describe the language of blueprints', Identify the variety of symbols used on blueprints including aircraft welding architecture machining fasteners electrical hydraulic and geometric locations', Explain why blueprints are standardized', Identify the common standardization organizations ISO and ASME', Identify the common sizes of blueprints

Name
The student will be able to utilize a production drawing in the shop

Objective
Describe the types of production drawings detail installation and assembly', Describe the elements of detail assembly and installation drawing', Identify what is and is not an assembly', Discuss the common elements of production drawing border title block revision block picture area parts list

Name
The student will be able identify terminology common to blueprints and explain their relationships

Objective
List the basic shapes used on blueprints point and lines surfaces planes angles', Identify line types used on blueprints', Identify the angle types used on blueprints', Explain the relationships that exist between two or more lines surfaces planes angles perpendicular lines right angles parallel lines acute angle obtuse angle complimentary angle supplementary angle', Measure an angle', Identify types of circles and terminology associated with them including concentric eccentric circumference diameter and radius', Explain the relationships that exist between two or more circles concentric circles eccentric circles arc tangent chord straight arc arch between radii', Identify common angels and arcs including straight angle right angle acute angle obtuse angle complimentary angle Supplementary angle arc between two radii', Measure a circle

Name
The student will be able to compare and contrast the elements of blueprint views

Objective
Explain how blueprints are drawn', Describe pictorial drawings perspective view isometric view oblique view and orthographic drawings', Compare and contrast the differences between perspective isometric and orthographic drawings', Describe orthographic projection including its principles and views', Identify the most common orthographic views top front and right side', Interpret an orthographic projection', Compare and contrast first and third angle projection', Identify auxiliary views including primary secondary and tertiary', Identify additional views including enlarged sectional partial and rotated', Describe the unique characteristics of orthographic views and airplanes including airplane views and reference planes station buttock line water line wing reference planes

Name
The student will be able to interpret blueprint lines

Objective
Describe blueprint line standards including object hidden center dimension extension leader break section phantom stitch cutting plane and viewing plane', Identify the standards of line precedence', Interpret a product based upon a line drawing', Interpret hidden features on a blueprint drawing', Identify other views of a product on the blueprint drawing

Name
The student will be able to identify dimension and tolerance on blueprints and its application in manufacturing

Objective
Identify the different types of dimensions dimension of size and dimension of position', Describe the components of dimensions extension lines dimension lines and dimension', Identify dimension of angles', Define tolerance and its role', Describe methods of displaying tolerance on a blueprint with dimension separate note title block', Identify the different types of tolerance and their role plus and minus maximum and minimum maximum minimum', Explain the purpose of dimension lines and extension lines', Identify different dimensioning methods used in product drawings including chain and baseline or datum dimensioning arcs and radius typical dimensions and rivet location dimensions

Name
The student will be able to interpret common G D & T symbols on a blueprint

Objective
Identify the role of symbols on a blueprint', Define GDT', Define the product datum and its role including primary secondary and tertiary datums', Describe how GD T symbols are displayed', Identify types of GDT symbols including characteristic and modifying', Identify the categories of characteristic symbols including individual part individual and related and related only

Name
The student will be able to interpret common fastener symbols on a blueprint

Objective
Identify the role of fastener symbols on a blueprint', Identify type of fasteners specified on a blueprint permanent and removable', Describe the permanent fastener id system quadrants', Describe how removable fasteners are indicated on blueprint', Identify the tooling hole symbol and its role', Locate product feature symbols on a product drawing

Name
The student will be able to interpret common aircraft symbols on a blueprint

Objective
Identify the role of aircraft symbols on a blueprint', Identify common symbols including center line flag note directional indicator K or coordinating hole engineered tooling station indicators limited release

AVC117 - Hand & Power Tools

Overview

Department
Aviation

Course Description
This course provides the technical knowledge used in Aviation and Manufacturing areas related to hand and power tools.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Spring 2019

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
45

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The Student will select the right tool(s) to effectively complete the job/ activity.

Objective
The Student will select the right tools to effectively complete the jobactivity

Name
The student will be able to identify common cutting, drilling, layout, striking, holding, sharpeners and grinding tools.

Objective
Identify the usefunction of common tools such as layout striking holding sharpener grinding cutting drilling and sanding', Identify the usefunction of tools found in the lab

Name
The student will be able to identify safety practices associated with tools commonly used for layout, striking, holding, sharpening, grinding, cutting, drilling and sanding.

Objective
Identify the types of personal protective equipment', Describe safety practices associated with common tools', List common PPE used in manufacturing areas', List potential hazards found in manufacturing environments

Name
The student will be able to identify common fasteners types.

Objective
Name common types of fasteners', List parts of common types of fasteners', Describe how common fasteners work', Describe the fastener installation process

Name
The student will demonstrate the process to install common fasteners.

Objective
Recognize the identification standards used in common fasteners', Recognize the codes that identify fasteners', Understand the more common materials that fasteners are made of', Demonstrate the installation processs for common fasteners

Name
The student will be able to identify equipment used in the power island

Objective
Identify common power island equipment such as sanders drills and bandsaws', Identify the power island equipment located in the lab

Name
The student will be able to demonstrate safety procedures used with power island tools

Objective
Demonstrate safety precautions for common power island equipment such as sanders drills and band saws', Demonstrate safety procedures for power island tools found in the lab

Name
The student will demonstrate the operating procedures of common tools and power island tools

Objective
Effectively operate common power island tools such as drills band saws and sanders', Effectively operate the power island tools found in the laboratory', Effectively operate common tools such as layout striking holding sharpening grinding cutting drilling and sanding tools', Effectively operate the common tools found the laboratory

AVC120 - Introduction to Sealing

Overview

Department
Aviation

Course Description
This course provides an introduction to basic sealing principles; including tools, sealant selection, application processes, and cleaning methods. Instruction is delivered using interactive online course content.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the basic concepts associate with aerospace sealant processes

Objective
Demonstrate basic knowledge of sealing principles in aerospace manufacturing', Understand the purpose of sealing', Describe how sealing prevents corrosion', List the other important functions of sealants', Identify the functions of sealants on the airplane', Define corrosion', Describe how corrosion occurs', Define electrolysis anode and cathode', Identify the role of sealing in maintaining cabin pressure fuel retention surface adhesion and aerodynamics

Name
The student will be able hazards and PPE associated with sealants

Objective
Identify sealing materials as chemicals', Define a physical hazard in relation to work with chemicals', Define a health hazard in relation to working with chemicals', Identify material safety data sheet MSDS', List potential physical hazards associated with chemicals', List health hazards associated with chemicals', Identify the concept of chemical exposure', Identify PPE used to minimize exposure to chemicals', Name the federal agency charged with regulating safety', Describe the function of personal protective equipment designed to protect your body', Explain why proper fit of personal protective equipment is important', Identify the types of personal protective equipment designed to protect your body

Name
The student will be able to select the appropriate sealant

Objective
List common categories of sealants including pliable drying and curing', Identify the characteristics of pliable drying and curing sealants', Compare and contrast pre mixed and two part sealants', List different sealant applications including fillet wet fastener injection faying surfaces prepack and aerosmooth', Identify the function of different sealant applications', Locate sealant information on product and documentation

Name
The student will be able to prepare the surface for sealing

Objective
List the steps in the cleaning process', Recognize the tools used for cleaning surfaces in the airplane', Identify common solvents used in the cleaning process', Describe the steps to properly apply solvents', Recognize when a surface is properly cleaned and ready for sealing

Name
The student will be able to effectively use a sealing gun

Objective
Identify the parts of a sealing gun', Assemble a sealing gun', Describe sealing application for rives screws washers split grommets', Identify guidelines for proper application of sealant including issues of surface temperature sealant expiration and sealant consistency

AVC125 - Bonding and Grounding

Overview

Department
Aviation

Course Description
This course provides an overview of electrical bonding and grounding theory, required tools and procedures, and final quality control. Students learn using interactive online content.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to utilize Ohms law to calculate resistance

Objective
Define types of electrical bonding and grounding utilized in aircraft construction', Identify the electrical hazards associated with airplanes', Explain electrical resistance', Calculate electrical resistance', Explain the importance of low resistance metals in airplane construction', List hazards that can occur if electricity is not controlled', Explain Ohms law', Explain calculating resistance using Ohms law

Name
The student will be able to demonstrate converting Ohms to other units of measure

Objective
Explain how resistance is measured', List all the units of measure for ohms', Explain the fundamental rules of unit conversion', Demonstrate converting Ohms to other units of measure

Name
The student will be able identify hazards associated with resistance testing

Objective
Explain the potential hazards of resistance testing', List the correct ohmmeter to use in hazardous areas', List the correct ohmmeters and multimeters to use in nonhazardous areas', Define the inspection steps for ohmmeters and multimeters', Identify general safety rules for ohmmeters and multimeters

Name
The student will be able to utilize a variety of multimeters, Ohmmeters, and Milliohmmeters

Objective
List the major components of the Fluke Biddle Avtron multimeters Hewlett Packard milliohmmeter and the BCD M1 Ohmmeter', Explain how to prepare the Fluke Biddle Avtron multimeter Hewlett Packard milliohmmeter for resistance testing and the BCD M1 Ohmmeter', Use the Fluke Biddle Avtron multimeter Hewlett Packard milliohmmeter to test resistance and the BCD M1 Ohmmeter

AVC127 - Aviation Assembly Core

Overview

Department
Aviation

Course Description
This course provides students with the core knowledge necessary to be successful as an Aviation Sheetmetal Assembler. The topics will include safety, precision measurement, blueprint reading, sealing and electrical bonding techniques as well as quality control.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
7

Contact Hours

Contact Hours Min:
120

Billing Hours

Billing Hours Min:
7

Lecture Hours

Lecture Hours Min:
90

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to recall a basic introduction to OSAH Safety Standards and practice

Objective

Recall the OSHA Act', Recall the General Duty Clause', Recall employer and employee rights and responsibilities', Recall Whistleblower rights', Recall basic recordkeeping practices', Recall the protocol for inspections citations and penalties', Recognize the value of Safety and Health', Recall the OSHA 800 Number', Identify hazards', Practice precautions', Recall procedures for accidents should they occur', Recall postings for exits routes', Recall the procedures for following an emergency action plan', Identify the specifics for fire prevention', Identify the specifics for fire protection', Recall the OSHA regulations for work with electricity', Identify whether or not you are qualified to work with electricity', Identify ways to prevent electrical accidents', Identify safe work practices for handling electricity', Identify proper usage procedures and requirements for eye and face protection', Identify proper usage procedures and requirements for head protection', Identify proper usage procedures and requirements for foot and leg protection', Identify proper usage procedures and requirements for hand and arm protection', Identify proper usage procedures and requirements for body protection', Identify proper usage procedures and requirements for hearing protection', Recall the OSHA Hazard Communications regulations', Define hazardous chemicals', Define physical hazards', Define health hazards', Utilize the SDS safety data sheet', Recall labels and labeling requirements', Recall the written hazard communication program

Name

The student will be able to demonstrate a fundamental knowledge of safety hazards and practices relating to the following topics

Objective

Hazardous Materials', Machine Guarding', Blood borne Pathogens', Fall Protection', Define terminology associated with instrumentation precision accuracy calibration setting master zero setting tool discrimination resolution', Identify the impact of weather cleanliness instrument quality tool usage on precision and accuracy', Identify the role of NIST national Institute for Standards and Technology', Identify the three principles of measurement reference point measurement point measurement distance', Describe the relationship between the principles of measurement and the blueprint or engineering specifications', Identify the basics of using precision measurement tools', Define terminology rule measurement scale graduation line secondary graduation lines', Compare and contrast rule and ruler', Identify the key components of the precision rule', Interpret a rules graduation lines', Identify rules based upon their measurement scale', Choose which type of precision rule to measure a length', Utilize a precision rule to measure a length', Identify steps to care for a precision rule', Define the role of dial caliper', Identify the components of a the dial caliper and its role moveable body and stationary body left external and internal jaw revolution scale dial indicator dial face needle lock depth blade thumbwheel', Describe how the components work together to measure', Interpret the graduation scales on the dial caliper', Zero set a dial caliper', Use a dial caliper to measure a length external and internal and depth', Identify the steps to care for a dial caliper', Define the role of micrometers', Compare and contrast vernier micrometer and regular micrometer', Identify all the components of a vernier micrometer anvil lock level frame sleeve spindle thimble micrometer screw', Describe how the components work together to measure a product', Interpret the graduation scales primary graduation line secondary graduation line vernier graduation scale', Use a vernier micrometer to accurately measure a distance', Check the calibration on vernier micrometer', Identify the steps to care for a vernier micrometer', Define the role of full ball and half ball small hole gauges and their roles', Identify all the components of a small hole gauge ball handle wedge thimble', Describe how the components work together to measure', Use the small hole gauge to measure a diameter and a width', Identify the steps to care for a small hole gauge', Define counter sink counter sink gauge countersink angle', Identify the components of a countersink gauge body setting ring plunger dial indicator dial face dial needle dial lock', Describe how the components work together to measure a product', Zero set countersink gauge', Use the countersink gauge to measure a diameter', Identify the step to care for a countersink gauge', Identify a grip gauge and its role', Identify rivet terminology including clinch grip range and grip and grip range value', Identify all the components of a grip gauge body measurement slide measurement point measurement scale rivet diameter measurement holes lip graduation lines', Describe how the components work together to determine', Utilize the grip gauge to calculate CherryMax rivet length', Identify the steps to care for a grip gauge', Identify the role of rivet height gauge', Identify rivet height and tolerance', Identify the components of a rivet height gauge plunger body dial indicator dial face needle lock', Describe how the components work together to determine rivet height', Zero set rivet height gauge', Utilize the rivet height gauge to measure rivet height', Identify the steps to care for a rivet height gauge', Identify the role of Go and NoGo gauges in inspecting the dimensional characteristics of a hole including diameter roundness depth', Identify types of Go and NoGo guages', Identify the components of a Go and NoGo gauge', Use a Go and NoGo gauge to inspect hole features', Identify the role of pin protrusion gauges', Identify the different types of pin protrusion gauges', Use pin protrusion gauges to inspect lock bolt length', Define blueprint engineering drawing blueprint line blueprint symbol', Describe the blueprint cycle', Describe the history of blueprints', Describe the language of blueprints', Identify the variety of symbols used on blueprints including aircraft welding architecture machining fasteners electrical hydraulic and geometric locations', Explain why blueprints are standardized', Identify the common standardization organizations ISO and ASME', Identify the common sizes of blueprints', Describe the types of production drawings detail installation and assembly', Describe the elements of detail assembly and installation drawing', Identify what is and is not an assembly', Discuss the common elements of production drawing border title block revision block picture area parts list', List the basic shapes used on blueprints point and lines surfaces planes angles', Identify line types used on blueprints', Identify

Name
The student will be able to compare and contrast the elements of blueprint views

Objective
Explain how blueprints are drawn', Describe pictorial drawings perspective view isometric view oblique view and orthographic drawings', Compare and contrast the differences between perspective isometric and orthographic drawings', Describe orthographic projection including its principles and views', Identify the most common orthographic views top front and right side', Interpret an orthographic projection', Compare and contrast first and third angle projection', Identify auxiliary views including primary secondary and tertiary', Identify additional views including enlarged sectional partial and rotated', Describe the unique characteristics of orthographic views and airplanes including airplane views and reference planes station buttock line water line wing reference planes', Describe blueprint line standards including object hidden center dimension extension leader break section phantom stitch cutting plane and viewing plane', Identify the standards of line precedence', Interpret a product based upon a line drawing', Interpret hidden features on a blueprint drawing', Identify other views of a product on the blueprint drawing

Name
The student will be able to identify dimension and tolerance on blueprints and its application in manufacturing

Objective
Identify the different types of dimensions dimension of size and dimension of position', Describe the components of dimensions extension lines dimension lines and dimension', Identify dimension of angles', Define tolerance and its role', Describe methods of displaying tolerance on a blueprint with dimension separate note title block', Identify the different types of tolerance and their role plus and minus maximum and minimum maximum minimum', Explain the purpose of dimension lines and extension lines', Identify different dimensioning methods used in product drawings including chain and baseline or datum dimensioning arcs and radius typical dimensions and rivet location dimensions', Identify the role of symbols on a blueprint', Define GDT', Define the product datum and its role including primary secondary and tertiary datums', Describe how GD T symbols are displayed', Identify types of GDT symbols including characteristic and modifying', Identify the categories of characteristic symbols including individual part individual and related and related only', Identify the role of fastener symbols on a blueprint', Identify type of fasteners specified on a blueprint permanent and removable', Describe the permanent fastener id system quadrants', Describe how removable fasteners are indicated on blueprint', Identify the tooling hole symbol and its role', Locate product feature symbols on a product drawing', Identify the role of aircraft symbols on a blueprint', Identify common symbols including center line flag note directional indicator K or coordinating hole engineered tooling station indicators limited release', Demonstrate basic knowledge of sealing principles in aerospace manufacturing', Understand the purpose of sealing', Describe how sealing prevents corrosion', List the other important functions of sealants', Identify the functions of sealants on the airplane', Define corrosion', Describe how corrosion occurs', Define electrolysis anode and cathode', Identify the role of sealing in maintaining cabin pressure fuel retention surface adhesion and aerodynamics

Name
The student will be able to identify the hazards and PPE associated with sealants

Objective
Identify sealing materials as chemicals', Define a physical hazard in relation to work with chemicals', Define a health hazard in relation to working with chemicals', Identify material safety data sheet MSDS', List potential physical hazards associated with chemicals', List health hazards associated with chemicals', Identify the concept of chemical exposure', Identify PPE used to minimize exposure to chemicals', Name the federal agency charged with regulating safety', Describe the function of personal protective equipment designed to protect your body', Explain why proper fit of personal protective equipment is important', Identify the types of personal protective equipment designed to protect your body

Name
The student will be able to describe the installation techniques for pre installed and direct standard ground studs

Objective
List the steps required to install a pre installed ground stud', List the steps required to install a direct standard ground stud', Explain how to use the power tools to install ground studs', Identify the role of bonding and grounding', Identify the equipment and tools needed to install ground', Identify the components of pre installed and direct standard ground studs

Name
The student will be able to identify the steps to install and check the resistance on a pre installed ground stud

Objective
Identify the steps for Installing a pre installed ground stud', Identify the process for checking resistance on a pre installed stud

Name
The student will be able to the history of the quality movement

Objective
Describe the quality condition of the United States before and after the 1950s', Discuss the quality condition of the United States from the 1990s to the present', Describe the quality condition of other industrialized nations', Discuss the elements of change in both the United States and other nations', Discuss the theory of Statistical Process Control SPC', Relate the application of SPC to aerospace manufacturing', Identify different types of data gathering techniques', Identify data on different types of control charts

Name
The student will be able to describe the teams role in quality improvement

Objective
Define synergy', Describe the four Cs of successful teamwork', Describe the stages of team growth

AVC135 - Hand Tools

Overview

Department
Aviation

Course Description
This course provides an introduction to the various hand tools used in aerospace industry. The course also introduces the student to several aerospace fasteners, including temporary fasteners, bolts and lock bolts, Hi-Lok, and rivets.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify safety practices associated with aerospace hand tools

Objective
Identify the types of personal protective equipment', Describe safety practices associated with compressed air tools air lines drills rivet guns hand tools', List common PPE used in manufacturing areas', List potential hazards found in manufacturing environments

Name
The student will be able to identify drilling techniques which result in quality holes

Objective
Recognize the parts of the drill bit', Recognize the basic components of the pneumatic drill', Identify proper drill techniques', List the different types of drill bits', Recognize the tools and accessories used to drill a quality hole

Name
The student will be able describe countersink techniques

Objective
List the common reasons for countersinking a hole', Identify the different types of countersink cutters', Identify countersinks', Describe the purpose of a microstop countersink tool', Adjust the microstop countersink tool', Describe the proper technique for countersinking a hole', Describe the proper technique for countersinking on a curved surface', Describe general countersinking techniques

Name
The student will be able to explain techniques associated with temporary fasteners

Objective
Identify different types of temporary fastener', Determine how temporary fasteners sizes are identified', Discuss why temporary fasteners are sizes are identified', Explain how to install Cleco clamps', Explain how to install the different kinds of Cleco fasteners

Name
The student will be able to describe process for Hi - Lok installation

Objective
Name the types of bolts and HiLoks used in aviation', List the parts of a bolt', List the parts of a HiLok', Describe how these fasteners work', Describe the Hi - Lok installation process

Name
The student will be able to describe process for lockbolt installation

Objective
Name the types of lockbolts used in aviation', List the parts of a lockbolt', Describe how a lockbolt fastener works', Describe the lockbolt puller process

Name
The student will be able to describe the process to install rivets

Objective
Name two types of rivets used in aviation', List the parts of a rivet and blind rivet', Describe how rivets and blind rivets work', Describe the rivet installation process

Name
The student will be able to identify fasteners used in aviation industry

Objective
Recognize the identification standards used in fastener codes', Recognize the codes that identify fasteners', Understand the more common materials that fasteners are made of', Identify the information in the National Aerospace Standard Code cross

AVC137 - Precision Measuring

Overview

Department
Aviation

Course Description
This course provides students with the knowledge and skills needed to utilize precision measurement tools in the manufacturing and aerospace environment. Students will learn to utilize the different types of tools, interpret the measurement results and apply those results to industry specific scenarios.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply basic concepts and terminology to precision instruments

Name
The student will be able utilize small hole gauge

Name
The student will be able utilize countersink gauge

Name
The student will be able to utilize grip gauges

Name
The student will be able to utilize rivet height gauges

Name
The student will be able to utilize Go and NoGo Gauges

Name
The student will demonstrate skills associated with Certification in Tape and Rule Measurement

Name
The student will demonstrate skills associated with Certification in Slide Caliper Measurement

Name
The student will demonstrate skills associated with Certification in Micrometer Measurement

AVC140 - Electrical Bonding & Grounding

Overview

Department
Aviation

Course Description
This course provides the specific technical and manufacturing skills and knowledge required to prepare electrical bonding and grounding locations in the aerospace industry. The topics are presented online using interactive content.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to describe the installation techniques for pre installed and direct standard ground studs

Objective
List the steps required to install a pre installed ground stud', List the steps required to install a direct standard ground stud', Explain how to use the power tools to install ground studs', Identify the role of bonding and grounding', Identify the equipment and tools needed to install ground', Identify the components of pre installed and direct standard ground studs', Identify the steps for Installing a pre installed ground stud', Identify the process for checking resistance on a pre installed stud

Name
The student will be able apply a fillet seal on a direct ground stud installation

Objective
Installing a pre installed ground stud', Check resistance on a pre installed stud', Identify a fillet seal', Apply a fillet seal on a direct ground stud installation

Name
The student will be able to apply a fay seal on the direct ground stud installation

Objective
Apply a Fay seal on the direct ground stud installation', Check resistance on the direct ground installation with a fay seal', Identify Disc and Belt Sanders', Identify Floor Mounted Drill Press', Identify Band Saw

AVC145 - Power Island

Overview

Department
Aviation

Course Description
This course provides the technical knowledge and skills necessary to operate power island equipment. Students are introduced to the equipment using interactive online course content.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify equipment used in the power island

Objective
Identify Disc and Belt Sanders, Identify Floor Mounted Drill Press, Identify Band Saw

Name
The student will be able to describe safety procedures used with power island tools

Objective
Describe safety precautions and equipment for Disc and Belt Sanders', Describe safety precautions and equipment for a Floor Mounted Drill Press', Describe safety precautions and equipment for a Band Saw

Name
The student will be able to explain procedures for using tools in the power island

Objective
Explain the procedures for using Disc and Belt Sanders', Explain the procedures for using a Floor Mounted Drill Press', Explain the procedures for using a Band Saw

Name
The student will be able to identify the correct tool used for cutting, drilling and sanding materials

Objective
Identify the Belt and Disc Sanders as tools to be used for sandingshaping materials', Identify the Floor Mounted Drill Press as the tool to be used for drilling materials', Identify the Band Saw as the tool to be used for cutting materials

AVC150 - Human Factors

Overview

Department
Aviation

Course Description
This course provides students with an overview of the impact of human factors on the safe operation and maintenance of an aircraft. Topics will include a review of 12 most common human factors that can negatively impact the functioning of an aircraft and how to avoid these errors. Case studies will be used to help students apply what they learn to real world situations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2014

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify potential causes of Human Error

Objective
The student will list 5 possible causes of Human Error

Name
The student will be able to access the FAA Website to learn in more depth different aspects of Human Factors in aviation

Objective
The Student will access the FAA video and discuss whether or not Human Factors is a valid concern', The student will be able to state the percentage of aviation accidents caused by human error

Name
The student will be able to describe types of human error

Objective
The student will be able to distinguish the difference between errors of Omission and Commission', The student will be able to describe the differences between Slips Lapses Mistakes and Violations', The student will be able to describe the 3 major areas of human error in aviation - PilotFlightdeck Air Traffic Control and Maintenance error

Name
The student will be able to describe the causality and possible prevention of the Aloha Airlines accident.

Objective
After viewing the video the student will discuss which Human Factors contributed to the accident', After viewing the video the student will discuss which Safety Nets could have prevented the accident

Name
The student will be able to Describe the Dirty Dozen and Safety Nets

Objective
The student will review the results of the class discussion and view a listing of students ideas of human error causes', The student will be exposed to the Names and definitions of the Dirty Dozen - identified in Human Factors as the twelve major causes of human error', The student will compare the actual Dirty Dozen to the student generated list of human error causality and will then see that many of the items on the student generated list agree with the actual Dirty Dozen', The student will learn and be able to describe safety nets for each of the Dirty Dozen

Name
The student will be able to analyze the Human Factors causality of the BAC1-11 Accident and suggest Safety Nets that could have prevented the Accident

Objective
After viewing the video the student will discuss which of the Dirty Dozen contributed to the accident', After view the video the student will discuss which Safety Nets could have prevented the accident

Name
The student will be able to Describe the Swiss Cheese Theory of Accidents

Objective
The student will view a graphic presentation and video which will enable the inclusion of the Swiss Cheese theory in upcoming accident investigation

Name
The student will be able to Analyze the Human Factors causation and be able to list possible Dirty Dozen Factors/Safety Nets in analysis of two separate Accident Investigations in 500 word presentations

Objective
After choosing the first of 3 accident video choices to view the student will prepare a 500 word report explaining their interpretation of Human Factors causes using Dirty Dozen Safety Nets and the Swiss Cheese theory of accidents', After choosing the first of 3 accident video choices to view the student will prepare a 500 word report explaining their interpretation of Human Factors causes using Dirty Dozen Safety Nets and the Swiss Cheese theory of accidents

AVC155 - Aircraft manufacturing Advanced Fastening Practices

Overview

Department
Aviation

Course Description
This course provides an overview of the knowledge and technical skills required for the installation of critical aviation structural fastener. These specific fasteners are required above and beyond the normal assembly and require specific techniques for installation.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Spring 2014

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

AVC160 - Aircraft Control Surface Rigging

Overview

Department
Aviation

Course Description
This course provides an overview of the knowledge and technical skills required to perform maintenance procedures relevant to aircraft control surface rigging.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Spring 2014

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
Students will be able to identify common mechanical systems and components

Objective
Identify the application and operation of bell cranks', Identify the application and operation of push pull rods', Identify the application and operation of control cables and assorted hardware', Identify the application and operation of mechanical linkages', Identify the application and operation of aircraft flight control surfaces', Identify the application and operation of mechanical actuators', Identify the application and operation of pulleys', Identify the application and operation of aircraft hardware

Name
The student will be able to perform systems rigging on Rotary Wing and Fixed Wing aircraft

Objective
Select appropriate tooling to verify flight control travels', Verify proper alignment of flight controls', Adjust and demonstrate flight control travels on Rotary Wing aircraft', Adjust and demonstrate flight control travels on Fixed Wing aircraft

Name
The student will be able perform the static balance of aircraft flight controls

Objective
Remove and reinstall primary flight controls on Rotary Wing aircraft', Remove and reinstall primary flight controls on Fixed Wing aircraft', Perform static balance check on primary flight controls per manual specifications', Adjust primary flight controls to obtain static balance

Name
The student will be open aircraft in order to gain access to mechanical assemblies for rigging purposes

Objective
Determine appropriate panels for removal using approved maintenance manuals', Remove and Replace access panels as required for adjustments', Jack aircraft per maintenance manual

AVC165 - Technical Writing

Overview

Department
Aviation

Course Description
This course provides students with an overview of the process used to create effective technical documents. Topics include the three C’s of good technical writing including clarity, conciseness and completeness, the five steps of creating successful technical documents, and the importance of accuracy.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to define the basic skills associated with technical writing

Objective
Define technical writing', Describe the origins of technical writing', List the three Cs of good technical writing', Define clarity', Define conciseness', Define completeness', Describe the importance of accuracy

Name
The student will be able to identify the basic parts of a successfully written technical document.

Objective
List the five steps to creating successful documents', Identify part of preparing to create a document', Define primary purpose', Describe the relationship between document content and intended audience', Define scope', List factors that influence the method used to deliver a document', List common parts of documentation', State the importance of wellorganized documents', Understand when the writing process should begin', Describe the revision process

AVC170 - Conflict Resolution

Overview

Department
Aviation

Course Description
This course provides the basics of good communication skills. Topics include the different views of conflict, types of listening skills and techniques for how to be an effective communicator; different conflict management styles such as positional bargaining, collaborative approach and the interest based relational approach.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to describe the concepts associated with communication and conflict

Objective
Give examples of conflict', List the three views of conflict', List the origins of conflict', Define positive conflict', List the indicators of positive conflict', Define negative conflict', List the indicators of negative conflict

Name
The student will be able to define the concepts associated with effective communication skills

Objective
Describe the importance of communication skills', List the common types of listening', Define empathetic listening', Describe the guidelines for empathetic listening', Describe the process of empathetic listening', Describe the mirroring technique of feedback', Define I statement

Name
The student will be able discuss the concepts associated with conflict management

Objective
List the ThomasKillman styles of conflict management', Discuss the positives and negatives of different conflict management styles', Define positional bargaining', Discuss the collaborative approach to conflict management', Discuss the Interest Based Relational approach to conflict management', Describe the questions you should ask yourself to facilitate a winwin conflict resolution

AVC190 - Aerospace Applied Learning

Overview

Department
Aviation

Course Description
The Aerospace Applied Learning course represents an educational strategy linking the classroom with the acquisition of knowledge in the workplace. Through direct observation, reflection and evaluation, students gain an insight into the internship site's work, mission, and audience, how these relate to their academic study, as well as the organization's position in the broader industry or field. Students will produce a critical reflection on their internship experience demonstrating how they have addressed specific learning goals. This course is designed to be available from 4 to 8 credits.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2023

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
180

Billing Hours

Billing Hours
Min:
4

Other Hours

Other Hours
Min:
180

Course Learning Outcomes

Learning Outcomes

Name
Applied your knowledge, skills, experience to a work environment;

Objective
Applied your knowledge skills experience to a work environment

Name
Acquired new learning through challenging and meaningful activities;

Objective
Acquired new learning through challenging and meaningful activities

Name
Reflected on the content and process of the learning experience;

Objective
Reflected on the content and process of the learning experience

Name
Advocated for your own learning in alignment with internship goals;

Objective
Advocated for your own learning in alignment with internship goals

Name
Demonstrated professional skills in the workplace;

Objective
Demonstrated professional skills in the workplace

Name
Built and maintained positive professional relationships;

Objective
Built and maintained positive professional relationships

Name
Demonstrated awareness of community and/or organizational issues;

Objective
Demonstrated awareness of community andor organizational issues

Name
Identified, clarified and/or confirmed professional direction as it relates to your academic studies and future career path;

Objective
Identified clarified andor confirmed professional direction as it relates to your academic studies and future career path

Name
Developed self-understanding, self-discipline, maturity and confidence;

Objective
Developed selfunderstanding selfdiscipline maturity and confidence

Name
Developed strong networking/mentoring relationships

Objective
Developed strong networkingmentoring relationships

AVT118 - Fundamentals of Flight

Overview

Department
Aviation

Course Description
Fundamentals of Flight is a comprehensive introduction to the principles of flight, focusing on the key aerodynamic forces and aircraft control mechanisms. This course covers the basic theory of flight, examining how airfoils generate lift and the effects of thrust and drag on an aircraft's performance. Students will explore the concepts of aircraft stability and control.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Explain the theory of flight, including the four fundamental forces acting on an aircraft: lift, weight, thrust, and drag.

Name
Describe the function of airfoils and the role they play in generating lift.

Name
Identify and analyze the effects of thrust and drag on aircraft performance during various flight conditions.

Name
Explain the principles of aircraft stability, including longitudinal, lateral, and directional stability.

Name
Discuss aircraft control mechanisms, focusing on primary and secondary control surfaces.

Name
Identify and explain the operation of transport aircraft control surfaces, including elevators, rudders, ailerons, spoilers, and trim tabs.

AVT128 - Electricity & Electronics I

Overview

Department
Aviation

Course Description
This course is designed to introduce the student to the fundamental concepts of electricity and electronics that involve direct current (dc) and alternating current (ac), including series, parallel and series-parallel resistive circuits, magnetism electro-magnetism, capacitance, inductance, and transformers. The lab portion of this course will provide students with hands on experience with shop grade test equipment while performing experiments. Laboratory experiments are conducted on pre-assembled boards maximizing student productivity and allowing increased instructor interaction and support.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Explain and Describe Basic Electricity Concepts

Objective
1.1 Explain electric charge, atomic structure, conductors, insulators, semiconductors, potential difference, voltage, current, and resistance, 1.2 Describe electric circuit characteristics and the difference between electron flow and conventional current.

Name
Identify and Demonstrate Resistors

Objective
2.1 Identify different resistor types, interpret resistor color codes, and explain potentiometers, rheostats, and resistor power ratings, 2.2 Demonstrate precautions when using an ohmmeter to measure resistors

Name
Analyze and Apply Ohm’s Law

Objective
3.1 Use Ohm's Law to calculate current, voltage, resistance, and power in circuits, 3.2 Differentiate between open and short circuits.

Name
Analyze and Apply Series and Parallel Circuits

Objective
4.1 Apply concepts of series and parallel circuits to calculate total resistance, current, voltage, and power, 4.2 Explain Kirchhoff’s laws, troubleshoot circuits, and solve for unknowns in series-parallel configurations

Name
Identify and Apply Circuit Measurements

Objective
5.1 Use a multimeter to measure voltage, current, and resistance in series, parallel, and series-parallel circuits, 5.2 Identify voltage and current distribution using divider circuits

Name
Analyze and Apply Switches and Components

Objective
6.1 Identify switch functions and demonstrate basic switch-controlled circuits, 6.2 Vary current using rheostats and measure the effect with a multimeter

Name
Analyze and Apply Magnetism and Electromagnetism

Objective
7.1 Explain magnetism, electromagnetism, and motor action, applying laws such as Lenz’s Law and the Hall Effect, 7.2 Use solenoids, relays, and electromagnets in practical circuits

Name
Understand and Apply Alternating Current and Voltage

Objective
8.1 Explain AC waveform generation, sine wave characteristics, and phase angles, 8.2 Measure amplitude, frequency, and phase using an oscilloscope

Name
Define and Analyze Inductance and Capacitance

Objective
9.1 Define inductance and capacitance, calculate related values, and apply inductive and capacitive reactance, 9.2 Analyze RL and RC circuits, using oscilloscope measurements to verify results

Name
Analyze RLC Circuits

Objective
10.1 Analyze series and parallel RLC circuits, calculate total impedance, and verify with an oscilloscope

Name
Explain Batteries

Objective
11.1 Explain types of cells and battery configurations to increase voltage or current, and measure battery circuit values

Name
Apply Lab Skills and Safety

Objective
12.1 Apply standard lab procedures and demonstrate lab safety throughout all activities

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Enroll in the following Courses:

- MTH112 - College Algebra

OR

Any of the following requirements

Enroll in the following Courses:

- MTH108 - Contemporary Math

AVT138 - Electricity and Electronics II

Overview

Department
Aviation

Course Description
This course is the continuation of AVT 128 and is designed to introduce the student to the fundamental concepts of electricity and electronics that involve both analog and digital circuits. Students will explore key concepts such as diode and transistor circuits, amplifiers, oscillators, operational amplifiers, and power supplies. Additionally, the course covers fundamental digital logic, including flip-flops, combinational circuits, register memory, and arithmetic counting circuits. Through a combination of theoretical discussion, hands-on experiments, and troubleshooting exercises using trainers and pre-assemble circuit cards, students will develop the skills necessary to analyze, test, and troubleshoot analog and digital.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Analyze Diode and Transistor Circuits

Objective
1.1 Understand the operating principles of diodes and transistors and apply these concepts to test and troubleshoot basic circuits involving rectification, switching, and amplification

Name
Troubleshoot Power Supply Circuits

Objective
2.1 Analyze various power supply configurations, including linear and switching supplies, and troubleshoot issues related to voltage regulation and power conversion

Name
Understand and Test Amplifier and Oscillator Circuits

Objective
3.1 Examine the function of transistor amplifiers and oscillators, analyze signal amplification and frequency generation, and troubleshoot common issues in these circuits

Name
Apply Knowledge of Pulse and Trigger Device Circuits

Objective
4.1 Understand the role of pulse amplifiers and trigger circuits in timing and switching applications and troubleshoot faults within these systems

Name
Utilize Operational Amplifiers in Circuit Design

Objective
5.1 Analyze operational amplifier circuits and apply them to solve complex signal processing problems, while troubleshooting performance issues

Name
Identify and Analyze Radio Frequency (RF) Circuits

Objective
6.1 Recognize key components and functions of RF circuits, with a focus on frequency modulation and signal transmission, and apply diagnostic techniques

Name
Understand Digital Circuit Concepts

Objective
7.1 Demonstrate knowledge of basic digital circuits, including logic gates, flip-flops, and registers, and apply these concepts in testing simple digital systems

Name
Troubleshoot Combinational and Sequential Logic Circuits

Objective
8.1 Apply knowledge of combinational logic circuits such as multiplexers and decoders and troubleshoot sequential logic circuits involving flip-flops and counters

Name
Analyze Memory and Arithmetic Counting Circuits

Objective
9.1 Evaluate register memory circuits and arithmetic counting circuits and apply troubleshooting techniques to ensure correct digital data manipulation

Name
Convert Analog Signals to Digital and Vice Versa

Objective
10.1 Understand and apply techniques for data conversion between analog and digital forms, including the use of analog-to-digital (ADC) and digital-to-analog (DAC) converters

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVT128

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVT128 - Electricity & Electronics I

AVT146 - Avionics

Overview

Department
Aviation

Course Description
This course provides a foundational understanding of aircraft instrumentation and the key avionics systems that interact to ensure safe and efficient flight. Students will explore major aircraft instruments, their components, and how they function individually and as part of an integrated avionics network. Special emphasis will be placed on understanding how these systems communicate and support automated flight through autopilot. The course will introduce students to the basics of autopilot operation, relevant terminology, and system integration, preparing them for further study inn advanced avionics applications.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Identify Aircraft Instrumentation Systems: Recognize and describe primary flight instruments such as the altimeter, airspeed indicator, and attitude indicator, including their components and how they provide crucial flight data.

Name
Understand Instrument System Functions: Explain how each instrument operates, including how inputs from sensors and systems (e.g., pitot-static, gyroscopic) are processed and displayed to the flight crew.

Name
Examine System Integration: Analyze how aircraft instruments interact with other avionics systems, including navigation, communication, and flight control, to support overall aircraft operations.

Name
Explore Instrumentation Data Flow: Understand how data from flight instruments is integrated into modern avionics suites, including glass cockpit systems and electronic flight information systems (EFIS).

Name
Introduce Autopilot Systems: Describe the basics of autopilot systems, focusing on how they receive input from key instruments to control altitude, heading, and flight path automatically.

Name
Analyze Avionics System Interactions: Explain how avionics systems work together to ensure accurate data exchange between instruments, the flight management system (FMS), and autopilot.

Name
Evaluate Instrumentation Impact on Autopilot: Discuss how failures in certain flight instruments affect the operation of autopilot systems and how redundancy ensures flight safety.

Name
Apply Avionics Terminology: Demonstrate proficiency in understanding and using common avionics abbreviations and acronyms relevant to aircraft instrumentation and autopilot systems.

AVT156 - Wiring & Cannon Plug Lab

Overview

Department
Aviation

Course Description
The student will learn methods of construction and repair of avionics system wiring harnesses. Students will learn and perform practice exercises with the most common types of aircraft connectors, tooling, and wiring systems used in today's aircraft.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
2

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will fabricate and repair damage to an aircraft wiring harness

Objective
1.1 Select the appropriate conductor, 1.2 Select the appropriate contacts, 1.3 Prepare the conductor for installation, 1.4 Select the correct tooling, 1.5 Install conductors and terminations, 1.6 Recall the appropriate repair for damage to the harness

AVT166 - Advanced Wiring

Overview

Department
Aviation

Course Description
The Advanced Wiring course will instruct students in the fabrication and installation of electronic wiring interconnect systems. This instruction will include termination of individual stranded wires, shielded wires, twisted shielded pairs, and co-axial cables to cannon plugs, plastic connectors, terminal lugs, and terminal and ground blocks. Through classroom discussion and hands-on training, students will learn handling wire harnesses, ESD protection, proper wire routing, wire protection, electrical bonding, connector buildup, contact insertion, and extraction.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate Proficiency in Wire Termination

Objective
1.1 Students will be able to terminate individual stranded wires, shielded wires, twisted shielded pairs, and co-axial cables to various connection points such as cannon plugs, plastic connectors, terminal lugs, and terminal/ground blocks, adhering to industry standards.

Name
Identify and Apply Proper Wire Harness Fabrication Techniques

Objective
2.1 Students will be able to identify the components of wire harnesses and apply the correct techniques for their assembly, routing, and securing in aerospace environments

Name
Ensure ESD Protection During Wiring Operations

Objective
3.1 Students will explain and implement appropriate Electrostatic Discharge (ESD) protection procedures to safeguard sensitive electronic components during wiring tasks

Name
Apply Best Practices for Wire Routing and Protection

Objective
4.1 Students will demonstrate the ability to route wires effectively, ensuring protection from environmental factors, mechanical stress, and electrical interference, while complying with regulatory guidelines

Name
Perform Electrical Bonding

Objective
5.1 Students will be able to perform proper electrical bonding to ensure safe and reliable electrical connections in aerospace systems

Name
Assemble and Build Connectors

Objective
6.1 Students will demonstrate proficiency in connector buildup, including contact insertion and extraction for both cannon plugs and plastic connectors, ensuring correct installation and secure connections

Name
Analyze and Troubleshoot Wiring Installations

Objective
7.1 Students will develop critical thinking skills for identifying and resolving wiring-related issues, including improper routing, termination errors, and connector failures, using troubleshooting methodologies

Name
Interpret Wiring Diagrams and Schematics

Objective
8.1 Students will interpret and apply complex wiring diagrams and schematics to correctly assemble and install wiring interconnect systems in aerospace applications

Name
Comply with Safety and Industry Standards

Objective
9.1 Students will follow established safety protocols and comply with relevant industry standards, including those for wire fabrication, installation, and ESD protection, to ensure safe and efficient practices in the workplace

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- AVT156 - Wiring & Cannon Plug Lab

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- ELT127 - Wiring & Cannon Plug Lab (Inactive)

AVT175 - Troubleshooting Essentials

Overview

Department
Aviation

Course Description
The course emphasizes diagnostic procedures, system analysis, and the use of advanced troubleshooting tools and techniques. Through hands-on labs and real-world scenarios, students will develop proficiency in identifying faults, interpreting wiring diagrams, utilizing test equipment, and applying logical reasoning to solve problems efficiently. This course prepares students to handle both common and complex avionics issues in modern aircraft, enhancing their critical thinking and decision-making abilities.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Analyze and interpret technical documentation such as wiring diagrams, schematics, and system manuals to identify potential failure points in avionics systems

Name
Apply systematic troubleshooting techniques to diagnose faults in aircraft electrical, electronic, and avionics systems

Name
Utilize diagnostic tools and equipment such as multimeters, oscilloscopes, and specialized avionics testing devices to test and verify system functionality

Name
Develop logical troubleshooting plans for both common and complex aircraft problems, ensuring a structured approach to fault resolution

Name
Identify faulty components while adhering to industry standards and safety regulations

Name
Demonstrate effective problem-solving and critical thinking when addressing time-sensitive aircraft system issues

Name
Communicate technical findings effectively with team members, engineers, and customers, ensuring clear documentation and resolution of system malfunctions

AVT185 - UAS Operations

Overview

Department
Aviation

Course Description
This course is an introduction to small unmanned aircraft systems (UAS) including knowledge areas covered on the airman knowledge test for a Remote Pilot Certificate with a Small Unmanned Aircraft Systems Rating. Successful completion will prepare the student for the FAA Part 107 Remote Pilot Certificate.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Apply regulations relating to small unmanned aircraft system rating privileges, limitations, and flight operation

Name
Demonstrate an understanding of airspace classification, operating requirements, and flight restrictions affecting small unmanned aircraft operation

Name
Demonstrate an understanding of aviation weather sources and effects of weather on small unmanned aircraft performance

Name
Demonstrate an understanding of small unmanned aircraft loading

Name
Demonstrate an understanding of emergency procedures

Name
Demonstrate an understanding of crew resource management

Name
Demonstrate an understanding of radio communication procedures

Name
Demonstrate the ability to determining the performance of small unmanned aircraft

Name
Demonstrate an understanding of physiological effects of drugs and alcohol

Name
Demonstrate an understanding of aeronautical decision-making and judgment

Name
Demonstrate an understanding of airport operations

Name
Demonstrate an understanding of aircraft maintenance and pre-flight inspection procedures

AVT195 - Soldering

Overview

Department
Aviation

Course Description
In this course, students learn the basic concepts, tools, materials, processes, and skills necessary for hand soldering through-hole and surface-mount chip components.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Develop and implement a safety action plan when soldering, including safety checks and protocols

Name
Demonstrate proper usage and handling of each type of tool and equipment in a safe and effective manner

Name
Develop proper soldering techniques for through-hole components

Name
Develop proper soldering techniques for surface mounted components

Name
Understand the J-standard of soldering

AVT210 - Communication, Navigation & Surveillance Systems I

Overview

Department
Aviation

Course Description
This course is the first of two courses which study the electrical and electronic characteristics of typical aircraft electrical instrument systems, communications systems and navigation systems. Students will learn the primary system characteristics and interconnection requirements of typical avionics systems. Students will learn about radio operation and communication theory, VOR, ADF, ELT and other navigation systems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
120

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Identify and Describe Avionics System Components

Objective
1.1 Students will be able to identify and describe the key components and characteristics of typical aircraft electrical instrument systems, communications systems, and navigation systems

Name
Explain Radio Operation and Communication Theory

Objective
2.1 Students will demonstrate an understanding of basic radio operation, including the underlying communication theory that supports aviation communication systems

Name
Analyze the Functions of Communication Systems

Objective
3.1 Students will analyze the functionality of aviation communication systems, such as Very High Frequency (VHF) radio, and evaluate how these systems contribute to safe and effective aircraft operations

Name
Interpret the Operation of Navigation Systems

Objective
4.1 Students will interpret the operational principles of navigation systems, including VHF Omnidirectional Range (VOR), Automatic Direction Finder (ADF), and Emergency Locator Transmitter (ELT)

Name
Assess System Interconnection Requirements

Objective
5.1 Students will assess the interconnection requirements between avionics systems, identifying how different systems integrate and communicate within an aircraft's electrical framework

Name
Apply Knowledge to Real-World Avionics Scenarios

Objective
6.1 Students will apply theoretical knowledge to real-world scenarios, effectively simulating the operation and troubleshooting of avionics systems in practical laboratory settings

Name
Demonstrate Safe Practices in Avionics Systems Handling

Objective
7.1 Students will demonstrate the ability to work with avionics systems safely and follow best practices for handling and maintaining communication and navigation equipment

AVT220 - Communication, Navigation & Surveillance Systems II

Overview

Department
Aviation

Course Description
This course is the second of two courses which study the electrical and electronic characteristics of typical aircraft electrical instrument systems, communications systems and navigation systems. Students will learn the primary system characteristics and interconnection requirements of typical avionics systems. Students will learn about DME, ILS, MLS and other forms of navigation and surveillance systems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Identify Avionics System Components

Objective
1.1 Demonstrate understanding of the electrical and electronic characteristics of typical aircraft electrical instrument systems, communications systems, and navigation systems

Name
Describe Interconnection Requirements

Objective
2.1 Explain the interconnection requirements of avionics systems and how these systems are integrated into aircraft platforms

Name
Analyze Navigation Systems

Objective
3.1 Describe the operational principles of Distance Measuring Equipment (DME), Instrument Landing Systems (ILS), and other advanced navigation systems commonly used in aviation

Name
Evaluate Communication and Surveillance Systems

Objective
4.1 Analyze and troubleshoot communication and surveillance systems, identifying their primary characteristics and operational requirements

Name
Interpret System Diagrams and Schematics

Objective
5.1 Accurately interpret and analyze avionics wiring diagrams and schematics to understand the interconnection between communication, navigation, and surveillance systems

Name
Apply Industry Standards

Objective
6.1 Demonstrate knowledge of relevant industry standards and best practices for maintaining and servicing avionics communication and navigation systems

Name
Perform Basic Testing Procedures

Objective
7.1 Conduct testing procedures for DME, ILS, and other navigation and surveillance systems using appropriate equipment and methodologies

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVT210

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVT210 - Communication, Navigation & Surveillance Systems I

AVT230 - Avionics Systems & Troubleshooting

Overview

Department
Aviation

Course Description
This course introduces the student to avionics testing and troubleshooting. First, students will study the troubleshooting theory of VHF COM, VHF NAV, ILS, Marker Beacon, DME, Transponder, and Pitot-Static systems. Further study of complex wiring diagrams will help the student relate the theoretical to the practical. Then, in the lab portion of this course, the student will operate the most common avionics test equipment: and will learn to perform standard functional tests: VHF COM, VHF NAV, ILS, Marker Beacon, Transponder, DME, SWR, and operation of a Time Domain Reflectometer. Troubleshooting common avionics problems will also be introduced as students troubleshoot system faults on avionics system trainers and various aircraft.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
120

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will understand the functions of the Aeroflex IFR-4000 COM/NAV test set

Objective
1.1 Explain the purpose of the IFR-4000, 1.2 List the available operational modes of the IFR-4000, 1.3 Explain the function of each of the function keys, 1.4 Describe how each function key modifies the test signal, 1.5 Explain the sequence of each test and expected results

Name
The student will understand the functions of the Aeroflex IFR-6000 pulse test set

Objective
2.1 Explain the purpose of the IFR-6000, 2.2 List the available operational modes of the IFR-6000, 2.3 Explain the function of each of the function keys, 2.4 Describe how each function key modifies the test signal, 2.5 Explain the sequence of each test and expected results

Name
The student will understand the operation of the IFR-600 pulse test set

Objective
3.1 Explain the purpose of the IFR-600, 3.2 List the available operational modes of the IFR-600, 3.3 Explain the function of each of the controls, 3.4 Describe how each control modifies the test signal, 3.5 Explain the sequence of each test and expected results

Name
The student will understand the operation of the Time Domain Reflectometer (TDR)

Objective
4.1 Explain the concept of TDR testing, 4.2 Describe how to set up the TDR, 4.3 Explain the term ‘velocity factor’, 4.4 Explain how the TDR measures fault distance, 4.5 Explain how the TDR responds to changes in line impedance , 4.6 Describe how to interpret the results display

Name
The student will understand the operation of the Barfield pitot-static tester

Objective
5.1 Explain the operation of the altimeter, vertical speed instruments, 5.2 Explain the connection of the pitot tube and static ports, 5.3 Explain how to pitot-static test the primary instruments, 5.4 Explain how to pitot-static test the Mode C transponder output

Name
The student will understand the operation of the precision milli-ohmmeter for bonding

Objective
6.1 Explain the term ‘bonding’, 6.2 Explain the requirement for bonding of antennas and component mounts, 6.3 Explain why bonding checks are required for composite aircraft , 6.4 Describe how to perform a bond test on an antenna, 6.5 State the test limits for an antenna bond test

Name
The student will understand methods of tracing wiring through a wiring diagram

Objective
7.1 Explain the GAMA/ATA chapter codes system, 7.2 Describe how a wiring diagram is broken up by chapter codes, 7.3 Explain the term ‘off page reference’, 7.4 Describe two methods of wire coding, 7.5 Explain how wire segments are coded, 7.6 Create a simplified system wiring diagram for a fault given a multi-sheet wiring diagram

Name
The student will be able to operate the Aeroflex IFR-4000 COM/NAV test set

Objective
8.1 Demonstrate the setup of the IFR-4000, 8.2 Perform a COM ramp test using a IFR-4000, 8.3 Perform a VOR ramp test using a IFR-4000, 8.4 Perform a LOC ramp test using a IFR-4000, 8.5 Perform a Glide Slope ramp test using a IFR-4000, 8.6 Perform a Marker Beacon ramp test using a IFR-4000

Name
The student will be able to operate the Aeroflex IFR-6000 pulse test set

Objective
9.1 Demonstrate the setup of the IFR-6000, 9.2 Perform a DME ramp test using an IFR-6000, 9.3 Perform a Mode A transponder ramp test using an IFR-6000, 9.4 Perform a Mode C transponder ramp test using an IFR-6000

Name
The student will be able to operate the Time Domain Reflectometer (TDR)

Objective
10.1 Demonstrate the setup of the TDR, 10.2 Determine the velocity factor of a cable using the TDR, 10.3 Demonstrate a method of testing a new cable to determine quality prior to installation, 10.4 Demonstrate a method of testing a transmitter cable and antenna together on an aircraft

Name
The student will be able to operate the Barfield pitot-static tester

Objective
11.1 Demonstrate the initial setup and self test of the Barfield, 11.2 Demonstrate the connection of the Barfield for testing, 11.3 Demonstrate setting the test parameters on the Barfield, 11.4 Perform a leak test using the Barfield, 11.5 Demonstrate the safe conclusion of a Barfield test

Name
The student will be able to operate the precision milli-ohmmeter

Objective
12.1 Demonstrate the initial setup of the precision milli-ohmmeter, 12.2 Perform an antenna bonding test, 12.3 Perform a ground stud bonding test, 12.4 Perform a component rack mount bonding test

AVT240 - Aircraft and Electronics for NCATT Applications

Overview

Department
Aviation

Course Description
This class helps student increase the knowledge and skills required to troubleshoot and repair practical electronics projects and prepares the student to be successful on the avionics primary certification test given by the National Center for Aerospace and Transportation Technologies.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to successfully complete the avionics primary certification test given by the National Center for Aerospace and Transportation Technologies

Objective
1.1. Identify basic facts and terminology related to direct current, 1.2. Identify basic facts and terminology related to direct current, 1.3. Identify the relationship of basic facts and state general principles about basic circuit theory and operation 1.4. Describe the performance of basic circuit troubleshooting 1.5. Identify the relationship of basic facts and state general principles about basic circuit calculations 1.6. Describe the performance of basic DC/AC circuit measurements 1.7. Identify basic facts and terminology related to resistor color codes & values 1.8. Describe the performance of basic resistor fault isolation 1.9. Identify the relationship of basic facts and state general principles about inductors 1.10. Identify the relationship of basic facts and state general principles about capacitors 1.11. Describe the performance of basic capacitor fault isolation 1.12. Identify the relationship of basic facts and state general principles about transformers 1.13. Describe the performance of basic transformer fault isolation 1.14. Identify the relationship of basic facts and state general principles about analog circuits, devices and switches 1.15. Identify the relationship of basic facts and state general principles about power supply circuits and rectifiers 1.16. Identify basic facts and terminology related to power supply circuits and filters 1.17. Identify basic facts and terminology related to frequency sensitive filters 1.18. Identify basic facts and terminology related to wave generation circuits 1.19. Identify the relationship of basic facts and state general principles about limiter circuits 1.20. Identify the relationship of basic facts and state general principles about digital numbering systems 1.21. Identify the relationship of basic facts and state general principles about digital logic functions 1.22. Identify basic facts and terminology related to working hazards and safety practices 1.23. Identify basic facts and terminology related to hazardous materials handling 1.24. Identify the relationship of basic facts and state general principles FOD prevention 1.25. Identify basic facts and terminology related to technical publications 1.26. Describe the characteristics and proper use of common tools 1.27. Identify basic facts and terminology related to handling electrostatic devices 1.28. Define the nomenclature terms for the performance task Use of Safety Devices 1.29. Identify basic facts and terminology related to aircraft wiring 1.30. State the operating principle for the performance task Perform Wire Maintenance 1.31. State the task procedures and list step-by-step procedures for the performance task Use Test Equipment 1.32. Identify basic facts and terminology related to aircraft structures 1.33. Identify basic facts and terminology related to aircraft handling and safety

BAF103 - Finance

Overview

Department
Professional Studies

Course Description
This course provides an introduction to financial markets, institutions and management in contemporary society. Emphasis is placed on developing an understanding of the financial markets in which funds are traded, the financial institutions participating in facilitating the trade of such funds, and the financial principles and concepts behind sound financial management. Topics include financial systems of the United States, business financial management, and financing other sectors of the economy.Prerequisite: Minimum grade of “C” or better in ACC 105 Fundamentals of Accounting and ECO 105 Principles of Macroeconomics

Academic Level (Course Level)
Undergraduate

Instructional Methods
Hybrid

Effective Start Term
Spring 2014

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to describe the financial system of the United States and the Federals Reserves impact on financial activities

Objective
Define finance', Define financial functions in our economy', Discuss the development of financial institutions and intermediaries in our society', Describe the monetary system of the United States', Describe the structure and operation of the banking system in the United States', Describe the Federal Reserve system of the United States', Discuss the savings and investment process in our economy

Name
The student will be able to discuss and utilize financial concepts and demonstrate the ability to make effective financial decisions

Objective
Define business financial management functions', Discuss the concepts and principles behind financial planning and working capital management', Define shortterm and longterm sources of business financing', Discuss the concept of the time value of money', Discuss the concepts and principles behind fixed asset management', Discuss the concepts and principles behind longterm debt and equity financing', Define markets for longterm business funds

Name
The student will be able to discuss the various ways used to secure public finance and discuss the impact of each on business activity

Objective
Discuss financing concepts and principles for other sectors of the economy eg government financing and consumer financing

Requirements

Simple Requirements

A minimum grade of 'C' in Course ACC105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ACC105 - Fundamentals of Accounting

A minimum grade of 'C' in Course ECO105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ECO105 - Principles of Macroeconomics

BAF105 - Introduction to US Financial System

Overview

Department
Professional Studies

Course Description
This course emphasizes the relevance of monetary instruments, intermediaries and the role of the central banks as they impact local, state, national and international economics. Topics include history and evolution of financial institutions; monetary instruments and flow; and central banking, operation and policies.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Hybrid

Effective Start Term
Fall 2023

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Upon completion of this unit, students will be able to describe the operation of the United States financial system

Objective
Discuss the 5 parts of the financial system', Describe the 5 core principles of money and banking', Describe the three functions of money', Discuss the structure of financial markets', Describe the varying types of financial institutions found within the United States', Discuss the differences between underlying and derivative financial instruments

Name
Upon completion of this unit, students will be able to calculate the value of assets over a variety of time horizons and be able to discuss the various risks associated with holding assets

Objective
Calculate future value using compounding interest', Calculate the present value of an investment', Calculate the discounted value of an asset', Discuss the difference between real and nominal interest rates', Discuss risk aversion risk premium and the risk return tradeoff', Describe the different types of bonds', Describe the basic function of financial markets', List the four classifications of financial markets', Explain the four characteristics of financial markets', Identify three major categories of financial intermediaries', Explain why and how the government regulates financial markets', List three methods of measuring interest rates', Explain the purpose of a banks balance sheet', List some assets and liabilities that make up a bank balance sheet', Name several methods that can be used by banks to manage their assets and liabilities profitably', Differentiate among financial institutions handling of transaction accounts ie thrifts banks and credit unions', Describe the purpose and general structure of pension plans', List the types and purpose of finance companies mutual funds investment brokers and insurance companies', Explain how technological changes have resulted in financial innovations', Summarize financial services regulations during the past 20 years and the impact of these regulations on the financial services industry

Name
The student will be able to discuss the role of the federal reserve in controlling the money supply and their effect on the macro economy

Objective
Explain how and why the Federal Reserve System was established', Describe the structure of the Federal Reserve System', List ways the Federal Reserve controls the money supply', Explain why the Board of Governors and the chairman of the Federal Reserve are so powerful', Describe the roles of the central bank depository institutions depositors and borrowers in the money supply process', Explain the impact of changes in the Federal Reserve balance sheet on the money supply', Explain the impact of the behavior of banks depositors and borrowers on the money supply process

BAF121 - Introduction to Bank Management

Overview

Department
Professional Studies

Course Description
Emphasizes the relevance of banks and the economy, bank regulations and policy, bank organizational structure, bank management, the financial institutions' environment, bank deregulation, and asset/liability management.Prerequisite: BAF 103 Finance and BAF 105 Introduction to US Financial System

Academic Level (Course Level)
Undergraduate

Instructional Methods
Hybrid

Effective Start Term
Fall 2016

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the role of banking and its affects within the local economy

Objective
Recognize the roles of the financial system', Identify the leading competitors of banks', Identify common Products and Services offer by financial institutions', Differentiate the impact of federal and state regulations on financial organizations', Interpret banking organizations structure', Discuss the requirements for opening new bank organizations', Explain the importance of customer relationships', Identify the importance of globalization', Recognizes trends in financial organizations', Calculate expected rate of return when establishing new locations

Name
The student will be able to describe the different types of risks faced by banks and discuss ways to mitigate those risks

Objective
Recognize the general financial statements of banks', Compare and contrast the use of internal auditors and external auditors', Identify assets of the banking firm', Calculate key profitability ratios', Define and measure risk in banking and financial services

Name
The student will be able to discuss the role of securitization in limiting bank risk

Objective
Identify asset management strategies liability management strategies and funds management strategies', Recognize the forces measurement and components of interest rates', Explain the types of securities for both loans and other assets', Recognize regulators concerns about securitization and how it can affect a banks yearly exam', Identify types of credit derivatives and how to reduce credit risk on the balance sheet

Name
The student will be able to discuss strategies to effectively manage bank liquidity

Objective
Identify investment instruments used by financial firms', Describe the key factors affecting financial firms choice of investment securities', Explain a financial institutions need for liquidity', Describe different management strategies when dealing with liquidity', Distinguish the level of legal reserves

Name
The student will be able to discuss the role of non-deposit funds and their impact on a banks financial statement

Objective
Identify types of deposits offered by banks and other depository institutions', Recognize types of nondeposit funds', Define the risk factors to investing in nondeposit funds', Recognize types of fee income', Explain types of insurance products sold by financial institutions', Identify capital and its importance in daily operations', Recognize capital requirements set by government regulations', Describe the risk associated with capital

Name
The student will be able to describe how to write and administer profitable loans

Objective
Describe the importance of implementing a lending policy', Recognize the importance of following lending regulations', Identify a basic loan agreement', Recognize different types of loans', Compare and contrast the different types of credit scoring', Explain how expectations for employees are increasing

Name
The student will be able to discuss merger and acquisitions within the banking industry

Objective
Describe the motives behind financial institutions mergers and acquisitions', Recognize regulatory rules for bank mergers in the United States', Explain consumer reinvestment act requirements for mergers acquisitions and implementing new bank locations

Requirements

Simple Requirements

A minimum grade of 'C' in Course BAF103

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- BAF103 - Finance

A minimum grade of 'C' in Course BAF105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- BAF105 - Introduction to US Financial System

BIO100 - Biology Review

Overview

Department
General Education

Course Description
This course is designed to help the students increase their knowledge concerning basic biological concepts. It is not intended to replace BIO110 Principles of Biology. Recommended for students planning to take BIO150 Human Anatomy & Physiology or BIO160 Microbiology who have not had a recent life science course, or students wishing to prepare for BIO110 Principles of Biology. This course is graded on a pass/fail scale so students will not be receiving a grade. Students must score 70% of the available points to pass the class.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2015

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will have an understanding of chemistry as it relates to living systems

Objective
Diagram and label basic atomic structure', Use a periodic table to determine protons neutrons and electrons', Distinguish between neutral atoms and ions regarding electron number', Explain the two major types of bonding covalent and ionic', Define and identify acids and basis', Use a pH scale to classify acids and basis', Distinguish between organic and inorganic compounds', Give and briefly define the four major classes of organic compounds

Name
The student will be able to explain the basic functions of the cell

Objective
Identify and give the functions of the cell organelles', Distinguish between prokaryotic and eukaryotic cells', Explain the movement of water into and out of a cell using the terms isotonic', hypotonic hypertonic and osmosis', Define and give an example of diffusion', Distinguish between active transport and passive transport', Diagram the fluidmosaic model of the plasma membrane

Name
The student will understand the cell processes involved in bioenergetics and cell division

Objective
Explain the action of enzymes using the terms substrate active site enzymesubstrate', complex reactants and products', Give the importance of enzymes in the process of metabolism', Distinguish between anabolism and catabolism', List the chemical equation for cellular respiration and explain its importance', Explain the importance of ATP in living systems', Identify the stages of mitosis', Explain the importance of mitosis and meiosis', Compare and contrast the processes of mitosis and meiosis

Name
The student will understand the relationship between DNA and inheritance

Objective
Diagram and label a portion of DNA', Explain the relationship between a chromosome gene and DNA', Distinguish between DNA and RNA', Diagram and explain the importance of DNA replication', Explain the steps involved in transcription translation and protein synthesis', Diagram a genetic cross using a Punnett square', Give and briefly define the principles of genetics outlined by Gregor Mendel', Apply the principles of genetics to human reproduction and development

BIO110 - Principles of Biology

Overview

Department
General Education

Course Description
An introduction to fundamental biological concepts that includes molecular biology, cellular structure and function, human biology, and ecology. Students will have an understanding of the nature of science, levels of organization, bioenergetics, reproduction, inheritance, and the mechanisms of change. Laboratory stresses the process of scientific investigation and observation of biological processes.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Demonstration an understanding of the nature of science

Objective
Scientific processes', Scientific methods

Name
Demonstrate an understanding of the levels of organization and emergent properties of life

Objective
Chemical', Cellular', Organorgan system', Organismal', Ecological

Name
Demonstrate an understanding of bioenergetics

Objective
Enzyme activity', Metabolism', Cellular respirationphotosynthesis

Name
Demonstrate an understanding of the importance of reproduction in maintaining the continuity of life

Objective
Mitosis', Meiosis', Differentiationdevelopment', Diversity of reproductive strategies

Name
Demonstrate an understanding of apply principles of genetics to unity and diversity of life

Objective
Classical genetics', Molecular genetics', DNAreplication expression and regulation

Name
Demonstrate an understanding of discussing evolution as the mechanism of change in biology

Objective
Natural selection', Speciation', Diversity of lifeclassification

Name
Demonstrate an understanding of the principles of ecology

Objective
Ecosystem organization', Ecological interactions', Environmental issues', Human impact on ecological systems

Name
Laboratory topics/skills

Objective
Microscopy', Quantitative measurement skills incorporating the metric system', Analytical and statistical skills including presenting andor interpreting graphs and tables', experience with living organisms in the laboratory andor field setting', Identification and proper use of laboratory equipment

BIO120 - Environmental Biology

Overview

Department
General Education

Course Description
An interdisciplinary study of the environment investigating how nature works and how things are interconnected. Based on an understanding of ecological concepts and principles, students examine lifestyle issues and critically analyze the relationship among population, natural resources, land use, agriculture, biodiversity, industrialization and pollution. Environmental problems are examined from scientific, ethical, economic and sociological perspectives to enable students to understand the relevance of biology to contemporary issues in human society.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Utilize scientific inquiry to make data-informed decisions

Objective
Describe what scientists do and outline the scientific methods', Explain tropical deforestation and the causes and consequences of biodiversity losses', Explain global warming and its effects and list solutions dealing with the threat of global warming', Explain ozone depletion and solutions for protecting the ozone layer

Name
Explain physical and biological process that shape the earth

Objective
Explain the properties of atoms and ions compounds and matter', Be able to describe connections between climate weather and life', Explain the atmosphere outdoor air pollution indoor air pollution the effects of air pollution on living organisms and materials and solutions for preventing and controlling air pollution', Explain waters importance and unique properties including the supply renewal and use of water resources water resource problems and solutions', List and describe types and sources of water pollution', Describe mineral supplies and environmental impacts soil erosion and solutions for soil conservation', Explain reuse recycling and hazardous waste regulation in the United States', Describe geologic processes', Distinguish between internal and external earth processes', Explain mineral resources and the rock cycle and crustal resources', Distinguish between and list natural hazards

Name
Evaluate interconnections between organisms and the environment

Objective
Describe biomes including deserts and semi deserts grasslands and forests', Distinguish between polar sub polar temperate and tropical climates', Describe life in aquatic environments including the coastal zone coral reefs open sea freshwater lakes freshwater streams and freshwater inland wetlands', Explain changes in populations communities and ecosystems

Name
Examine human interactions and impacts on the environment and natural resources

Objective
Explain the factors affecting human population size including birth and death rate fertility age structure and solutions', Describe urbanization urban growth and population distribution', Describe the urban resource and environmental problems associated with it', Explain urban land use planning control and solutions to making urban areas more livable and sustainable

Name
Discuss policies, ethics, and economics in the environmental decision making

Objective
Explain economic goods resources and systems growth and external costs', Describe politics and environmental policy and antienvironmental groups', Describe human centered environmental worldviews in industrial societies', Describe lifecentered and earthcentered environmental worldviews', Describe food production world food problems methods of increasing world food production agricultural policy food aid and land reform', Distinguish between pesticide types and uses and the regulation of pesticides in the United States Describe other ways to control pests', Explain managing and sustaining forests rangelands national parks biodiversity sanctuaries and public lands in the United States', Describe wildlife management protection of wild species from extinction and fishery management

Name
Propose components of a sustainable future

Objective
List and describe energy resources and understand the importance of improving energy efficiency', Compare and contrast solar energy moving water heat stored in water wind and biomass for producing heat and electricity', Distinguish between oil natural gas coal and nuclear energy as nonrenewable energy resources', Describe a sustainable system and how it survives and functions over some specified time', Describe a sustainable society and how it manages its economy and population size', Explain Growth and the Wealth gap including linear and exponential growth human population growth and economic growth', Distinguish between nonrenewable resources and renewable resources and demonstrate the connections between renewable resources and the Tragedy of thecommons', Describe pollution and its sources the effects of pollution methods of dealing with pollution andprevention and clean up', List environmental resource problems and their root causes', Give a brief history of resource use and conservation and cultural change', Distinguish between hunting and gathering societies agricultural societies and industrial societies', Explain Resource conservation and environmental protection in the United States

BIO125 - Science Prospectus

Overview

Department
General Education

Course Description
An interdisciplinary study of how science influences all aspects of human life. Students will examine lifestyle issues and critically analyze the relationship among population, natural resources, land use, agriculture, biodiversity, industrialization and pollution and our role in these processes. Everything from food science to astronomy will be explored. Topics will be centered around problem solving and discussions using scientific data and critical thinking skills.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2020

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate an understanding of the nature of scientific thinking.

Objective
Demonstrate an understanding of the nature of scientific thinking', Utilize scientific inquiry to make datainformed decisions

Name
Explain physical and biological process that shape the universe

Objective
Explain physical and biological process that shape the universe

Name
Evaluate interconnections between food and human health

Objective
Evaluate interconnections between food and human health', Examine human interactions and impacts on the environment and natural resources', Discuss policies ethics and economics in the environmental decision making

Name
Demonstrate an understanding of the importance of maintaining the continuity of life

Objective
Demonstrate an understanding of the importance of maintaining the continuity of life

BIO130 - Biology I

Overview

Department
General Education

Course Description
A study of the fundamental concepts in cellular and molecular biology, that lead to further studies in the diversity of life. Emphasis in lab is placed on the biological functions that define life, including basic biochemistry, cell and membrane functions, bioenergetics, reproduction and genetics, and phylogeny and evolution.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate an understanding of the foundations of biology

Objective
Basic concepts of biology', Scientific Method

Name
Demonstrate an understanding of cellular reproduction

Objective
Binary fission', Mitosis', Meiosis

Name
Demonstrate an understanding of the levels of organization and emergent properties of life

Objective
Basic biological chemistry', Structure and functions of biological molecules', Cellular structure and functions

Name
Design and perform experiments in a laboratory setting

Objective
Microscopy', Quantitative measurement skills incorporating the metric system', Analytical and statistical skills including presenting and/or interpreting graphs and tables', Experience with living organisms in the laboratory

Name
Demonstrate an understanding of bioenergetics

Objective
Enzyme activity', Cellular respiration', Photosynthesis

Name
Apply the basic principles of mendilan genetics and molecular genetics and relate these to the basic principles of natural selection and evolution.

Objective
Classical genetics', Molecular genetics

Requirements

Simple Requirements

A minimum grade of 'C' in Course BIO110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- BIO110 - Principles of Biology

BIO135 - Biology II

Overview

Department
General Education

Course Description
A study of the fundamental concepts of biology as they apply to levels of organization, from the bacteria through the vertebrates, and ecosystems. Lecture emphasis is on the organization, physiology, and diversity of life as studied through the kingdoms. Laboratory work emphasizes the structural comparison of major kingdoms and phyla.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Summarize and explain the processes and mechanisms of evolution

Objective
Explain the difference between microevolution and macroevolution', Apply the HardWeinberg Principles', Explain the concept of descent with modification', Understand the evolution of populations', Understand the origin and evolution of vertebrates

Name
Interpret organismal diversity using phylogenetic hypotheses

Objective
Explain phylogeny and the tree of life', Explore the phylogenetic diversity of protists plants animals fungi and prokaryotes

Name
Relate structure to function in organisms

Objective
Outline resource acquisition and transport in living organisms', Describe reproductive strategies in the living organisms', Understand immune endocrine and nervous systems in animals

Name
Explain how organisms interact with their environments

Objective
Summarize population and community ecology', Understand ecosystem dynamics', Evaluate restoration ecology', Discuss how the Laws of thermodynamics apply to an ecosystem', Recognize the human impact upon the biosphere

Name
Design and perform experiments incorporating organisms in a laboratory setting

Objective
Develop observational skills from the microscopic to the macroscopic and ecological levels', Apply quantitative measurement skills incorporating the metric system', Interpret and communicate data using appropriate analytical and statistical skills

Requirements

Simple Requirements

A minimum grade of 'C' in Course BIO130

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- BIO130 - Biology I

BIO145 - Human Anatomy & Physiology I

Overview

Department
General Education

Course Description
This course represents the first of an eight (8) credit hour Anatomy & Physiology course and is designed to provide students with a thorough study of the anatomy & physiology of the human body. The student is expected to enroll in the second half of the course (BIO 146 Human Anatomy & Physiology II) during the same academic year, and both courses (BIO 145 Human Anatomy & Physiology I and BIO 146 Human Anatomy & Physiology II) must be taken to be equivalent to BIO 150 Human Anatomy & Physiology. Lecture and lab studies will include: organization of the body; cells; tissues; membranes and glands; skeletal; muscular; nervous; sensory and endocrine system.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Body Plan and Organization

Objective
Anatomical Position', Body planes sections', Body cavitiesand regions', Directional terms', Basic terminology

Name
Homeostasis

Objective
General types of homeostatic mechanisms', Examples of homeostatic mechanisms', Application of homeostatic mechanisms', Predictions related to homeostatic imbalance including disease statesand disorders

Name
Chemistry and Cell Biology Review

Objective
Atomsand molecules', Chemical bonding', Inorganic compoundssolutions including the concept of pH', Organic compounds', Energy transfer using ATP', Intracellular organization of nucleus and cytoplasm', Membrane structure and function', Mechanisms for movement of materials across cellular membranes', Organelles', Protein synthesis', Cellular respiration introduction', Somatic cell division mitosisand cytokinesis', Reproductive cell division', Application of homeostatic mechanisms', Predictions related to homeostatic imbalance including disease states and disorders

Name
Histology

Objective
Overview of histologyand tissue types', Microscopic anatomy locationand functional roles of epithelial connective muscular and nervous tissues', Membranes mucous serous cutaneousand synovial glands exocrineand endocrine tissue injuryand repair

Name
Integumentary System

Objective
General functions of the skinand the subcutaneous layer', Grossand microscopic anatomy of the skin', Roles of the specific tissue layers of the skinand subcutaneous layer', Anatomyand functional roles of accessory structures', Application of homeostatic mechanisms

Name
Skeletal System

Objective
General functions of boneand the skeletal system', Structural components - microscopic anatomy', Structural components - gross anatomy', Physiology of embryonic bone formation ossification osteogenesis', Physiology of bone growth repairand remodeling', Organization of the skeletal system gross anatomy of bones', Classification structureand function of joints articulations', Application of homeostatic mechanisms', Predictions related to homeostatic imbalance including disease statesand disorders

Name
Muscular System

Objective
General functions of muscle tissue', Identification general locationand comparative characteristics of skeletal smoothand cardiac muscle tissue', Detailed grossand microscopic anatomy of skeletal muscle', Physiology of skeletal muscle contraction', Skeletal muscle metabolism', Principlesand types of whole muscle contraction nomenclature of skeletal muscles', Locationand function of skeletal muscles', Group actions of skeletal muscles', Lever systems', Application of homeostatic mechanisms Predictions related to homeostatic imbalance including disease statesand disorders

Name
Nervous System

Objective
General functions of the nervous system', Organization of the nervous system from both anatomicaland functional perspectives', Grossand microscopic anatomy of the nerve tissue', Neurophysiology including mechanism of resting membrane potential production of action potentialsand impulse transmission', Neurotransmitters andtheir roles in synaptic transmission', Sensory receptorsand their roles', Division originand function of component parts of the brain', Protective roles of the cranial bones meningesand cerebrospinal fluid', Structureand function of cranial nerves', Anatomy of the spinal cordand spinal nerves', Sensory receptorsand their roles', Division originand function of component parts of the brain', Protective roles of the cranial bones meningesand cerebrospinal fluid', Structureand function of cranial nerves', Anatomy of the spinal cordand spinal nerves', Predictions related to homeostatic imbalance including disease statesand disorders

Name
Special Senses

Objective
Grossand microscopic anatomy of the eyeand ear', Roles of specific tissues of the eye in vision', Roles of specific tissues of the ear in hearingand equilibrium', Olfactory receptorsand their role in smell', Gustatory receptorsand their role in taste', General grossand microscopic anatomy of hearingand accessory structures of the ear', Roles of specific tissues of the ear in hearing', Roles of the accessory structures', Role of the ear in equilibrium', Application of homeostatic mechanisms', Predictions related to homeostatic imbalance including disease statesand disorders

Name
Endocrine System

Objective
General functions of the endocrine system', Chemical classification of hormonesand mechanism of hormone actions at receptors', Control of hormone secretion', Control by the hypothalamus andpituitary gland', Identity source secretory controland functional roles of the major hormones produced by the body', Local hormones paracrinesand autocrinesand growth factors', Hormonal response to stress', Application of homeostatic mechanisms', Predictions related to homeostatic imbalance including disease statesand disorders

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Earn a minimum grade (UG) of S in the following:

- BIO100 - Biology Review

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- BIO110 - Principles of Biology

BIO146 - Human Anatomy & Physiology II

Overview

Department
General Education

Course Description
This course represents the second of an eight (8) credit hour Anatomy and Physiology course and is designed to provide students with a thorough study of the anatomy and physiology of the human body. The student is expected to enroll in the first half of the course (BIO 145 Human Anatomy & Physiology I) during the same academic year, and both courses BIO 145 Human Anatomy & Physiology I and BIO 146 Human Anatomy & Physiology II must be taken to be equivalent to BIO 150 Human Anatomy & Physiology. Lecture and lab studies will include; the cardiovascular system, lymphatic system, respiratory system, digestive system, metabolism, urinary system, electrolyte and acid-base balance and reproductive systems.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Cardiovascular System

Objective
General functions of the cardiovascular system', Composition of blood plasma identity microscopic anatomy numbers formationand functional roles of the', Formed elements of the blood', Hemostasis including coagulation of the blood', ABOand Rh blood grouping', Grossand microscopic anatomy of the heart including the conduction system physiology of cardiac muscle', Contraction blood flow through the heart', Conduction system of the heart the electrocardiogram', Cardiac cycle', Regulation of cardiac output stroke volumeand heart rate', Anatomyand functional roles of the different types of blood vessels', Pattern of blood circulation throughout the body including systemic pulmonary coronary hepatic portaland fetal circulations', Blood pressureand its functional interrelationships with cardiac output peripheral resistanceand hemodynamics', Application of homeostatic mechanisms', Predictions related to homeostatic imbalance including disease statesand disorders

Name
Lymphatic System and Immunity

Objective
General functions of the lymphatic system', Lymphand lymphatic vessels', Lymphatic cells tissuesand organs', Introduction to innate nonspecific defensesand adaptive specific defenses', Innate nonspecific defenses', General functions of the lymphatic system', Lymphand lymphatic vessels', Lymphatic cells tissuesand organs', Introduction to innate nonspecific defensesand adaptive specific defenses', Innate nonspecific defenses', Application of homeostatic mechanisms', Predictions related to homeostatic imbalance including disease statesand disorders

Name
Respiratory System

Objective
General functions of the respiratory system', Grossand microscopic anatomy of the respiratory tractand related organs', Mechanisms of pulmonary ventilation pulmonary air volumesand capacities', Mechanisms of gas exchange in lungsand tissues', Mechanisms of gas transport in the blood', Control of pulmonary ventilation', Application of homeostatic mechanisms', Predictions related to homeostatic imbalance including disease statesand Disorders

Name
Digestive System

Objective
General functions of the digestive system', Grossand microscopic anatomy of the alimentary canal', Grossand microscopic anatomy of the accessory glandsand organs', Peritoneumand mesenteries', Motility in the alimentary canal', Mechanicaland chemical processes of digestion', Processes of absorption', Hormonaland neural regulation of digestive processes', Application of homeostatic mechanisms', Predictions related to homeostatic imbalance including disease statesand disorders

Name
Metabolism

Objective
Nutrition', Introduction to metabolism', Cellular respirationand the catabolism anabolism of carbohydrates lipidsand proteins', Metabolic roles of body organs', Energy balanceand thermoregulation', Application of homeostatic mechanisms', Predictions related to homeostatic imbalance including disease statesand disorders

Name
Urinary System

Objective
General functions of the urinary system', Grossand microscopic anatomy of the urinary tract including detailed histology of the nephron', Functional processes of urine formation including filtration reabsorption secretionand excretion', Factors regulatingand altering urine volumeand composition including the renin angiotensin system and the roles of aldosterone andantidiuretic hormone', Endocrine activities of the kidneys such as vitamin D activationand secretion of erythropoietin', Innervationand control of the urinary bladder

Name
Fluid/Electrolyte and Acid/Base Balance

Objective
Regulation of water intakeand output', Description of the major fluid compartments including intracellular extracellular intravascularand interstitial', Volumeand chemical composition of major compartment fluids', Movements between the major fluid compartments causal forces volumesand electrolyte balance', Regulation of water intakeand output', Description of the major fluid compartments including intracellular extracellular intravascularand interstitial', Volumeand chemical composition of major compartment fluids', Movements between the major fluid compartments causal forces volumesand electrolyte balance

Name
Reproductive Systems

Objective
General functions of the maleand female reproductive systems', Grossand microscopic anatomy of the maleand female reproductive systems', Gametogenesis', Specific roles of the female reproductive organs', Specific roles of the female reproductive organs regulation of reproductive functions', Conception pregnancyand embryologicaland fetal development', Parturitionand labor', Mammary gland anatomyand physiology

Requirements

Simple Requirements

A minimum grade of 'C' in Course BIO145

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- BIO145 - Human Anatomy & Physiology I

BIO150 - Human Anatomy & Physiology

Overview

Department
General Education

Course Description
A detailed study of the structure and function of the human body. Laboratory work includes tissue examination, basic physiological experiments and structural identification of all organ systems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Body Plan & Organization/Upon completion of this section the student will be able to demonstrate measurable understanding of descriptiveanatomical and directional terminology including the following topics: anatomical position, body planes, sections, body cavities & regions, directional terms, basic terminology, levels of organization, survey of body systems.

Name
Homeostasis/Upon completion of this section the student will be able to demonstrate measurable understanding of the basic concept of homeostasis and how homeostatic mechanisms apply to body systems including the following topics: general types of homeostatic mechanisms , examples of homeostatic mechanisms ,application of homeostatic mechanisms, predictions related to homeostatic imbalance, including disease states & disorders

Objective
HomeostasisUpon completion of this section the student will be able to demonstrate measurable understanding of the basic concept of homeostasis and how homeostatic mechanisms apply to body systems including the following topics general types of homeostatic mechanisms examples of homeostatic mechanisms application of homeostatic mechanisms predictions related to homeostatic imbalance including disease states disorders

Name
Chemistry & Cell Biology Review/Upon completion of this section the student will be able to demonstrate measurable understanding of basic chemistry and cellular structures and function, including the following topics: atoms & molecules ,chemical bonding ,inorganic compounds/solutions (including the concept of pH) ,organic compounds ,energy transfer using ATP, intracellular organization of nucleus and cytoplasm, membrane structure & function, mechanisms for movement of materials across cellular membranes , organelles, protein synthesis, cellular respiration (introduction) , somatic cell division (mitosis & cytokinesis), reproductive cell division, application of homeostatic mechanisms ,predictions related to homeostatic imbalance, including disease states and disorders

Objective
Chemistry Cell Biology ReviewUpon completion of this section the student will be able to demonstrate measurable understanding of basic chemistry and cellular structures and function including the following topics atoms molecules chemical bonding inorganic compoundssolutions including the concept of pH organic compounds energy transfer using ATP intracellular organization of nucleus and cytoplasm membrane structure function mechanisms for movement of materials across cellular membranes organelles protein synthesis cellular respiration introduction somatic cell division mitosis cytokinesis reproductive cell division application of homeostatic mechanisms predictions related to homeostatic imbalance including disease states and disorders

Name
Histology/Upon completion of this section the student will be able to demonstrate measurable understanding of the basic tissues of the body, their location and functions, including the following topics: overview of histology & tissue types, microscopic anatomy, location, & functional roles of epithelial, connective, muscular and nervous tissues, membranes (mucous, serous, cutaneous & synovial), glands (exocrine & endocrine), tissue injury & repair

Objective
HistologyUpon completion of this section the student will be able to demonstrate measurable understanding of the basic tissues of the body their location and functions including the following topics overview of histology tissue types microscopic anatomy location functional roles of epithelial connective muscular and nervous tissues membranes mucous serous cutaneous synovial glands exocrine endocrine tissue injury repair

Name
Integumentary System/ Upon completion of this section the student will be able to demonstrate measurable understanding of major gross and microscopic anatomical components of the integumentary system and describe the functions of the system, including the following topics: general functions of the skin & the subcutaneous layer, gross & microscopic anatomy of the skin, roles of the specific tissue layers of the skin & subcutaneous layer, anatomy & functional roles of accessory structures, application of homeostatic mechanisms , predictions related to homeostatic imbalance, including disease states & disorders

Objective
Integumentary System Upon completion of this section the student will be able to demonstrate measurable understanding of major gross and microscopic anatomical components of the integumentary system and describe the functions of the system including the following topics general functions of the skin the subcutaneous layer gross microscopic anatomy of the skin roles of the specific tissue layers of the skin subcutaneous layer anatomy functional roles of accessory structures application of homeostatic mechanisms predictions related to homeostatic imbalance including disease states disorders

Name
Skeletal System/Upon completion of this section the student will be able to demonstrate measurable understanding of major gross and microscopic anatomical components of the skeletal system and explain their functional roles in osteogenesis, repair, and body movement, including the following topics: general functions of bone & the skeletal system, structural components ,microscopic anatomy ,structural components, gross anatomy ,physiology of embryonic bone formation (ossification, osteogenesis, physiology of bone growth, repair & remodeling, organization of the skeletal system - gross anatomy of bones, classification, structure & function of joints (articulations), application of homeostatic mechanisms ,predictions related to homeostatic imbalance, including disease states & disorders

Objective
Skeletal SystemUpon completion of this section the student will be able to demonstrate measurable understanding of major gross and microscopic anatomical components of the skeletal system and explain their functional roles in osteogenesis repair and body movement including the following topics general functions of bone the skeletal system structural components microscopic anatomy structural components gross anatomy physiology of embryonic bone formation ossification osteogenesis physiology of bone growth repair remodeling organization of the skeletal system gross anatomy of bones classification structure function of joints articulations application of homeostatic mechanisms predictions related to homeostatic imbalance including disease states disorders

Name
. Muscular System/Upon completion of this section the student will be able to demonstrate measurable understanding of major gross and microscopic anatomical components of the muscular system and explain their functional roles in body movement, maintenance of posture, and heat production, including the following topics: general functions of muscle tissue , identification, general location, & comparative characteristics of skeletal, smooth, & cardiac muscle tissue, detailed gross & microscopic anatomy of skeletal muscle , physiology of skeletal muscle contraction ,skeletal muscle metabolism, principles & types of whole muscle contraction - nomenclature of skeletal muscles, location & function of skeletal muscles, group actions of skeletal muscles, lever systems, application of homeostatic mechanisms, predictions related to homeostatic imbalance, including disease states & disorders

Objective
Muscular SystemUpon completion of this section the student will be able to demonstrate measurable understanding of major gross and microscopic anatomical components of the muscular system and explain their functional roles in body movement maintenance of posture and heat production including the following topics general functions of muscle tissue identification general location comparative characteristics of skeletal smooth cardiac muscle tissue detailed gross microscopic anatomy of skeletal muscle physiology of skeletal muscle contraction skeletal muscle metabolism principles types of whole muscle contraction nomenclature of skeletal muscles location function of skeletal muscles group actions of skeletal muscles lever systems application of homeostatic mechanisms predictions related to homeostatic imbalance including disease states disorders

Name
Nervous System (part 1) /Upon completion of this section the student will be able to demonstrate measurable understanding of the major gross and microscopic anatomical components of the nervous system and explain their functional roles in communication, control, and integration, including the following topics: general functions of the nervous system, organization of the nervous system from both anatomical & functional perspectives ,gross & microscopic anatomy of the nerve tissue, neurophysiology, including mechanism of resting membrane potential, production of action potentials, & impulse transmission , neurotransmitters & their roles in synaptic transmission , sensory receptors & their roles , division, origin, & function of component parts of the brain - protective roles of the cranial bones, meninges, & cerebrospinal fluid, structure & function of cranial nerves ,anatomy of the spinal cord & spinal nerves

Objective
Nervous System part 1 Upon completion of this section the student will be able to demonstrate measurable understanding of the major gross and microscopic anatomical components of the nervous system and explain their functional roles in communication control and integration including the following topics general functions of the nervous system organization of the nervous system from both anatomical functional perspectives gross microscopic anatomy of the nerve tissue neurophysiology including mechanism of resting membrane potential production of action potentials impulse transmission neurotransmitters their roles in synaptic transmission sensory receptors their roles division origin function of component parts of the brain protective roles of the cranial bones meninges cerebrospinal fluid structure function of cranial nerves anatomy of the spinal cord spinal nerves

Name
Nervous System (part 2)/Upon completion of this section the student will be able to demonstrate measurable understanding of the major gross and microscopic anatomical components of the nervous system and explain their functional roles in communication, control, and integration, including the following topics: reflexes & their roles in nervous system function, physiology of sensory & motor pathways in the brain & spinal cord ,functions of the autonomic nervous system ,comparison of somatic & autonomic nervous systems, application of homeostatic mechanisms, predictions related to homeostatic imbalance, including disease states & disorders

Objective
Nervous System part 2Upon completion of this section the student will be able to demonstrate measurable understanding of the major gross and microscopic anatomical components of the nervous system and explain their functional roles in communication control and integration including the following topics reflexes their roles in nervous system function physiology of sensory motor pathways in the brain spinal cord functions of the autonomic nervous system comparison of somatic autonomic nervous systems application of homeostatic mechanisms predictions related to homeostatic imbalance including disease states disorders

Name
Special Senses (part 1) Upon completion of this section the student will be able to demonstrate measurable understanding of the major gross and microscopic anatomical components of the eye and ear and explain their functional roles in vision, hearing and equilibrium. Students should also be able to identify and locate the receptors responsible for olfaction and gustation and briefly describe the physiology of smell and taste, including the following topics. - gross & microscopic anatomy of the eye & ear - roles of specific tissues of the eye in vision - roles of specific tissues of the ear in hearing & equilibrium - olfactory receptors & their role in smell ,gustatory receptors & their role in taste

Objective
Special Senses part 1 Upon completion of this section the student will be able to demonstrate measurable understanding of the major gross and microscopic anatomical components of the eye and ear and explain their functional roles in vision hearing and equilibrium Students should also be able to identify and locate the receptors responsible for olfaction and gustation and briefly describe the physiology of smell and taste including the following topics gross microscopic anatomy of the eye ear roles of specific tissues of the eye in vision roles of specific tissues of the ear in hearing equilibrium olfactory receptors their role in smell gustatory receptors their role in taste

Name
Special Senses (part 2) Students should also be able to identify and locate the receptors responsible for olfaction and gustation and briefly describe the physiology of smell and taste, including the following topics: general gross & microscopic anatomy of hearing & accessory structures of the ear - roles of specific tissues of the ear in hearing - roles of the accessory structures - role of the ear in equilibrium - application of homeostatic mechanisms - predictions related to homeostatic imbalance, including disease states & disorders

Objective
Special Senses part 2 Students should also be able to identify and locate the receptors responsible for olfaction and gustation and briefly describe the physiology of smell and taste including the following topics general gross microscopic anatomy of hearing accessory structures of the ear roles of specific tissues of the ear in hearing roles of the accessory structures role of the ear in equilibrium application of homeostatic mechanisms predictions related to homeostatic imbalance including disease states disorders

Name
Endocrine System/Upon completion of this section the student will be able to demonstrate measurable understanding of the major gross and microscopic anatomical components of the endocrine system and explain the functional roles of their respective hormones in communication, control, and integration, including the following topics: general functions of the endocrine system ,chemical classification of hormones & mechanism of hormone actions at receptors ,control of hormone secretion ,control by the hypothalamus& pituitary gland, identity, source, secretory control, & functional roles of the major hormones produced by the body, local hormones (paracrines & autocrines) & growth factors - hormonal response to stress, application of homeostatic mechanisms, predictions related to homeostatic imbalance, including disease states & disorders

Objective
Endocrine SystemUpon completion of this section the student will be able to demonstrate measurable understanding of the major gross and microscopic anatomical components of the endocrine system and explain the functional roles of their respective hormones in communication control and integration including the following topics general functions of the endocrine system chemical classification of hormones mechanism of hormone actions at receptors control of hormone secretion control by the hypothalamus pituitary gland identity source secretory control functional roles of the major hormones produced by the body local hormones paracrines autocrines growth factors hormonal response to stress application of homeostatic mechanisms predictions related to homeostatic imbalance including disease states disorders

Name
Cardiovascular System (Part 1) / Upon completion of this section the student will be able to demonstrate measurable understanding of the major gross and microscopic anatomical components of the cardiovascular system and explain their functional roles in transport and hemodynamics, including the following topics. Topics include: - general functions of the cardiovascular system - general functions of the cardiovascular system - composition of blood plasma - identity, microscopic anatomy, numbers, formation, & functional roles of the formed elements of the blood.

Objective
Cardiovascular System Part 1 Upon completion of this section the student will be able to demonstrate measurable understanding of the major gross and microscopic anatomical components of the cardiovascular system and explain their functional roles in transport and hemodynamics including the following topics Topics include general functions of the cardiovascular system general functions of the cardiovascular system composition of blood plasma identity microscopic anatomy numbers formation functional roles of the formed elements of the blood

Name
Cardiovascular System (part 2) demonstrate measurable understanding of hemostasis, including coagulation of the blood - ABO & Rh blood grouping - gross & microscopic anatomy of the heart, including the conduction system ,physiology of cardiac muscle contraction , blood flow through the heart, conduction system of the heart & the electrocardiogram, cardiac cycle , regulation of cardiac output, stroke volume & heart rate - anatomy & functional roles of the different types of blood vessels, pattern of blood circulation throughout the body, including systemic, pulmonary, coronary, hepatic portal, & fetal circulations, blood pressure & its functional interrelationships with cardiac output, peripheral resistance, & hemodynamics , application of homeostatic mechanisms, predictions related to homeostatic imbalance, including disease states & disorders

Objective
Cardiovascular System part 2 demonstrate measurable understanding of hemostasis including coagulation of the blood ABO Rh blood grouping gross microscopic anatomy of the heart including the conduction system physiology of cardiac muscle contraction blood flow through the heart conduction system of the heart the electrocardiogram cardiac cycle regulation of cardiac output stroke volume heart rate anatomy functional roles of the different types of blood vessels pattern of blood circulation throughout the body including systemic pulmonary coronary hepatic portal fetal circulations blood pressure its functional interrelationships with cardiac output peripheral resistance hemodynamics application of homeostatic mechanisms predictions related to homeostatic imbalance including disease states disorders

Name
Lymphatic System & Immunity/ Upon completion of this section the student will be able to demonstrate measurable understanding of the major gross and microscopic anatomical components of the lymphatic system and explain their functional roles in fluid dynamics and immunity, including the following topics. - general functions of the lymphatic system - general functions of the lymphatic system - lymph & lymphatic vessels - lymphatic cells, tissues, & organs - introduction to innate (nonspecific) defenses & adaptive (specific) defenses - innate (nonspecific) defenses - overview of adaptive (specific) defenses - antigens & antigen processing - lymphocytes & their role in adaptive immunity - antibodies & their role in adaptive immunity - applied immunology - application of homeostatic mechanisms - predictions related to homeostatic imbalance, including disease states & disorders

Objective
Lymphatic System Immunity Upon completion of this section the student will be able to demonstrate measurable understanding of the major gross and microscopic anatomical components of the lymphatic system and explain their functional roles in fluid dynamics and immunity including the following topics general functions of the lymphatic system general functions of the lymphatic system lymph lymphatic vessels lymphatic cells tissues organs introduction to innate nonspecific defenses adaptive specific defenses innate nonspecific defenses overview of adaptive specific defenses antigens antigen processing lymphocytes their role in adaptive immunity antibodies their role in adaptive immunity applied immunology application of homeostatic mechanisms predictions related to homeostatic imbalance including disease states disorders

Name
Respiratory System/Upon completion of this section the student will be able to demonstrate measurable understanding of the major gross and microscopic anatomical components of the respiratory system and explain their functional roles in breathing/ventilation and in the processes of external and internal respiration, including the following topics. - general functions of the respiratory system - gross & microscopic anatomy of the respiratory tract & related organs - mechanisms of pulmonary ventilation - pulmonary air volumes & capacities - mechanisms of gas exchange in lungs & tissues - mechanisms of gas transport in the blood - control of pulmonary ventilation - application of homeostatic mechanisms - predictions related to homeostatic imbalance, including disease states & Disorders

Objective
Respiratory SystemUpon completion of this section the student will be able to demonstrate measurable understanding of the major gross and microscopic anatomical components of the respiratory system and explain their functional roles in breathingventilation and in the processes of external and internal respiration including the following topics general functions of the respiratory system gross microscopic anatomy of the respiratory tract related organs mechanisms of pulmonary ventilation pulmonary air volumes capacities mechanisms of gas exchange in lungs tissues mechanisms of gas transport in the blood control of pulmonary ventilation application of homeostatic mechanisms predictions related to homeostatic imbalance including disease states Disorders

Name
Digestive System Upon completion of this section the student will be able to demonstrate measurable understanding of the major gross and microscopic anatomical components of the digestive system and explain their functional roles in digestion, absorption, excretion and elimination, including the following topics. - general functions of the digestive system - gross & microscopic anatomy of the alimentary canal - gross & microscopic anatomy of the accessory glands & organs - peritoneum & mesenteries - motility in the alimentary canal - mechanical & chemical processes of digestion - processes of absorption - hormonal & neural regulation of digestive processes - application of homeostatic mechanisms - predictions related to homeostatic imbalance, including disease states & disorders

Objective
Digestive System Upon completion of this section the student will be able to demonstrate measurable understanding of the major gross and microscopic anatomical components of the digestive system and explain their functional roles in digestion absorption excretion and elimination including the following topics general functions of the digestive system gross microscopic anatomy of the alimentary canal gross microscopic anatomy of the accessory glands organs peritoneum mesenteries motility in the alimentary canal mechanical chemical processes of digestion processes of absorption hormonal neural regulation of digestive processes application of homeostatic mechanisms predictions related to homeostatic imbalance including disease states disorders

Name
Metabolism /Upon completion of this section the student will be able to demonstrate measurable understanding of the functional relationship among cellular, tissue and organ level metabolism, the role nutrition plays in metabolism, and the mechanisms by which metabolic rate is regulated in the body, including the following topics. - nutrition - introduction to metabolism - cellular respiration & the catabolism & anabolism of carbohydrates, lipids, & proteins - metabolic roles of body organs - energy balance & thermoregulation - application of homeostatic mechanisms - predictions related to homeostatic imbalance, including disease states & disorders

Objective
Metabolism Upon completion of this section the student will be able to demonstrate measurable understanding of the functional relationship among cellular tissue and organ level metabolism the role nutrition plays in metabolism and the mechanisms by which metabolic rate is regulated in the body including the following topics nutrition introduction to metabolism cellular respiration the catabolism anabolism of carbohydrates lipids proteins metabolic roles of body organs energy balance thermoregulation application of homeostatic mechanisms predictions related to homeostatic imbalance including disease states disorders

Name
Urinary System/Upon completion of this section the student will be able to demonstrate measurable understanding of the major gross and microscopic anatomical components of the urinary system and explain their functional roles, including the following topics. - general functions of the urinary system - gross & microscopic anatomy of the urinary tract, including detailed histology of the nephron - functional processes of urine formation, including filtration, reabsorption, secretion, & excretion - factors regulating & altering urine volume & composition, including the renin- angiotensin system and the roles of aldosterone& antidiuretic hormone - endocrine activities of the kidneys, such as vitamin D activation & secretion of erythropoietin - innervation & control of the urinary bladder

Objective
Urinary SystemUpon completion of this section the student will be able to demonstrate measurable understanding of the major gross and microscopic anatomical components of the urinary system and explain their functional roles including the following topics general functions of the urinary system gross microscopic anatomy of the urinary tract including detailed histology of the nephron functional processes of urine formation including filtration reabsorption secretion excretion factors regulating altering urine volume composition including the renin angiotensin system and the roles of aldosterone antidiuretic hormone endocrine activities of the kidneys such as vitamin D activation secretion of erythropoietin innervation control of the urinary bladder

Name
Fluid/Electrolyte& Acid/Base Balance/Upon completion of this section the student will be able to demonstrate measurable understanding of the physiology of the homeostatic mechanisms that control fluid/electrolyte and acid/base balance, including the following topics. - regulation of water intake & output - description of the major fluid compartments, including intracellular, extracellular, intravascular, & interstitial - volume & chemical composition of major compartment fluids - movements between the major fluid compartments, causal forces, volumes, & electrolyte balance - buffer systems & their roles in acid/base balance - role of the respiratory system in acid/base balance - role of the urinary system in acid/base balance

Objective
FluidElectrolyte AcidBase BalanceUpon completion of this section the student will be able to demonstrate measurable understanding of the physiology of the homeostatic mechanisms that control fluidelectrolyte and acidbase balance including the following topics regulation of water intake output description of the major fluid compartments including intracellular extracellular intravascular interstitial volume chemical composition of major compartment fluids movements between the major fluid compartments causal forces volumes electrolyte balance buffer systems their roles in acidbase balance role of the respiratory system in acidbase balance role of the urinary system in acidbase balance

Name
Reproductive Systems/Upon completion of this section the student will be able to demonstrate measurable understanding of the major gross and microscopic anatomical components of the reproductive system and explain their functional roles in reproduction and inheritance, including the following topics. - general functions of the male & female reproductive systems - gross & microscopic anatomy of the male & female reproductive systems - gametogenesis - specific roles of the female reproductive organs - specific roles of the female reproductive organs - regulation of reproductive functions - conception, pregnancy, & embryological & fetal development - parturition & labor - mammary gland anatomy & physiology Comments: Information contained in this section shall not exempt any institution

Objective
Reproductive SystemsUpon completion of this section the student will be able to demonstrate measurable understanding of the major gross and microscopic anatomical components of the reproductive system and explain their functional roles in reproduction and inheritance including the following topics general functions of the male female reproductive systems gross microscopic anatomy of the male female reproductive systems gametogenesis specific roles of the female reproductive organs specific roles of the female reproductive organs regulation of reproductive functions conception pregnancy embryological fetal development parturition labor mammary gland anatomy physiology Comments Information contained in this section shall not exempt any institution

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Earn a minimum grade (UG) of C in the following:
- BIO110 - Principles of Biology

OR

Earn a minimum grade (UG) of C in the following:
- BIO160 - Microbiology

OR

Earn a minimum grade (UG) of C in the following:
- CHM110 - General Chemistry

BIO151 - Anatomy and Physiology Enhancement

Overview

Department
General Education

Course Description
This course provides for an elaboration of either the anatomy or the physiology of foundation topics presented in BIO 150 Human Anatomy and Physiology. Topics can include cell structure and function, muscular system, nervous system, endocrine system, immune system, cardiovascular system, respiratory system, digestive systems and/or urogenital system. This course is graded on a pass/fail scale and no letter grade will be given. Passing credit will be awarded when the student satisfactorily completes a minimum of 75% of the content assigned for this course. Note: Core content may vary by semester as dictated by student learning assessments. Additional topic lists may be distributed each semester as instructors are not restricted from adding topics for enrichment.Prerequisite: Minimum grade of “C” or better in BIO 150 Human Anatomy and Physiology or an equivalent 5 credit hour course.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2016

Credits

Credit Hours

Credit Hours Min:
1

Contact Hours

Contact Hours Min:
15

Billing Hours

Billing Hours Min:
1

Lecture Hours

Lecture Hours Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to

Objective
Recognize the specific contribution of scientific theories and concepts and analyze the impact they have on contemporary intellectual thought and social systems', Apply the scientific methodprocess and scientific principles in designated classroom and laboratory activities', Recognize the natural phenomena of the physicalbiological world and the patterns they encounter in their daily living', Employ reading writing and critical thinking skills as well as cooperative learning techniques throughout the duration of this course', Demonstrate and understanding of the process of science utilizing critical thinking prediction and problem solving', Demonstrate awareness of structure and functions of body systems

Requirements

Simple Requirements

A minimum grade of 'C' in Course BIO150

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- BIO150 - Human Anatomy & Physiology

BIO160 - Microbiology

Overview

Department
General Education

Course Description
An introduction to microorganisms and their morphology, physiology, genetics and distribution. Emphasis is placed on the relationship of microorganisms to disease and the human immune responses. Techniques involving staining, culturing, identifying and biochemistry are considered in laboratory.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will gain familiarity with basic characteristics of cellular microbes

Objective
Compare and contrast prokaryotic and eukaryotic cellular organization', Categorize the major shapes and arrangements of bacterial cells', Describe the function of major organelles and structures associated with eukaryotic and prokaryotic cells including cell membrane cell wall ribosomes nucleus nucleiod endoplasmic reticulum Golgi complex lysosomes pili flagella glycocalxy nucleolus vacuolesvesicles inclusion bodies photosynthetic organelles mitochondria and cytoskeleton', Compare and contrast the organization of cell walls in gram positivegram negative and acidfast bacteria', List the diverse functions of the cell membrane in bacteria

Name
The student will gain familiarity with basic characteristics of a cellular microbes

Objective
List the major structural components of viruses and bacteriophages and their functions including genome capsid envelope attachment proteins and enzymes', Discuss the origins of a viral envelope', Discuss the chemical nature of viroids and prions the types of organisms they infect and various diseases associated with each

Name
The student will gain familiarity with environmental factors affecting microbialgrowth and nutrition

Objective
Outline the physical factors necessary for bacterial growth', Outline the process of binary fission', Compare the effects of tonicity on bacterial cells', Compare autotrophs to heterotrophs with respect to carbon and energy sources', Predict the appearance of a growth curve in an open system', Calculate the total bacteria in a system when given the formula NtNi2n', Describe environmental influences that govern the growth of bacteria

Name
The student will gain an understanding of photosynthesis, fermentation respiration and other metabolic activities of microbes

Objective
Describe the function of enzymes and the physical factors that influence their activity', Distinguish among the enzyme categories hydrolases ligases lysases and oxidoreductases', Summarize the sequence of events taking place during glycolysis transition reactions Krebs cycle and electron transport', Compare the major catabolic reactions in microbes including aerobic and anaerobic cellular respiration fermentation phototrophy and chemolithotrophy including information about overall reactions key intermediates final products and energy produced at each stage', Summarize the chemiosmotic theory of ATP production', Explain the following in terms of nutrient transport active transport and facilitated diffusion

Name
The student will gain an understanding of how microbes control the expressionof genes

Objective
Describe the various mechanisms of regulating enzyme activity including feedback inhibition and covalent modification', Describe the various mechanisms of regulating transcription and translation including positive and negative controls

Name
The student will gain an understanding of how DNA functions in controlling function of DNA

Objective
Compare and contrast the structure and function of DNA and RNA', Describe the arrangement of the genome in prokaryotes and eukaryotes', Describe the components of the central dogma of molecular genetics including the processes of replication transcription and translation Be familiar with differences between prokaryotes and eukaryotes in these processes', Describe several mutagens including chemical agents and radiation', Describe several consequences of a mutation in DNA relating it to the protein or proteins being produced', Discuss why mutations are essential to microbial populations

Name
The student will gain familiarity with the diversity of reproductive processes onmicrobial populations

Objective
Describe various sexual and asexual processes used by microbes', Outline the processes of transformation transduction and conjugations in relation to genetic variability

Name
The student will gain familiarity with the role of microbes in biotechnology and genetic engineering

Objective
Discuss monoclonal polyclonal antibodies', Describe the role of microorganisms in genetic engineering and biotechnology', Discuss several useful products and processes that have been developed using biotechnology

Name
The student will gain a basic understanding of the immune response, immuneof their action

Objective
Explain and describe the 3 line of defense against pathogens', Describe the anatomy and physiology of the primary and secondary lymphatic organs including bone marrow thymus lymph nodes spleen peyers patch and tonsils', Outline the sequence of events that occurs in phagocytosis', Differentiate between the populations of granulocytes and agranulocytes in terms of morphology and physiological effect', Describe the general complement reactions and list their 5 benefits', Outline and describe the events occurring in the inflammation response to an invading bacterium', Explain the relationship between hapten and antigen', Outline the major components of the innate immune system', List the origins and actions of several cytokines including interleukins prostaglandins tumor necrosis factor and colony stimulating factor', Explain the clonal selection theory of antibody specificity and diversity', Diagram the origin and development of B and Tlymphocytes', Diagram the steps leading from an undifferentiated T cell to a sensitized cytotoxic T cell and an undifferentiated B cell to an antibody producing plasma cell', Compare and contrast the primary and secondary response to antigens', Differentiate between endogenous and exogenous infections

Name
The student will gain an understanding of microbial roles in a variety of disease processes

Objective
Compare atopic allergy to anaphylaxis', Outline the major characteristics of the 4 types of hypersensitivites and provide examples of each', Describe the causative agent life cycle and symptoms of bacteria including but not limited to staphylococcal infections toxicoses Group A streptococcal infections gonorrheal infection pulmonary tubuculosis meningitis diphtheria legionellosis dental carries T pallidum Rickettsia and chlamydia', Describe the causative agent life cycle and symptoms of fungal diseases including but not limited to superficial mycoses Candida Histoplasma Cryptococcus and Coccidioides', Describe the causative agent life cycle and symptoms of viral disease including but not limited to HIV smallpox various types of herpes various types of hepatitis chicken pox adenoviruses polio RSV parvovirus paramyxoviruses and retoviruses', Describe the causative agent life cycle and symptoms of eukaryotic pathogens including but not limited to Giardia Amoebas PlasmodiumToxoplasma Trichomonas Trypanosoma and members of helminthes', Compare the four major groups of protozoa according to cell structure locomotion infectious state and mode of transmission', Compare the function of the trophozoite and cyst stages in protozoa', Differentiate between contamination infection and disease', Compare true pathogens to opportunistic pathogens', Distinguish between virulence and pathogenicity

Name
The student will become familiar with the mechanisms of microbe dispersal

Objective
Describe the various mechanism of disease transmission for common bacterial fungal viral and protozoal pathogens', List several fomites and rank them as to their ability to spread disease

Name
The student will gain familiarity with common methods of microbial control

Objective
Compare sterilization disinfection and sanitation', Describe the relationship between sepsis asepsis and antisepsis', Summarize the mechanism and effectiveness of moist and dry heat', Compare pasteurization and sterilization', Evaluate as means of sterilization tyndallization boiling water incineration ultrasonics and ionizing radiation including advantages and disadvantages of each', Evaluate the use of heavy metals in sterilization such as formaldehyde and ethylene oxide

Name
The student will become familiar with the types and mode of actions for antimicrobial products

Objective
Differentiate between antibiotics and synthetic drugs', Evaluate and antibiotic as broad or narrow spectrum', List 5 criteria that chemosynthetic drugs must meet in order to be useful against an infectious agent', Discuss the various mechanisms of action antimicrobial agents have on their respective microbes', Explain how one microbe can acquire resistance to several drugs

Name
The student will gain familiarity with the science of epidemiology and itssignificance to public health

Objective
Describe the strategies for developing vaccines', Outline the science of epidemiology and the work of an epidemiologist', Differentiate between communicable and noncommunicable', Given sample statistical data on the number of reported cases of disease determine which show sporadic frequency endemic epidemic and pandemic', List the main features of Kochs postulates and why they do not apply to some diseases

Name
The student will gain familiarity with the impacts and relationships of microbesin various ecosystems

Objective
Describe the importance of adaptation and natural selection to microbial populations', Explain a variety of symbiotic relationships formed by microbial populations', Explain the role of microbes in recycling resources in an ecosystem', Describe the various ways microbes transform the environment

Name
The student gain familiarity with basic laboratory techniques inMicrobiology

Objective
Practice laboratory safety', Collect and handle specimens', Isolate and identify microorganisms differentiation', Use a microscope', Pipette and micropipette', Use aseptic technique', Grow and control microorganisms', Utilize basic antigenantibody interactions', Make dilutions

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Earn a minimum grade (UG) of C in the following:
- BIO150 - Human Anatomy & Physiology

BIS133 - Bistro Practicum I

Overview

Department
Hospitality & Culinary Arts

Course Description
Immerse yourself in the dynamic world of culinary entrepreneurship in this practicum class. Under faculty guidance, students will rotate through diverse roles, managing all aspects of a student-run restaurant. This hands-on experience enhances culinary skills, fosters teamwork, and provides insights into real-world restaurant operations. From crafting menus to food preparation and customer service, students gain practical expertise while refining communication, problem-solving, and time management abilities. This course equips aspiring culinary professionals with the skills and confidence for success in the restaurant industry.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Execute Culinary Excellence: Skillfully prepare, cook, and present a variety of dishes, showcasing mastery of culinary techniques and artistic plating.

Name
Manage Diverse Roles: Proficiently rotate through culinary and restaurant roles, including cooking, kitchen management, front-of-house operations, and financial oversight, highlighting adaptability and proficiency.

Name
Integrate Culinary Theory: Seamlessly apply theoretical culinary knowledge to practical cooking and restaurant functions, ensuring the delivery of high-quality, innovative dishes in the student-run restaurant.

Name
Collaborate Effectively: Display excellent teamwork and communication skills while working alongside peers, contributing to smooth kitchen operations and exceptional dining experiences.

Name
Strategic Decision-Making: Analyze real-time culinary and operational challenges, making well-informed decisions that balance culinary creativity, customer preferences, and overall restaurant efficiency.

Name
Customer-Centric Focus: Cultivate an acute awareness of customer preferences and feedback, adapting menu offerings and culinary creations to enhance guest satisfaction, emphasizing the pivotal role of customer relationships in culinary ventures.

BIS137 - Bistro Practicum II

Overview

Department
Hospitality & Culinary Arts

Course Description
Delve deeper into the art of culinary creation in this advanced practicum. Building upon foundational skills, students will embark on a journey of creative menu innovation. Guided by experienced faculty, participants will curate unique dining experiences, experimenting with flavors, techniques, and presentation. Through this hands-on exploration, students will refine their culinary voice, mastering the balance between tradition and innovation. Engaging in specialized roles within the student-run restaurant, they will further elevate their teamwork, leadership, and critical thinking abilities. This course is tailored for those aspiring to lead culinary trends and excel in the evolving gastronomic landscape. This course is designed as the second Bistro Practicum course in a series of four.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Foundational Bistro Flavors: Develop an appreciation for classic bistro flavors and master the art of creating comforting and flavorful lunch dishes.

Name
Bistro Technique Proficiency: Gain expertise in essential bistro cooking techniques, including sauting, braising, and pan sauces, showcasing mastery of these foundational skills.

Name
Seasonal Ingredient Focus: Embrace the importance of seasonal ingredients in bistro cuisine, selecting and incorporating fresh, local produce into limited menu offerings.

Name
Menu Coherence: Create a coherent and well-balanced limited lunch menu that captures the essence of a bistro dining experience and complements each dish.

Name
Efficient Kitchen Collaboration: Excel in a compact kitchen setting, effectively collaborating with peers to ensure smooth lunch service operations and uphold bistro standards.

Requirements

Simple Requirements

A minimum grade of 'C' in Course BIS133

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- BIS133 - Bistro Practicum I

BIS143 - Bistro Practicum III

Overview

Department
Hospitality & Culinary Arts

Course Description
Delve deeper into the art of culinary creation in this advanced practicum. Building upon foundational skills, students will embark on a journey of creative menu innovation. Guided by experienced faculty, participants will curate unique dining experiences, experimenting with flavors, techniques, and presentation. Through this hands-on exploration, students will refine their culinary voice, mastering the balance between tradition and innovation. Engaging in specialized roles within the student-run restaurant, they will further elevate their teamwork, leadership, and critical thinking abilities. This course is tailored for those aspiring to lead culinary trends and excel in the evolving gastronomic landscape. This course is designed as the third Bistro Practicum course in a series of four.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Sophisticated Bistro Flavor Profiles: Develop complex and layered flavor profiles that elevate bistro lunch dishes, integrating advanced seasoning and ingredient pairing techniques.

Name
Precision in Bistro Techniques: Demonstrate mastery in refined bistro techniques, including precise temperature control, reduction sauces, and artistic plating.

Name
Artful Menu Presentation: Curate a limited lunch menu that not only embodies the bistro ethos but also showcases refined visual presentation and artistic flair.

Name
Bistro Menu Innovation: Innovate within the limitations of a limited menu, creating dishes that surprise and delight while adhering to the bistro's cozy and approachable identity.

Name
Leadership in Bistro Excellence: Take leadership roles in managing the bistro's lunch operations, overseeing the execution of dishes, and fostering an environment of culinary excellence.

Requirements

Simple Requirements

A minimum grade of 'C' in Course BIS 137

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- BIS137 - Bistro Practicum II

BIS147 - Bistro Practicum IV

Overview

Department
Hospitality & Culinary Arts

Course Description
Delve deeper into the art of culinary creation in this advanced practicum. Building upon foundational skills, students will embark on a journey of creative menu innovation. Guided by experienced faculty, participants will curate unique dining experiences, experimenting with flavors, techniques, and presentation. Through this hands-on exploration, students will refine their culinary voice, mastering the balance between tradition and innovation. Engaging in specialized roles within the student-run restaurant, they will further elevate their teamwork, leadership, and critical thinking abilities. This course is tailored for those aspiring to lead culinary trends and excel in the evolving gastronomic landscape. This course is designed as the fourth Bistro Practicum course in a series of four.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Mastery of Bistro Gastronomy: Showcase an in-depth understanding of bistro gastronomy, infusing classic bistro dishes with modern twists and innovative reinterpretations.

Name
Contemporary Bistro Techniques: Employ advanced contemporary cooking techniques to transform bistro lunch offerings, including sous-vide, deconstruction, and molecular gastronomy.

Name
Artistic Bistro Menu Design: Craft a limited lunch menu that showcases culinary artistry, incorporating both traditional and avant-garde elements to surprise and engage diners.

Name
Bistro Culinary Storytelling: Develop dishes that tell a narrative, connecting bistro traditions with contemporary culinary narratives, enriching the dining experience.

Name
Culinary Visionary Leadership: Assume a visionary role in the bistro's lunch concept, leading peers in pushing the boundaries of bistro cuisine, setting new trends, and creating an unforgettable gastronomic journey.

Requirements

Simple Requirements

A minimum grade of 'C' in Course BIS 143

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- BIS143 - Bistro Practicum III

BUS104 - Introduction to Business

Overview

Department
Professional Studies

Course Description
Studies various types of business organizations and the relationships of business to government and management to labor. Management’s perspective of production, marketing, personnel, finance and transportation is a constant consideration.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Identify and define Accounting from academic and professional perspectives

Objective
Identify what an accounting system does', Identify the rules that an accountant follows', Identify key documents used in accounting

Name
Identify and define Finance from academic and professional perspectives

Objective
Define a financial plan', Identify the elements of a financial plan', Identify a financial forecast', Recognize the importance of budgeting

Name
Identify and define Marketing from academic and professional perspectives

Objective
Define the term marketing', Discuss the four Ps of marketing and the marketing mix', Discuss various product pricing strategies', Explain the concept of branding and brand equity

Name
Identify and define Management and Leadership from academic and professional perspectives

Objective
Explain the four functions of management and why the role of management is changing', Summarize the five steps of the control function of management', Illustrate the skills a manager must possess', Explain the organizational theories of Fayol and Weber', Define the term Scientific Management', Discuss Maslows view of needs and motivation', Differentiate the difference between Theory X Theory Y and Theory Z', Explain the factors involved in the expectancy theory', Summarize the six steps in planning human resources', Trace the six steps in appraising performance

Name
Identify and define Information Systems from academic and professional perspectives

Objective
Illustrate how the technological environment has affected business', Define information systems', Describe how information systems have affected business

Name
Identify and define Entrepreneurship from academic and professional perspectives

Objective
Compare the advantages of a sole proprietorship', Identify the various forms of business ownership', Explain why people are willing to take the risk of entrepreneurship', Analyze what it takes to start and run a small business', Outline the advantages that small businesses have in entering global markets

Name
Identify and define Economics from academic and professional perspectives

Objective
Examine how the economic environment and taxes affect business', Identify various ways that business can meet and beat competition', Explain how wealth is accumulated in an economy', Describe how the free market system works', Describe monetary policy and its importance to the economy

Name
Identify and define Supply Chain/Operations Management from academic and professional perspectives

Objective
Define Supply Chain', Identify the elements of Supply Chain', Define Operations Management', Identify the elements of Operations Management

Name
Identify the role of ethics and social responsibility in business

Objective
Explain why legality is only the first step in behaving ethically', Describe managements role in setting ethical standards', Define social responsibilities

BUS121 - Business Communications

Overview

Department
Professional Studies

Course Description
Business Communications is designed to cover the communication skills that are necessary in a high-technology global business environment. These skills include competencies in written and oral communication; an awareness of international, legal, and ethical issues; the ability to work collaboratively on group projects; and proficiency in using microcomputers.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Analyze the audience to create messages to meet business communication and information needs in a variety of situations.

Name
Demonstrate care, courtesy, and convention in professional messages.

Name
Clearly organize information to allow an audience to quickly process the message.

Name
Construct concise and comprehensive messages.

Name
Locate, interpret, and present credible and relevant evidence from reliable sources.

BUS125 - Business Law

Overview

Department
Professional Studies

Course Description
A basic introductory law course covering the legal and social environment within which business operates, including the structure, processes, and procedures of the American legal system. A substantial portion of the course is devoted to contracts.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Describe American Law sources, the American court system and processes, and methods of alternative dispute resolution

Name
Recognize the relevance of ethical and legal considerations when making strategic business decisions

Name
Differentiate between negligence, intentional torts, and strict liability within tort law

Name
Identify contract elements and important characteristics of performance and breach

Name
Define and differentiate the fundamental principles of personal property, real property, and intellectual property

Name
Describe the nature and function of agency and employment law

Name
Define and differentiate the duties and potential liability of various business entities

BUS130 - Personal Finance

Overview

Department
Professional Studies

Course Description
This course is designed for non-business majors, as well as for business majors. The course is concerned with efficient management of money as a primary requirement for successful personal life. Aids individuals in establishing and maintaining credit, using a budget, safeguarding and investing savings, and arranging personal insurance.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Explain personal financial planning, financial statements, time value of money, and budgets

Objective
Identify social and economic influences on personal financial goals and decisions', Develop personal financial goals', Assess personal and financial opportunity costs associated with financial decisions', Implement a plan for making personal financial and career decisions', Identify the main components of wise money management', Create a personal balance sheet and cash flow statement', Develop and implement a personal budget', Connect money management activities with saving for personal financial goals', Identify commonly used financial services', Compare the types of financial institutions', Assess various types of savings plans', Evaluate different types of payment methods

Name
Explain the benefits and potential costs of consumer credit

Objective
Analyze advantages and disadvantages of using consumer credit', Assess the types and sources of consumer credit', Determine whether you can afford a loan and how to apply for credit', Determine the cost of credit by calculating interest using various interest formulas', Develop a plan to protect your credit and manage your debts

Name
Evaluate housing needs, large purchases, and financing alternatives

Objective
Assess costs and benefits of renting', Implement the homebuying process', Determine costs associated with purchasing a home', Develop a strategy for selling a home', Identify types of risks and risk management', Assess the insurance coverage and policy types available to homeowners and renters', Analyze the factors that influence the amount of coverage and cost of home insurance', Evaluate factors that affect the cost of automobile insurance', Identify strategies for effective consumer buying', Implement a process for making consumer purchases', Describe steps to take to resolve consumer problems', Evaluate legal alternatives available to consumers

Name
Identify fundamental tax strategies

Objective
Identify the major taxes paid by people in our society', Calculate taxable income and the amount owed for federal income tax', Prepare a federal income tax return', Select appropriate tax strategies for various life situations

Name
Identify how insurance is used to manage risk

Objective
Recognize the importance of health insurance in financial planning', Analyze the costs and benefits of various types of health insurance coverage as well as major provisions in health insurance policy', Assess the tradeoffs of different health insurance plans', Evaluate the differences among health care plans offered by private companies and by the government', Explain the importance of disability income insurance in financial planning and identify its sources', Explain why the costs of health insurance and health care have been increasing', Define life insurance and determine your life insurance needs', Distinguish between the types of life insurance companies and analyze various life insurance policies these companies issue', Select important provisions in life insurance contracts and create a plan to buy life insurance', Recognize how annuities provide financial security

Name
Compare investment and retirement planning alternatives and strategies

Objective
Explain why you should establish an investment program', Describe how safety risk income growth and liquidity affect your investment program', Identify the factors that can reduce investment risk', Understand why investors purchase government bonds', Recognize why investors purchase corporate bonds', Evaluate bonds when making an investment', Identify the most important features of common and preferred stock', Explain how you can evaluate stock investments', Analyze the numerical measures that cause a stock to increase or decreases in value', Describe how stocks are bought and sold', Explain the trading techniques used by longterm investors and shortterm speculators', Describe the characteristics of mutual fund investment', Classify mutual funds by investment objective', Evaluate mutual funds', Describe how and why mutual funds are bought and sold

Name
Explain the estate planning process

Objective
Analyze current assets and liabilities for retirement and estimate retirement living costs', Determine planned retirement income and develop a balanced budget based on retirement income', Analyze the personal and legal aspects of estate planning', Distinguish among various types of wills and trusts

BUS135 - Introduction to Public Relations

Overview

Department
Professional Studies

Course Description
In this course students will learn the theories that are the backbone of all public relations practitioners while also learning the roles and responsibilities of those who practice in the field. Students will explore the issues and challenges facing public relations practitioners in today's technological, multicultural and global environment. Students will put their knowledge to the test by creating and presenting a public relations plan.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Spring 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Describe the major theories and processes that undergird the practice of public relations

Objective
Corporate Public Relations', Responsibilities and Focus of the Chief Communications Officer', Agency Public Relations', Government Relations and Public Affairs', Issues Management and Public Policy', Nonprofit NGO and Activist Public Relations', Goal Attainment Approach', Systems Theory Approach', Stakeholder Management Approach

Name
Identify and describe the roles played by public relations in organizations and business

Objective
Stakeholder Management and Prioritizing Publics', The Situational Theory of Publics Predicts Active or Passive Behavior', A Contingency Approach to Public Relations Strategy', Functions of Management', Public Relations Roles', The CSuite

Name
Describe the major strategic considerations for the public relations practitioner

Objective
Value of Public Relations', Organizational Culture', Organizational Structure

Name
Utilize the basic vocabulary of the public relations practitioner

Name
Define the major tools and tactics of the public relations practitioner

Name
Identify the ethical implications of public relations practices

Objective
Identify the ethical issues associated with public relations, Identify a moral analysis in relationship to public relations', Review a public relations case study that present ethic issues

Name
Gather and analyze information as a public relations tool

Objective
identify the role of research in public relations', Identify the purpose and forms of public relations research', Identify type of research used in public relations', Practice collection research based on provided public relations scenarios

Name
Prepare a public relations plan

Objective
Utilize the public relations process RACE to create a plan', Present your plan to fellow students and faculty

Name
Craft a range of communications that serve target audiences in commercial and social campaigns

BUS140 - Principles of Marketing

Overview

Department
Professional Studies

Course Description
Production and marketing of goods and services are the essence of economic life in any society. All organizations perform these two basic functions to satisfy their commitments to society, their customers and their owners. Marketing examines the problems of transferring title and moving goods from producer to consumer, buying, selling, storing, transporting, standardizing, financing, risk-bearing, and supplying market information. The free enterprise and the government's contribution, retailing, and international marketing are discussed at length.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Identify the scope and role of marketing in enhancing the welfare of consumers, organizations, and society.

Name
Identify key elements of consumer and organizational buying behavior and the marketing research process.

Name
Examine ways to segment markets, choose targeting strategies, and position products.

Name
Identify and describe elements of the marketing mix, including product, price, place (distribution), and promotion.

Name
Recognize the influence of the external environment on marketing, including technological and global influences

Name
Identify legal, regulatory, and ethical issues impacting marketing activities.

Name
Show an understanding of the strategic marketing planning process.

BUS145 - Dreamweaver

Overview

Department
Professional Studies

Course Description
This course is designed to introduce the fundamentals of web page authoring using Macromedia Dreamweaver version 8. Emphasis is on developing an understanding of how to plan, design, create, modify and publish a web site.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Hybrid

Effective Start Term
Fall 2012

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to successfully demonstrate how to develop a web page using the specific skills below:

Objective
Plan and define a web site', Add a folder and pages and set the home page', Create and view a site map', Create head content and set page properties', Add links to web pages', Create unordered and ordered lists', Create edit and apply CSS', Add and enhance images and use alternate text', Insert background images', Create external internal and anchor links', Insert flash text', Create modify and copy a navigation bar', Manage web site links

Name
The student will be able to successfully demonstrate how to develop a web page using the specific skills below:

Objective
Create a table', Resize split and merge cells', Insert and align graphics', Insert text and format call content

Objective
Plan and create a form', Format a form', Work with form objects', Create a jump menu

Objective
Create a layer', Set the position and size of the layers', Configure layer preferences', Convert layers to tables and tables to layers

Name
The student will be able to successfully demonstrate how to create and modify frames using the specific skills below:

Objective
Create a frameset', Configure frames', Add content to frames', Link frames', Create NoFrames content

Name
The student will be able to successfully demonstrate how to add multimedia elements to a web page using the specific skills below:

Objective
Add Flash objects', Add rollover images', Add sounds and popup messages

Name
The student will be able to successfully demonstrate how to use templates, behaviors, stylesheets and snippet to enhance a web page using the specific skills below:

Objective
Create and modify templates', Change text using existing behaviors', Swam images with behaviors', Create popup menus with behaviors

Name
The student will be able to successfully demonstrate how to manage a web server using the specific skills below:

Objective
Publish a web site and transfer files', Check files in and out', Cloak files', Import and export a site definition

BUS160 - Human Relations

Overview

Department
Professional Studies

Course Description
This course is designed to help employees and supervisors gain human relations skills needed for success at their work site. The case method will be used to analyze situations in which actual job relations are presented.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2009

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss human relationships and the impact these have in the workplace

Objective
Describe the impact of human perception on relationships with people', List the four key elements of the perception process and describing each element', Identifying and describing four personality influences that color human perception', Explain the importance of understanding motivation', Describe McClellands work concerning the need for achievement affiliation and power', Describe Maslows work with the hierarchy of needs and explaining the implications of Maslows theory in the work environment

Name
The student will be able to discuss leadership theory in relation to the workplace.

Objective
Discuss the situational leadership theory', Identify the four characteristics of task relevant maturity

Name
The student will be able to identify concepts associated with goal setting in relationship to the workplace.

Objective
Explain the importance of measurability in goal setting listing three reasons why goals go astray and defining goal congruence', Discuss the goal setting process relating to hisher career future

Name
The student will be able discuss the fundamental aspects of effective communication

Name
The student will be able discuss the elements of conflict management

Objective
Describe the three types of conflict discussed in and telling how to manage each of these conflict types', Describe how to manage each types of conflict

Name
The student will be able discuss the elements of groups in the workplace

Objective
List the three major types of roles played in groups and identifying three of the categories for each role type', Define supportive and defensive group communication climates and giving three characteristics of each climate type', List the five steps of the group problem solving process

Name
The student will be able discuss topics impacting organizations including employee development, management expectations, performance reviews, and reward systems

Objective
Explain the role of training education and employee development in an organization', Identify and describing five things organizations expect of management employees', Explain what steps a manager can take to manage those above herhim', Identify and describe four ways communication can be used as a reward', Identifying five things a performance review can accomplish listing three stumbling blocks to a good performance review and describing the nonevaluative approach to performance appraisals', Describe the management dilemma of rewarding the behaviors as discussed in the article on Rewarding A while hoping for B

BUS180 - Business Internship

Overview

Department
Professional Studies

Course Description
The internship represents an educational strategy linking the classroom with the acquisition of knowledge in the workplace. Through direct observation, reflection and evaluation, students gain an insight into the internship site's work, mission, and audience, how these relate to their academic study, as well as the organization's position in the broader industry or field. Students will produce a critical reflection on their internship experience demonstrating how they have addressed specific learning goals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2020

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
3

Other Hours

Other Hours
Min:
135

Course Learning Outcomes

Learning Outcomes

Name
Applied your knowledge, skills, experience to a work environment;

Name
Acquired new learning through challenging and meaningful activities;

Name
Advocated for your own learning in alignment with internship goals;

Name
Demonstrated professional skills in the workplace;

Name
Built and maintained positive professional relationships;

Name
Identified, clarified and/or confirmed professional direction as it relates to your academic studies and future career path;

Name
Developed self-understanding, self-discipline, maturity and confidence;

Name
Developed strong networking/mentoring relationships

Name
Reflected on the content and process of the learning experience;

BUS200 - Principles of Management

Overview

Department
Professional Studies

Course Description
Explores the basic management functions of planning, controlling organizing and directing an organization. The basic management theories, functions and aspects of various types of business are studied.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Summer 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

BUS210 - Principles of Leadership

Overview

Department
Professional Studies

Course Description
Introduction of foundational leadership theories and their practical application in professional and community settings. Students will explore contemporary leadership concepts, analyze their personal leadership styles, and develop essential skills through hands-on practice and self-reflection. Emphasizes ethical decision-making and effective communication of leadership principles in a variety of organizational environments.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Analyze personal strengths, styles and preferences that contribute to leadership

Name
Explore, apply, and reflect on basic concepts of leadership

Name
Examine the relationship of ethics, diversity, and inclusion in leadership

Name
Communicate knowledge about and application of leadership to others

Name
Observe and critique leadership in a community setting

CAT101 - CATIA Part Design & Sketcher

Overview

Department
Manufacturing

Course Description
This course provides an introduction to the 3DEXPERIENCE platform, including searching, creating and editing objects. This course covers the creation of solid parts without complex contours. Students will be introduced to the part environment of 3DEXPERIENCE and learn how to work between the Sketcher and Part Design workbenches to create individual parts.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate through classroom and laboratory projects the ability to effectively manipulate basic concepts of CATIA 3D

Objective
Utilize Part Design Screen', Utilize the Part Design Workbench', Utilize the Sketcher Workbench', Manipulate the documents', Manipulate the display

Name
The student will be able demonstrate through classroom and laboratory projects the ability to effectively manipulate CATIA 3D basic and advanced Sketcher software

Objective
Create sketches in CATIA', Constrain sketches in CATIA', Modify sketches in CATIA

Name
The student will be able to The student will be able to demonstrate through classroom and laboratory projects the ability to effectively manipulate CATIA 3D parts design software

Objective
Create parts', Modify parts', Demonstrate Boolean Operations on parts', Integrate surfaces to parts', Apply materials to parts

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- MCD104 - Blueprint Reading for Drafting

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- MMG113 - Print Reading

CAT102 - CATIA Drafting

Overview

Department
Manufacturing

Course Description
This course covers the creation of engineering drawings. Students will be introduced to the drafting environment of 3DExperience and learn how to create drawings from parts and products.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to create and modify views.

Objective
The student will be able to create and modify views

Name
The student will be able to create, generate and modify dimensions.

Objective
The student will be able to create generate and modify dimensions

Name
The student will be able to create and modify annotations and symbols.

Objective
The student will be able to create and modify annotations and symbols

Name
The student will be able to create 2D geometry and create title blocks or backgrounds.

Objective
The student will be able to create 2D geometry and create title blocks or backgrounds

Requirements

Simple Requirements

A minimum grade of 'C' in Course CAT101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CAT101 - CATIA Part Design & Sketcher

CAT103 - CATIA 3D Tolerancing & Annotations

Overview

Department
Manufacturing

Course Description
This course is for those interested in model based definition, where the 3D model is the master instead of the draft sheet. This course covers all of the necessary options to properly apply tolerancing and annotations on the 3D part or product.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Upon successful completion of the course, the student will be able to create views; any geometrical or dimensional tolerance and annotation necessary to convey the design intent of the 3D part using both manual techniques and the tolerancing advisor; create captures to organize those specifications; filter the specifications; and create reports.

Objective
Functional Tolerancing and Annotation Workbench', Pulldown Menus', Bottom Toolbar Changes', Top Toolbar', GDT Review', Utilize tools in the Functional Tolerancing and Annotation Workbench to create different types of views needed', Utilize tools to create the different types of datums manually and with Tolerancing Advisor as needed', DimensionsUtilize tools to create and modify different types of deminsions manually and with Tolerancing Advisor', Utilize tools in the workbench and different types of controls to create', Geometrical Tolerancing manually and with Tolerancing Advisor', Utilize tools for creating and modifying text leaders links notes and Symbols manually and with Tolerancing Advisor', Utilize tools to create construction geometry and management of geometry Thread Representation Creation and Geometry Connection Management', Utilize tools for Listing Annotation Sets 3D Annotation Query Switch Filtering Mirror Clipping Plane and Captures

Requirements

Simple Requirements

A minimum grade of 'C' in Course CAT101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CAT101 - CATIA Part Design & Sketcher

CAT105 - CATIA Assembly Design

Overview

Department
Manufacturing

Course Description
This course covers the use of multiple parts to create an assembly. This includes manipulating parts in an assembly, creating engineering connections and analyzing assemblies. It also covers designing within the context of an assembly, including creating and using publications.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to insert, manipulate, constrain and modify components in an assembly.

Objective
The student will be able to insert manipulate constrain and modify components in an assembly

Name
The student will be able to work with the links of assembly.

Objective
The student will be able to work with the links of assembly

Name
The student will be able to create parts within the assembly structure.

Objective
The student will be able to create parts within the assembly structure

Name
The student will be able to create kinematic simulations.

Objective
The student will be able to create kinematic simulations

Name
The student will be able to perform measurements.

Objective
The student will be able to perform measurements

Name
The student will be able to demonstrate clash analyses and section analysis skills.

Objective
The student will be able to demonstrate clash analyses and section analysis skills

Name
The student will be able to create design reviews.

Objective
The student will be able to create design reviews

Requirements

Simple Requirements

A minimum grade of 'C' in Course CAT101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- CAT101 - CATIA Part Design & Sketcher

CAT110 - CATIA Wireframe & Surfaces

Overview

Department
Manufacturing

Course Description
This course is an extension of the part environment which covers the use of wireframe and surface geometry to create complex contours. This course concentrates on the tools available and how to integrate this geometry back into a solid part.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate through classroom and laboratory projects the ability to effectively manipulate CATIA 3D surfaces software to create a solid part

Objective
Create wireframe geometry', Modify wireframe geometry', Perform operations on this geometry', Analyze curves and surfaces', Utilize this geometry to create parts

Name
The student will be able to demonstrate through classroom and laboratory projects the ability to effectively manipulate CATIA 3D wireframe software to create a solid part

Objective
Create surface geometry', Modify surface geometry', Perform operations on this geometry', Analyze curves and surfaces', Utilize this geometry to create parts

Requirements

Simple Requirements

A minimum grade of 'C' in Course CAT101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CAT101 - CATIA Part Design & Sketcher

CAT115 - CATIA Prismatic Machining

Overview

Department
Manufacturing

Course Description
This course is the beginning manufacturing course. This course covers the machining operations involved in 3-axis milling. Students will be introduced to the process environment of 3DExperience and learn how to work between the process, part and product environments.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate concepts from Part Design, Assembly and measurement as they relate to prismatic machining

Objective
Review CATIA Part Design as it relates to Prismatic Machining', Review CATIA Assembly as it relates to Prismatic Machining', Review CATIA Measurement as it relates to Prismatic Machining

Name
The student will be able to define part and machine operations

Objective
Define machining modes', Define all aspects of milling modes', Identify all aspects of Axial modes', Identify Prismatic Machining Workbench', Utilize specifications tree and tool bar in prismatic Marching workbench', Identify NC tools', Utilize NC tools in conjunction with CATIA software', Define the part operation including machine definition machining axis definition and geometry definition

Name
The student will be able to demonstrate through laboratory projects how to replay machine operations

Objective
Define photo and video mode', Apply photo and video mode

Name
The student will be able to demonstrate through classroom and laboratory projects how to modify machining operations to reflect part modifications

Objective
Identify all aspects of modifying machine operations', Demonstrate all aspects of facing', Demonstrate all aspects of profile contour milling', Demonstrate all aspects of grove milling', Demonstrate all aspects of pocketing', Demonstrate prismatic roughing', Demonstrate curve following', Demonstrate point to point', Demonstrate all types of drilling including spot drilling dwell delay deep hole break chips', Demonstrate tapping and reverse tapping', Demonstrate all aspects of boring including boring and chamfering boring spindle stop reaming counter boring back boring', Demonstrate circular and Thread milling

Name
The student will be able generate Apt code for the machining process

Objective
Identify APT Code', Create APT code for the machining process

Requirements

Simple Requirements

A minimum grade of 'C' in Course CAT101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CAT101 - CATIA Part Design & Sketcher

A minimum grade of 'C' in Course CAT105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CAT105 - CATIA Assembly Design

A minimum grade of 'C' in Course CAT105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CAT105 - CATIA Assembly Design

CAT124 - CATIA Surface Machining

Overview

Department
Manufacturing

Course Description
This course is a continuation in the manufacturing environment. This course covers the more advanced machining operations involved in full 3-axis and multi-axis machining. Students will learn how to integrate the manufacturing tools available in Prismatic Machining and Mill-Turn Machining.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate through classroom and laboratory projects the ability to use both the workbenches associated with CATIA Surface machining

Objective
Identify Surface Machining Workbench', Utilize the Surface Machining Workbench', Identify Advanced Machining Workbench', Utilize the advanced machining workbench', use multiple part operations', integrate tools from the machining workbenches

Name
The student will be able to demonstrate through classroom and laboratory projects the ability to use roughing, sweeping and reworking operations

Objective
Identify roughing', Identify sweeping', Demonstrate roughing operations including roughing sweep roughing and additional roughing', Demonstrate sweeping

Name
The student will be able demonstrate through classroom and laboratory projects the ability to utilize multi-axis machining operations

Objective
Identify multiple axis machining including rotary and five axis', Demonstrate multiple axis machining

Name
The student will be able to machine complex contours and part surfaces

Objective
Identify Zlevel machining', Demonstrate Zlevel Machining', Identify spiral milling', Demonstrate spiral milling', Identify contour driven milling', Demonstrate contour driven milling', Identify isoparametic machining', Demonstrate isoparametric machining', Use machine surfaces

Requirements

Simple Requirements

A minimum grade of 'C' in Course CAT101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CAT101 - CATIA Part Design & Sketcher

A minimum grade of 'C' in Course CAT115

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CAT115 - CATIA Prismatic Machining

A minimum grade of 'C' in Course CAT105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- CAT105 - CATIA Assembly Design

CCM225 - Construction Technology Cabinet Maker Apprenticeship

Overview

Department

Apprenticeship & Appl Learning

Course Description

This course serves as a credit placeholder for students participating in the Construction Technology Cabinet Maker Apprenticeship program in partnership with WSU Tech, industry partners, and the Kansas Office of Apprenticeships. Students who have successfully completed the approved apprenticeship training may receive 45 credit hours of prior learning. Students must provide approved documentation outlining successful completion of apprenticeship training.

Academic Level (Course Level)

Undergraduate

Effective Start Term

Fall 2025

Credits

Credit Hours

Credit Hours
Min:
45

Contact Hours

Contact Hours
Min:
2025

Billing Hours

Billing Hours
Min:
45

Other Hours

Other Hours
Min:
2025

Course Learning Outcomes

Learning Outcomes

Name

Students will demonstrate mastery of technical competencies gained through the Construction Technology Cabinet Maker Apprenticeship program

CCP100 - Introductory Craft Skills

Overview

Department
Applied Technologies

Course Description
This course is the Core Curriculum for Introductory Craft Skills under the National Center for Construction Education (NCCER). This course is NCCER's basic course for all construction, maintenance and pipeline organizations. This course covers basic safety obligations of workers, supervisors and managers; reviews the role of company policies and OSHA regulations; introduces trainees to hand and power tools widely used in the construction industry, and their proper uses. Students will also become familiarized with basic blueprint terms, components and symbols.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Describe the construction industry

Objective
Define construction and summarize the current and future outlook for jobs', Identify some of constructions more prominent contributions in history

Name
Explain the benefits of a construction career

Objective
Recognize and describe how construction careers make a difference in the community', Describe the financial and professional benefits of pursuing a construction career

Name
Describe the typical career path for craft professionals.

Objective
Describe industry sectors and the progression path for construction careers', Identify different construction careers and the types of skills they require

Name
Identify ways to pursue a career in the construction industry.

Objective
Explain the benefits of career and technical education programs', Describe the advantages of craft training programs and their relationship with apprenticeships', Summarize the path to a construction career through community colleges and universities

Name
Explain the benefits of safety, the cost of workplace incidents, and ways to reduce related

Objective
Describe the types of workplace incidents along with physical and monetary impacts', Summarize the causes and consequences of common incidents', Explain how to recognize evaluate and control workplace hazards

Name
Describe and demonstate common fall hazards and methods to prevent them.

Objective
Summarize the most common types of construction fall hazards', Describe components of effective fall arrest systems and how they prevent or halt falls', Explain how to use ladders and stairs safely

Name
Recognize and understand how to avoid struck-by and caught-in/ caught-between hazards.

Objective
Describe struckby hazards and how to avoid them', Describe common caughtincaughtbetween hazards and steps that can prevent them

Name
Identify common electrical hazards and how to avoid them

Objective
Summarize basic jobsite electrical safety guidelines', Explain the importance of disabling equipment as well as basic lockouttagout procedures

Name
Associate personal protective equipment (PPE) with the hazards they reduce or eliminate

Objective
Explain how PPE is used to protect craftworkers from different types of injuries', Explain how respirators protect craftworkers from respiratory dangers

Name
Describe safety practices used with other common job-site hazards.

Objective
List other types of hazards craftworkers may encounter', Describe common environmental hazards and how craftworkers should respond to them', Summarize hazards associated with hot work', Identify fire hazards and describe basic firefighting procedures', Name different types of confined spaces and how to avoid related hazards

Name
Identify whole numbers and solve basic arithmetic problems with them.

Objective
List the key qualities of whole numbers and summarize their place values', Add and subtract whole numbers', Multiply and divide whole numbers

Name
Name fraction types and calculate with fractions.

Objective
Define equivalent fractions and calculate their lowest common denominators', Define improper fractions and convert them into mixed numbers', Add and subtract fractions', Multiply and divide fractions

Name
Identifyand calculate with decimals

Objective
List the key qualities of decimal numbers and summarize their place values', Add subtract multiply and divide decimal numbers', Convert between decimals fractions and percentages

Name
Name the common length-measuring tools and use them to measure lengths accurately.

Objective
Describe English and metric rulers using them correctly to measure lengths', Describe English and metric measuring tapes using them correctly to measure lengths

Name
Name common hand tools and state how to use them.

Objective
Identify various hammers and demolition tools and explain how to use them', Describe chisels and punches and how they are used', Match screwdrivers to the appropriate hardware', Differentiate between nonadjustable adjustable and socket wrenches', Describe various types of pliers and explain how they are used

Name
Identify common measurement and layout tools and describe how to use them.

Objective
Explain how to use a variety of measuring tools', Define various types of levels and layout tools and indicate how they are used

Name
Identify and describe other hand tools common to shops and job sites

Objective
Differentiate between various handsaws and their designated applications', Identify common clamp designs', Explain how different files and utility knives are used with various materials', Describe shovels and picks and the tasks for which each one is best suited

Name
Identify and explain how to use various types of power drills and impact wrenches

Objective
Summarize basic power tool safety guidelines', Identify common power drills and bits and explain how to use them', Describe the difference between hammer drills and impact drivers', Identify pneumatic drills and impact wrenches and explain how to use them

Name
Identify and explain how to use various types of power saws.

Objective
Explain how to use a circular saw and identify different types of blades', Differentiate between jigsaws and reciprocating saws and explain how to use them', Explain how to use a portable band saw', Describe the difference between miter saws and cutoff saws', Explain how to use table saws and describe the types of jobs for which they are best suite

Name
Describe the types of jobs best suited to grinders and oscillating multi-tools.

Objective
Explain how to use various types of grinders', Identify grinder accessories and the jobs for which they are used', List the type of jobs that can be performed using an oscillating multitool

Name
Identify and explain how to use miscellaneous power tools

Objective
Discuss the hazards of using power nailers', Describe jobs that can be performed with hydraulic jacks

Requirements

Simple Requirements

A minimum grade of 'C' in Course SAF101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SAF101 - Safety Orientation/OSHA 10

CCP108 - Construction Basics

Overview

Department
Applied Technologies

Course Description
This course is the curriculum for Carpentry Basics under the National Center for Construction Education (NCCER). The course covers eight topics and starts by introducing the carpentry trade, including history, career opportunities, and requirements. The course includes study and practice required for framing a simple structure. Specific topics are building materials, fasteners and adhesives, hand and power tools, reading plans & elevations, floor systems, wall and ceiling framing, roof framing and windows and exterior doors.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Describe components and features used in construction drawings and identify how thedrawings are different

Objective
Summarize the purpose of the six basic construction drawing components', List and explain the significance of various drawing elements such as lines of construction symbols and grid lines', Explain how dimensions relate to various drawing scales', Demonstrate how to use engineers and architects scales', Identify the six types of construction drawings

Name
Demonstrate the communication, listening, and speaking processes and their relationship tojob performance

Objective
Describe the communication process and the importance of listening and speaking skills', Describe the listening process and identify good listening skills', Describe the speaking process and identify good speaking skills

Name
Demonstrate good reading and writing skills and their relationship to job performance.

Objective
Describe the importance of good reading and writing skills', Describe jobrelated reading requirements and identify good reading skills', Describe jobrelated writing requirements and identify good writing skills

Name
Identify and describe various types of rigging slings, hardware, and equipment.

Objective
Identify and describe various types of slings', Describe how to inspect various types of slings', Identify and describe how to inspect common rigging hardware', Identify and describe various types of hoists', Identify and describe basic rigging hitches and the related Emergency Stop hand signal

Name
Describe the opportunities in the construction businesses and how to enter the construction workforce.

Objective
Describe the construction business and the opportunities offered by the trades', Explain how workers can enter the construction workforce

Name
Explain the importance of critical thinking and how to solve problems.

Objective
Describe critical thinking and barriers to solving problems', Describe how to solve problems using critical thinking', Describe problems related to planning and scheduling

Name
Explain the importance of social skills and identify ways good social skills are applied in the construction trade

Objective
Identify good personal and social skills', Explain how to resolve conflicts with coworkers and supervisors', Explain how to give and receive constructive criticism', Identify and describe various social issues of concern in the workplace', Describe how to work in a team environment and how to be an effective leader

Name
Identify the basic concepts of material handling and common safety precautions

Objective
Describe the basic concepts of material handling and manual lifting', Identify common material handling safety precautions', Identify and describe how to tie knots commonly used in material handling

Name
Identify various types of material handling equipment and describe how they are used

Objective
Identify nonmotorized material handling equipment and describe how they are used', Identify motorized material handling equipment and describe how they are used

Requirements

Simple Requirements

A minimum grade of 'C' in Course CCP100

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CCP100 - Introductory Craft Skills

CCP112 - Carpentry I

Overview

Department
Applied Technologies

Course Description
Carpentry I is the introductory course in a two-course series. This course, aligned with the NCCER General Carpentry 6th edition modules, provides a comprehensive foundation in carpentry skills. The curriculum encompasses Orientation to Carpentry, Building Materials and Fasteners, Construction Plans and documents, and Principles of Site and Building Layout.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Identify the career and training opportunities within the carpentry trade.

Objective
Describe craft training opportunities within the carpentry trade

Name
Explain the importance of safety in carpentry, and how it impacts contractors and craft

Objective
Describe the OSHA Outreach Training Program and contents of a sitespecific safety plan SSSP

Name
Identify skills and attributes of successful carpenters

Objective
List the skills and responsibilities of professional carpenters', Summarize the traits and standards followed by professional carpenters

Name
Explain how organizations like SkillsUSA help you connect with construction craft professionals.

Objective
Describe SkillsUSA programscompetitions and the value they offer to the carpentry trainees and participating organizations', List the seven goals of the SkillsUSA Program of Work

Name
Explain safety hazards and precautions associated with wood, concrete, steel, and composite building materials

Objective
Describe the focus four and explain how to reduce hazards associated with handling carpentry materials', Explain the benefits of a job hazard analysis

Name
Identify different types of building materials and calculate needed quantities.

Objective
Summarize the types of lumber their characteristics and how lumber is graded', Describe the types of treated lumber', Identify engineered wood products and their applications', Distinguish between the types of concrete construction materials', Describe the types of steel framing and their applications', Summarize how to calculate lumber panel and concrete quantities

Name
Explain how to properly handle and store building materials

Objective
Describe how to safely handle and store wood concrete and steel building materials

Name
Identify fasteners, anchors, and adhesives used in construction.

Objective
Describe different types of nails screws bolts and staples', Summarize the categories of mechanical anchors', List adhesives used in construction and identify their applications

Name
Describe drawings included in a set of construction plans and explain how to read them

Objective
Describe the purpose of each type of drawing in a set of plans', Identify selected lines architectural symbols and abbreviations used on plans', Describe the methods of dimensioning construction drawings

Name
Read and Interprete written specifications

Objective
Summarize how specifications are organized', Explain the importance of construction building codes

Name
Explain how construction drawings are used in site and building layout

Name
Understand fundamental construction math concepts and right triangle calculations used insite layout

Name
Demonstrate using common measuring and leveling tools in performing site and building layout.

Objective
Identify measuring tools and their applications', Describe leveling tools and their applications', Describe site layout instruments and equipment

Name
Demonstrate how to measure horizontal and vertical distances, establish building lines, and verifycorners are square.

Objective
Describe how to measure horizontal and vertical distances', Summarize how to establish building lines with batter boards and verify corners are square

Requirements

Simple Requirements

A minimum grade of 'C' in Course CCP108

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CCP108 - Construction Basics

CCP122 - Carpentry II

Overview

Department
Applied Technologies

Course Description
Carpentry II builds upon the foundational skills acquired in Carpentry I. This course focuses on constructing and assembling floor systems, wall systems, roof framing, basic stair layout, and building envelope systems. The curriculum is aligned with the NCCER General Carpentry 6th edition modules, ensuring an industry-relevant learning experience.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Describe specifications and construction drawings that specify floor system requirements.

Objective
Summarize how specifications and architectural drawings are used in the construction of a floor

Name
Identify the types of floor framing systems.

Objective
Describe the types of woodframe flooring systems', List alternative flooring systems

Name
Demonstrate estimation skills for floor system components and required material quantities.

Objective
Define sill plate and describe its role in floor framing', List and recognize different types of girders and supports', Describe different types of floor joists', Explain the purposes of subfloor and underlayment', Estimate the amount of material needed for a floor assembly

Name
Lay out and construct a platform floor assembly.

Objective
Summarize how specifications are organized

Name
Identify the components of a wall system estimate and layout the needed framingmaterials.

Objective
List wall system components', Explain how to estimate quantities of materials required to frame walls

Name
Assemble and erect wall systems using the correct procedures

Objective
Describe the steps used to assemble a wall', List the four steps used to erect a wall

Name
Identify and install ceiling frame components

Objective
Describe how to lay out cut and install ceiling joists', Explain how to estimate the number of ceiling joists needed for a building

Name
Identify common residential roof types and related components

Objective
Describe residential roof types', List the main components of a roof

Name
Demonstrate the methods used to lay out and cut common rafters.

Objective
Explain how to lay out rafters and cut them to the proper length

Name
Demonstrate how to erect and sheath a gable roof.

Objective
Describe how to erect a gable roof and frame gable ends', Summarize how to install sheathing on the roof', Explain how to estimate the rafters ridgeboard and sheathing needed for a material takeoff

Name
Recognize the use of trusses in basic roof framing

Objective
Describe trusses and explain how they are installed

Name
Identify stairway components and related requirements.

Objective
Define key stairway terms and building require', Describe the types of stairways

Name
Describe and calculate the total rise, number and size of risers, and number and size oftreads needed for a stairway.

Objective
Summarize how to calculate the riser height tread depth and total run for a stairway', Describe how to calculate stairwell opening sizes

Name
Deomstrate the procedure for constructing stairs

Objective
Explain how to lay out cut and build stringers and concentrate forms

Name
Describe the purpose and components of a building envelope system.

Objective
Identify ways to minimize air and moisture infiltration in buildings

Name
Understand window types and installation requirements.

Objective
Identify window types applications and installation steps

Name
Understand door types, applications, and installation requirements

Objective
Identify residential and nonresidential doors and explain installation steps

Requirements

Simple Requirements

A minimum grade of 'C' in Course CCP112

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CCP112 - Carpentry I

CCP123 - Masonry I

Overview

Department
Applied Technologies

Course Description
This course consists of modules that will introduce the student to the fundamental building blocks for masonry work. Masonry as a trade, the tools, and equipment commonly used will be introduced.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Identify various types of masonry units and describe their applications in modern construction.

Name
Demonstrate safe use of PPE and adherence to masonry job site safety protocols.

Name
Select, use, and maintain hand tools, measuring tools, and mixing equipment used in masonry.

Name
Properly mix mortar and describe its role in masonry systems.

Name
Demonstrate proper spreading, furrowing, and laying techniques for masonry units

Name
Recognize the roles and career paths available within the masonry trade.

CCP124 - Exterior Envelope

Overview

Department
Applied Technologies

Course Description
This course is the curriculum for Exterior Envelopes under the National Center for Construction Education (NCCER). This course describes commercial roofing materials and structures and the procedures for installing commercial roofing, such as standing-seam, lap-seam, and built-up roofs. In addition, it provides information about the selection and installation of various types of insulating materials in walls, floors, and attics. It also covers the uses and installation practices for vapor barriers and waterproofing materials. Finally, it covers various exterior finish materials and their installation procedures, including wood, metal, vinyl, and fiber-cement siding.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to describe the characteristics and properties of metals as they relate to roofing applications.

Objective
Identify physical characteristics of metals', Identify mechanical properties of metals', Describe standard metal forms and structural shapes

Name
Identify types of advanced roof structures

Objective
Discuss the use of steel trusses and joists used in commercial roofing', Identify other trusses used for commercial roofing

Name
Describe the installation of a metal roof.

Objective
Identify safety precautions and hazards when installing roof systems', Identify design considerations when installing metal roofs', Explain how to install a lapseam metal roof', Explain how to install a standingseam metal roof

Name
Describe the installation of a built-up roof.

Name
Describe the safety and health hazards when working with insulation.

Objective
List the personal protective equipment PPE that is required when working with insulation', Describe how to safely handle insulation

Name
Describe the various types of insulation and their characteristics.

Objective
Explain how to determine Rvalue requirements', Describe flexible insulation and list its characteristics', Describe loosefill insulation and list its characteristics', Describe rigid or semirigid insulation and list its characteristics', Describe reflective insulation and list its characteristics', List miscellaneous types of insulation

Name
Describe the various installation methods for insulation.

Objective
Explain how to install flexible insulation', Explain how to install loosefill insulation', Explain how to install rigid or semirigid insulation', Explain how to install reflective insulation

Name
Identify the requirements for moisture control, waterproofing, and ventilation, and describe the related installation methods.

Objective
List various methods to control moisture in a structure', Identify methods to waterproof a structure Learning

Name
Describe the estimating procedure for thermal and moisture projects.

Name
Describe the safety hazards when working with exterior finish materials.

Objective
Identify safety hazards that are present when working at elevations', Describe safety hazards when working with hand and power tools equipment and exterior finish materials

Name
Describe the various types and applications of exterior finish materials.

Objective
Identify the types of wood siding', Identify vinyl and metal siding materials and components', List applications for fibercement siding', Discuss the types of veneer finishes', List speciality exterior finishes', Explain the purpose of flashing

Name
Explain how to install exterior finish materials.

Objective
Describe surface preparation that must be performed prior to installing exterior finish materials', Discuss the types of furring and insulation that might be applied to exterior walls', Explain how to establish a straight reference line', Describe how to install wood siding', Describe how to install vinyl and metal siding', Describe how to install fibercement siding', Explain how to install cornices

Name
Describe the estimating procedure for exterior finish projects.

Objective
Explain how to perform a takeoff on panel and board siding

Requirements

Simple Requirements

A minimum grade of 'C' in Course CCP122

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CCP122 - Carpentry II

CCP128 - Interior Systems

Overview

Department
Applied Technologies

Course Description
This course is the curriculum for Interior Systems under the National Center for Construction Education (NCCER). The course covers the various types of gypsum drywall, their uses, the fastening devices and installation methods, and detailed instructions for installing drywall on walls and ceilings using nails, drywall screws, and adhesives. It also covers the materials, tools, and methods used to finish and patch gypsum drywall. Instruction on the materials, layout, and installation procedures for many types of suspended ceilings used in commercial construction, ceiling tiles, drywall suspension systems, and pan-type ceilings, is also covered.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Identify components of a drywall assembly.

Objective
List the types of gypsum products', Identify drywall fasteners and list their uses', Identify drywall accessories and state their applications

Name
Describe the installation of drywall.

Objective
Describe the purpose of a finish schedule', List the tools used for drywall application', Identify methods of soundisolation construction', Describe the procedure for drywall construction', List special applications for drywall

Name
Contrast rated assemblies to nonrated assemblies.

Objective
Describe singleply drywall application', Describe how firerated walls are constructed', List multiply drywall applications', Describe how to prioritize walls

Name
Identify how to calculate a quantity takeoff for proper drywall installation.

Objective
Explain how to perform a material takeoff for drywall', Explain how to perform a material takeoff for drywall fasteners

Name
Identify differences between the six levels of finish established by industry standards.

Name
Identify the different materials for proper drywall finishing.

Objective
Describe how to select the proper trim', Describe the purposes of tapes compounds coatings and sanding materials

Name
Identify the proper tools used in drywall finishing.

Objective
Identify the hand tools used in drywall finishing', Identify the automatic tools used in drywall finishing

Name
Describe proper drywall finishing procedures.

Objective
Identify ideal site conditions for drywall finishing', Describe the process for finishing drywall', Describe the handfinishing procedures involved in drywall finishing', Describe the automatic taping and finishing procedures involved in drywall finishing', Identify common joint problems when finishing drywall', Identify common compound problems when finishing drywall', Identify common fastener problems when finishing drywall', Identify common problems when finishing drywall

Name
Explain how to estimate the proper amount of drywall finishing materials.

Name
Identify the components necessary to properly install a suspended ceiling system.

Objective
Identify the system components necessary to properly frame a suspended ceiling system', Identify the suspension systems and hardware necessary to properly install a suspended ceiling system', Identify the safe material handling and storage procedures required when installing a suspended ceiling system

Name
Interpret a reflected ceiling plan.

Objective
Interpret the layout information', Interpret the MEP locations

Name
Identify the procedures to lay out and install a suspended ceiling system.

Objective
Identify the layout and takeoff procedures to procure materials to lay out and install a suspended ceiling system', Identify the tools and equipment to lay out and install a suspended ceiling system', Identify the installation methods and procedures for a suspended ceiling system

Requirements

Simple Requirements

A minimum grade of 'C' in Course CCP122

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CCP122 - Carpentry II

CCP133 - Masonry II

Overview

Department
Applied Technologies

Course Description
This course consists of modules that will reinforce the fundamental building blocks for masonry work. Masonry measurements, masonry blueprint and specification will be introduced along with materials used in the trade.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Interpret basic masonry drawings and specifications.

Name
Use measurement tools and apply accurate layout techniques.

Name
Describe mortar properties and mix ratios appropriate to specific masonry tasks.

Name
Demonstrate proper placement, alignment, and spacing of masonry units.

Name
Execute basic masonry wall construction to standard specifications.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CCP123

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CCP123 - Masonry I

CCP134 - Introduction to Concrete Construction

Overview

Department
Applied Technologies

Course Description
This course is the curriculum for Intro to Concrete Construction under the National Center for Construction Education (NCCER). This course covers the properties, characteristics, and uses of cement, aggregates, and other materials that, when mixed, form different types of concrete. In addition, it covers the materials used in the reinforcement of concrete. It also covers the planning process that precedes the start of work on a construction site, including environmental considerations, personnel issues, access roads, traffic control, permits, site safety, utilities, and crane-related concerns. Finally, the course covers the principles of site layout and leveling and the techniques required for working in and around excavations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify various concrete ingredients and describe their purpose in a concrete mixture.

Objective
Explain how Portland cement affects a concrete mixture and list the types of Portland cement', Describe the characteristics of aggregate used in a concrete mixture', List the characteristics of water used in a concrete mixture', List types of concrete admixtures and describe how they affect a concrete mixture

Name
The student will be able to explain proper concrete mixture measurements and curing methods.

Objective
Describe normal concretemix proportions and measurements', List special types of concrete', Describe the properties of airentrained concrete', Describe how concrete is cured

Name
The student will describe the methods for testing concrete.

Objective
Describe the proper procedure for sampling concrete', Explain the purpose of a slump test', Describe how a concrete compression test is performed

Name
The student will be able to calculate concrete volume for rectangular or circular structures.

Objective
Calculate rectangular volume', Calculate circular volume

Name
The student will be able to describe stormwater protection and erosion and sedimentation control.

Objective
Describe environmental concerns and the role of federal state and local regulations in environmental issues', Identify ways to prevent erosion and sedimentation', Identify methods used to mitigate subsurface water problems at a work site

Name
The student will be able to explain the items that need to be addressed in the site utilization plan.

Objective
Explain how to set up a construction site', Explain how to handle natural vegetation and spoils', Describe the placement of utilities on a construction site

Name
The student will identify methods to ensure site safety and security.

Objective
Describe methods used to ensure site safety including construction signs barricades and traffic control', Describe methods used for site security

Name
The student will review the responsibilities of the carpenter relative to construction drawings, control points, and hand signals.

Objective
Read and interpret a set of civil plans and how they relate to elevations on a job site', Identify the types of control points and explain their use on a job site', Describe how to use hand signals to communicate

Name
The student will be able to recognize, use, and properly care for tools and equipment associated with differential leveling.

Objective
Identify the instruments commonly used for differential leveling', Explain how to set up and calibrate a leveling instrument', Explain how to use a builders level and differentialleveling procedures to determine site and building elevations

Name
The student will explain how to record site-layout data and information in field notes using accepted practices.

Name
The student will describe the applications involving differential leveling

Objective
Explain how to transfer an elevation up a structure', Discuss applications for profile crosssection and grid leveling

Name
The student will be able to list safety considerations for trenches and excavations.

Objective
List safety guidelines when working in and around foundation excavations', Identify safety hazards when working in and around trenches', Describe various shoring shielding and sloping systems used for trenches and excavations

Name
The student will understand and identify the different types, bearing capacities, and classifications of soils.

Objective
Explain how soils are classified', Describe soil composition and how it relates to density', Explain the purpose of fill in a construction project

Name
The student will describe the methods of compacting and testing soil.

Objective
Describe how moisture content affects soil compaction', Explain why soil is compacted in lifts', Describe how soil compaction is tested

Name
The student will be able to explain surface water, groundwater, and rock mitigation as related to concrete.

Objective
Describe how surface water and groundwater are mitigated', Describe how rock is mitigated

Name
The student will describe and list applications of reinforced concrete.

Objective
Describe how forces are resisted in concrete through the use of reinforcing bars', List applications for reinforced structural concrete', Discuss how posttensioned concrete is created

Name
The student will understand and be able to describe the general requirements for working with reinforcing steel, including tools, equipment, and fabricating methods.

Objective
List general safety precautions when working with reinforcing steel', Describe the general characteristics of reinforcing steel', Discuss how reinforcing steel is fabricated', Explain the purpose of bar supports', Explain how weldedwire fabric reinforcement is used to reinforce concrete

Name
The student will be able to describe methods by which reinforcing bars may be bent and cut in the field.

Objective
Describe how to cut rebar', Describe how to bend rebar

Name
The student will explain the methods for placing reinforcing steel.

Objective
Discuss the proper method for tying and splicing reinforcing steel', Explain the proper procedure for placing reinforcing steel

CCP138 - Advanced Framing

Overview

Department
Applied Technologies

Course Description
This course is the curriculum for Advanced Framing under the National Center for Construction Education (NCCER). This course covers the skills needed to become an effective crew leader - basic leadership skills, safety, and project control. It describes the planning process that precedes the start of work on a construction site, including environmental considerations, personnel issues, access roads, traffic control, permits, site safety, utilities, and crane-related concerns. It covers the different wall systems and their installation, including wood and steel framing materials. It also covers guidelines for selecting and installing metal framing for interior and exterior walls, loadbearing and nonbearing walls, partitions, and other applications.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
45

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to describe the culture in the construction industry.

Objective
Describe the opportunities in the construction and power industries', Describe how workers values change over time', Explain the importance of training and safety for the leaders in the construction and power industries', Describe how new technologies are beneficial to the construction and power industries', Identify the gender and minority issues associated with a changing workforce', Describe what employers can do to prevent workplace discrimination', Differentiate between formal and informal organizations', Describe the difference between authority responsibility and accountability', Explain the purpose of job descriptions and what they should include', Distinguish between company policies and procedures

Name
The student will be able to describe the role of a crew leader.

Objective
List the characteristics of effective leaders', Be able to discuss the importance of ethics in a supervisors role', Identify the three styles of leadership', Describe the forms of communication', Describe the four parts of verbal communication', Describe the importance of active listening', Explain how to overcome the barriers to communication', List ways that leaders can motivate their employees', Explain the importance of delegating and implementing policies and procedures', Distinguish between problem solving and decision making

Name
The student will be able to explain the importance of safety.

Objective
Give examples of direct and indirect costs of workplace accidents', Identify safety hazards of the construction industry', Explain the purpose of OSHA', Discuss OSHA inspection procedures', Identify the key points of a safety program', List steps to train employees on how to perform new tasks safely', Identify a crew leaders safety responsibilities', Explain the importance of having employees trained in first aid and cardiopulmonary resuscitation CPR', Describe the indications of substance abuse', List the essential parts of an accident investigation', Describe ways to maintain employee interest in safety Distinguish between company policies and procedures

Name
The student will be able to describe the three phases of a construction project.

Objective
Define the three types of project delivery systems', Define planning and describe what it involves', Explain why it is important to plan', Describe the two major stages of planning', Explain the importance of documenting job site work', Describe the estimating process', Explain how schedules are developed and used', Identify the two most common schedules', Explain how the critical path method CPM of scheduling is used', Describe the different costs associated with building a job', Explain the crew leaders role in controlling costs', Illustrate how to control the main resources of a job materials tools equipment and labor', Explain the differences between production and productivity and the importance of each

Name
The student will be able to describe the job site planning process.

Objective
Describe stormwater protection and erosion and sedimentation control', Describe environmental concerns and the role of federal state and local regulations in environmental issues', Identify ways to prevent erosion and sedimentation', Identify methods used to mitigate subsurface water problems at a work site

Name
The student will be able to list items that need to be addressed in the site utilization plan.

Objective
Explain how to set up a construction site', Explain how to handle natural vegetation and spoils', Describe the placement of utilities on a construction site

Name
The student will be able to identify methods to ensure site safety and security.

Objective
Describe methods used to ensure site safety including construction signs barricades and traffic control', Describe methods used for site security

Name
The student will be able to identify safety hazards to consider when erecting an advanced wall system.

Objective
Describe hazards that may be present when installing wall systems', Identify the fall protection equipment to be used when installing wall systems

Name
The student will be able to describe the different types of advanced wall systems.

Objective
Describe the use of curtain walls and identify the types of curtain walls', Identify various types of insulated wall systems and explain the carpenters role in their installation', Identify the carpenters role in the installation of masonry walls', Define firerated construction and explain methods used to fireproof a wall system

Name
The student will be able to identify the tools and components of cold-formed steel framing systems and their safe use.

Objective
Identify the safety guidelines that should be followed when working with coldformed steel', Identify steel framing materials', List the steel framing tools and fasteners', Explain how to perform a material takeoff for a steel frame project

Name
The student will be able to explain the steps required to lay out and install a steel stud wall.

Objective
Describe the basic steel construction methods', Explain how to frame nonstructural steel walls', Explain how to frame structural steel walls

Name
The student will be able to identify other steel framing applications.

Objective
Explain how steel framing members are used in floor and roof construction', Explain how steel framing members are used in ceiling construction

Requirements

Simple Requirements

A minimum grade of 'C' in Course CCP122

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CCP122 - Carpentry II

CCP143 - Masonry Installation Techniques

Overview

Department
Applied Technologies

Course Description
This course is a companion course to Masonry I and II. This course will reinforce and expand the students understanding of Masonry applications, processes and provide practical opportunities for skill development. This course will include materials and techniques used to plan, layout, reinforce, grout and inspect masonry work.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
6

Contact Hours

Contact Hours Min:
165

Billing Hours

Billing Hours Min:
6

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
150

Course Learning Outcomes

Learning Outcomes

Name
Construct and restore masonry features using specialized materials (acid brick, refractory brick, etc.).

Name
Build and install masonry arches, including jack, semicircular, and multicentered types.

Name
Install commercial masonry components using complex blueprints.

Name
Demonstrate repair and restoration techniques for damaged masonry.

Name
Demonstrate repair and restoration techniques for damaged masonry.

Name
Identify and implement logistics for high-volume or commercial masonry projects.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CCP133

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CCP133 - Masonry II

CCP144 - Advanced Finish and Trim

Overview

Department
Applied Technologies

Course Description
This course is the curriculum for Advanced Finish under the National Center for Construction Education (NCCER). This course covers the different types of trim used in finish work and focuses on the proper methods for selecting, cutting, and fastening trim to provide a professional finished appearance. The course also offers extensive coverage of the materials and techniques used in finishing wood stairways and the variety of stair systems used in commercial construction.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
45

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will understand and be able to describe the safety hazards related to working with window, door, floor, and ceiling trim.

Objective
Identify the proper personal protection equipment required when working with window door floor and ceiling trim', Identify tool and equipment safety guidelines when working with window door floor and ceiling trim tools

Name
The student will be able to identify the different types of standard moldings and materials.

Objective
Identify the different types of base moldings', Identify the different types of wall moldings', Identify the different types of ceiling moldings', Identify the different types of window and door trim

Name
The student will able to explain how to install different types of molding.

Objective
Explain how to properly cut trim', Explain how to properly fasten trim', Explain how to properly install base molding', Explain how to properly install ceiling molding', Explain how to properly install door trim Explain how to properly install window trim

Name
The student will be able to demonstrate how to estimate window, door, floor, and ceiling trim.

Name
The student will be able to identify the stair parts in various systems.

Name
The student will be able to explain the procedure for cutting and installing various stairway systems.

Objective
Describe the procedure for cutting and installing open service stairways', Describe the procedure for cutting and installing closed service stairways', Describe the procedure for cutting and installing main stairways', Describe the procedure for cutting and installing exterior wood stairways', Describe the procedure for cutting and installing L and Ushaped stairways

Name
The student will be able to outline the procedure for cutting and installing various custom stairway systems.

Objective
Describe the procedure for cutting and installing elliptical stairways', Describe the procedure for cutting and installing shopbuilt stairways', Describe the procedure for cutting and installing winder treads

Name
The student will be able to identify the materials that can be used to build commercial stairways.

Objective
Describe the procedure for constructing concrete stairways', Describe advantages of using prefabricated concretefilled steel stairways', Explain the purpose of commercial stairtread facing and nosing

Requirements

Simple Requirements

A minimum grade of 'C' in Course CCP122

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CCP122 - Carpentry II

CCP148 - Vertical and Horizontal Formwork

Overview

Department
Applied Technologies

Course Description
This course is the curriculum for Vertical and Horizontal Formwork under the National Center for Construction Education (NCCER). This course describes basic site layout tools and methods; layout and construction of deep and shallow foundations; layout and forming of slabs-on-grade; and forms used for curbing and paving. It covers the applications and construction methods for types of forming and form hardware systems for walls, columns, and stairs, as well as slip forms, climbing forms, and shaft forms. It also covers elevated decks and formwork systems and methods used in their construction.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Identify the safety requirements when forming foundations and slabs.

Objective
List safety rules pertaining to the use of hand tools when forming foundations and slabs', List safety rules pertaining to the use of power tools when forming foundations and slabs', Describe cement dermatitis and how it can be remedied

Name
Describe how to establish formwork locations and elevations.

Objective
Describe how to use control points when establishing formwork locations and elevations', Explain how to use leveling instruments', Explain how to measure horizontal distances', Explain how to measure vertical distances

Name
Explain how to properly perform job-site layout.

Objective
Describe how to establish building layout', Explain how to establish building lines with batter boards', Describe excavating and trenching processes', Explain how to lay out forms', Describe how to use templates

Name
Identify the various types of foundations and list appropriate uses for each.

Objective
Identify the various types of deepfoundation elements', Identify the various types of shallow foundation elements

Name
Identify various types of foundation forms and their proper removal.

Objective
Describe how to erect and strip jobbuilt wood forms', Explain how to erect manufactured forms', Describe how to strip forms

Name
Describe how slabs-on-grade are formed and finished.

Objective
List slabongrade construction considerations', Describe how to form and finish a commercial slabongrade', Discuss the use of screeds when finishing slabsongrade

Name
Identify methods to create curbs and pavement.

Objective
Discuss the use of curbing forms', Identify paving equipment used for commercial slabsongrade

Name
Identify the basic types of concrete wall forms.

Objective
Explain the importance of formwork planning', List the parts and accessories of concrete wall forms', Describe applications of panel form systems', Describe applications of gang forms

Name
Describe applications for patented wall-form systems.

Objective
List applications for curved forms', Describe how to frame wall openings

Name
Explain how to properly assemble and set forms.

Objective
Explain how to assemble forms', Explain how to set forms

Name
Identify the types of column forms.

Objective
List applications for fiber and steel column forms', List applications for jobbuilt column forms

Name
List applications of vertical slip-forming and describe each.

Objective
Identify slipform components', Describe applications of climbing forms

Name
Describe how to construct stair forms.

Name
List various vertical architectural and specialty forms and describe applications for each.

Objective
Describe how smooth finishes are created', Describe how textured surfaces are created', Explain the use of insulating concrete forms ICFs

Name
Identify safety hazards associated with elevated deck formwork.

Name
Identify the various types of structural-concrete floor and roof slabs.

Objective
Describe how oneway solid slabs are constructed', Describe how twoway flat slabs are constructed', Explain the difference between twoway flat plate slabs and twoway flat slabs', Describe how oneway joist slabs are constructed', Describe how twoway joist slabs are constructed', Describe how composite slabs are constructed', Describe how posttensioned concrete slabs are constructed

Name
Describe the different types of form systems.

Objective
Describe applications for pan forms', Describe applications for Ijoist pan forms', Describe applications for one and twoway beam and slab forms', Describe applications for flatslab or flatplate forms', Describe applications for compositeslab deck forms

Name
Identify types of elevated decks.

Objective
List the materials used for deck surfaces', Explain the use of handset multicomponent decks', Describe applications for handset panelized decks', Explain the use of outriggers', Describe applications for flying decks

Name
Identify the different types of shores and describe applications for each.

Objective
Explain how adjustable wood shores are installed', Explain how manufactured shores are installed

Name
Identify specialty form systems.

Objective
Explain how bridge decks are formed', Explain how tunnels and culverts are formed

Requirements

Simple Requirements

A minimum grade of 'C' in Course CCP134

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CCP134 - Introduction to Concrete Construction

CCP154 - Finishing Concrete

Overview

Department
Applied Technologies

Course Description
This course is the curriculum for Finishing Concrete under the National Center for Construction Education (NCCER). This course covers how tilt-up concrete construction is used, and tilt-up panels are formed, erected, and braced. It reviews the rebar installation and types of embedment used to lift and brace the panels. The methods used to achieve architectural and decorative finishes are also covered. The course also covers the tools, equipment, and procedures for handling, placing, and finishing concrete. It describes how joints are made in concrete structures, the use of joint sealants, and form removal procedures. Safety procedures for handling, placing, and finishing concrete are emphasized.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to describe the tilt-up wall-forming process.

Objective
Explain how to prepare the casting bed', Identify the different methods of forming tiltup wall panels', Discuss how architectural treatments are added to wall panels', Explain the purpose of reinforcement in wall panels', Discuss how inserts and embedment are placed in tiltup wall panels', Discuss the placement and finishing of concrete for tiltup wall panels

Name
The student will explain the proper procedure for erecting and bracing tilt-up wall panels.

Objective
List safety considerations when erecting tiltup wall panels', Describe the procedures for erecting and bracing tiltup wall panels

Name
The student will demonstrate knowledge of the safety precautions for handling, placing, and finishing concrete.

Objective
List the rules for the care and safe use of hand tools when handling and placing concrete', List the rules for the care and safe use of power tools when handling and placing concrete', Explain how to prevent cement dermatitis

Name
The student will identify the methods of moving and handling concrete.

Objective
Identify offsite equipment for mixing and conveying concrete', Identify onsite equipment for mixing and conveying concrete', Explain how to use hand and power tools for mixing and conveying concrete

Name
The student will explain and demonstrate the proper methods for placing and consolidating concrete into forms.

Objective
Explain the proper method for placing concrete into forms', Explain the proper method for consolidating concrete

Name
The student will be able to describe and demonstrate the proper methods for finishing and curing concrete.

Objective
Explain the proper method for screeding concrete', Explain the proper method for leveling concrete', Explain the proper method for finishing concrete', Describe how to properly cure concrete', Describe the use of joint sealants', Identify the tools used to rub and patch concrete

Name
The student will be able to explain the different kinds of joints in concrete structures.

Objective
Identify construction joints', Identify isolation joints', Identify control joints', Identify decorative joints

Requirements

Simple Requirements

A minimum grade of 'C' in Course CCP134

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CCP134 - Introduction to Concrete Construction

CCP155 - FEMA Doors & Hardware

Overview

Department
Applied Technologies

Course Description
This course is the curriculum for Doors and Door Hardware under the National Center for Construction Education (NCCER). This course covers the installation of metal doors and related hardware in steel-framed, wood-framed, and masonry walls, along with their related hardware, such as locksets and door closers. The course will also cover requirements for FEMA rated doors, door hardware, and installation. It also covers the installation of wooden doors, folding doors, and pocket doors.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the installation of metal doors and related hardware in steel-framed, wood-framed, and masonry walls, along with their related hardware, such as locksets and door closers. In addition, the student will be able to install wooden doors, folding doors, and pocket doors.

Objective
Identify various types of door jambs and frames and demonstrate the installation procedures for placing selected door jambs and frames in different types of interior partitions', Identify different types of interior doors', Identify different types of interior door hardware and demonstrate the installation procedures for selected types', Demonstrate the correct and safe use of the hand and power tools described in this module', List and identify specific items included on a typical door schedule', Demonstrate the procedure for placing and hanging a selected door', Install a selected metal frame door using the proper safety precautions', Install a prehung door unit or door hanging system using the proper safety precautions', Lay out and cut hinges in a wooden door', Install a lockset and door closer using the proper safety precautions', Install a bifold door using the proper safety precautions

Name
The student will become familiar with the International Code Council requirements for design and construction of storm shelters per ICC 500-2020. In addition, they will be able to explain what FEMA rated hardware is and demonstrate its installation.

Objective
Identify FEMA rated doors and their associated frames', Explain and demonstrate how to install a FEMA door frame', Explain frame anchoring requirements for tornado approved doors', Explain and demonstrate hardware installation for FEMA doors including hinges closures and locksets

Requirements

Simple Requirements

A minimum grade of 'C' in Course CCP150

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CCP150 - Drywall Installation and Finishing (Inactive)

CCP159 - Masonry III

Overview

Department
Applied Technologies

Course Description
This course consists of modules that will expand the student understanding of masonry applications and processes. This course will include materials and techniques used to plan, layout, reinforce, grout and inspect masonry work.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Interpret residential construction plans, elevations, and schedules.

Name
Estimate material needs based on residential drawings.

Name
Perform masonry tasks related to residential construction: foundations, patios, fireplaces, and chimneys.

Name
Describe and construct reinforced masonry including bond beams and vertical reinforcement.

Name
Demonstrate use of rebar, grout placement, and vibration techniques.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CCP133

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CCP133 - Masonry II

CCP168 - Equipment Operation

Overview

Department
Applied Technologies

Course Description
This course is the curriculum for Equipment Operation under the National Center for Construction Education (NCCER). Heavy equipment operators are highly skilled workers who are needed on every construction site and in every mining operation. A skilled operator has many opportunities for advancement with an employer or as an entrepreneur. Many large excavating and site-development companies operating today were founded by equipment operators who started with a single machine. This course provides training on common types of equipment and instruments used for finish grading, materials and methods used to stabilize soils and control soil erosion, and finishing and grading methods used for various applications.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Explain the role of heavy equipment operators in the construction industry.

Objective
Explain the uses of heavy equipment', Identify and describe the different types of heavy equipment', Describe the career opportunities associated with heavy equipment operation', Describe the training available to heavy equipment operators

Name
Explain the responsibilities and characteristics required of heavy equipment operators.

Objective
Describe employee responsibilities', Explain the importance of human relations', Explain the importance of safety in the operation of heavy equipment

Name
Describe the types of equipment used for finish grading.

Objective
Identify equipment used in finish grading', Describe how laser instruments are used in finish grading', Describe how a Global Positioning System GPS and a robotic total station are used in finish grading

Name
Explain methods used to stabilize soils and control soil erosion.

Objective
Identify soil stabilizers and binders', Describe methods used in the application of soil binders', Describe methods used to control soil erosion

Name
Describe finish grading methods.

Objective
Describe the use of grading specifications', Explain how finish grade is established for slopes', Explain how the finish subgrade and base are established', Describe grading methods used for ditches and trenches', Describe grading methods used on parking lots sidewalks and curbs

Requirements

Simple Requirements

A minimum grade of 'C' in Course CCP122

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- CCP122 - Carpentry II

CCP169 - Masonry IV

Overview

Department
Applied Technologies

Course Description
This course consists of modules that will expand the student understanding of masonry applications and processes. This course will include materials and techniques used to plan, layout, and inspect masonry work.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
120

Course Learning Outcomes

Learning Outcomes

Name
Construct masonry openings with associated metalwork including lintels and frames.

Name
Apply advanced masonry laying techniques such as closures, archways, and decorative bond patterns.

Name
Identify and adjust for environmental impacts on masonry work.

Name
Perform inspection procedures for quality assurance and control.

Name
Safely construct elevated masonry systems using appropriate PPE, bracing, and fall protection.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CCP159

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CCP159 - Masonry III

CCP172 - Fundamentals of Crew Leadership

Overview

Department
Applied Technologies

Course Description
This course is the curriculum for Fundamentals of Crew Leadership under the National Center for Construction Education (NCCER). This course covers the skills needed to become an effective crew leader. It will help a crew leader who wants to become more effective, as well as a crew member who aspires to become a crew leader. The module covers basic leadership skills, safety, and project control.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Students will understand the construction and power industries, including career opportunities, evolving worker values, leadership training importance, technological advancements, diversity issues, discrimination prevention, organizational structures, and distinctions between authority, responsibility, and accountability.

Objective
Describe the opportunities in the construction and power industries', Describe how workers values change over time', Explain the importance of training and safety for the leaders in the construction and power industries', Describe how new technologies are beneficial to the construction and power industries', Identify the gender and minority issues associated with a changing workforce', Describe what employers can do to prevent workplace discrimination', Differentiate between formal and informal organizations', Describe the difference between authority responsibility and accountability', Explain the purpose of job descriptions and what they should include', Distinguish between company policies and procedures

Name
Students will understand the common skills needed to effectively lead teams, including communication, motivation, delegation, and problem-solving.

Objective
Describe the role of a crew leader', List the characteristics of effective leaders', Be able to discuss the importance of ethics in a supervisors role', Identify the three styles of leadership', Describe the forms of communication', Describe the four parts of verbal communication', Describe the importance of active listening', Explain how to overcome the barriers to communication', List ways that leaders can motivate their employees', Explain the importance of delegating and implementing policies and procedures Distinguish between problem solving and decision making

Name
Students will understand the crew leader's role in ensuring a safe work environment.

Objective
Explain the importance of safety', Give examples of direct and indirect costs of workplace accidents', Identify safety hazards of the construction industry', Explain the purpose of OSHA', Discuss OSHA inspection procedures', Identify the key points of a safety program', List steps to train employees on how to perform new tasks safely', Identify a crew leaders safety responsibilities', Explain the importance of having employees trained in first aid and cardiopulmonary resuscitation CPR', Describe the indications of substance abuse', List the essential parts of an accident investigation', Describe ways to maintain employee interest in safety Distinguish between company policies and procedures

Name
Students will understand project phases, delivery systems, planning stages, documentation, estimating, scheduling, cost control, and resource management for optimal production and productivity.

Objective
Describe the three phases of a construction project', Define the three types of project delivery systems', Define planning and describe what it involves', Explain why it is important to plan', Explain the importance of documenting job site work', Describe the estimating process', Explain how schedules are developed and used', Explain how the critical path method CPM of scheduling is used', Describe the different costs associated with building a job', Explain the crew leaders role in controlling costs', Illustrate how to control the main resources of a job materials tools equipment and labor Explain the differences between production and productivity and the importance of each

CCP179 - Advanced Masonry Laying Techniques

Overview

Department
Applied Technologies

Course Description
This course is a companion course to Masonry III & IV. This course will reinforce and expand the student understanding of masonry applications, processes and will provide practical opportunities for skill development. This course will include materials and techniques used to plan, layout, reinforce, grout and inspect masonry work.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
6

Contact Hours

Contact Hours
Min:
165

Billing Hours

Billing Hours
Min:
6

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
150

Course Learning Outcomes

Learning Outcomes

Name
Estimate quantities and costs for commercial and residential masonry projects.

Name
Lay out and level large-scale projects using total stations or optical instruments.

Name
Construct stone masonry using dry-stack and mortared methods

Name
Install glazed masonry units and glass block walls to plan specifications.

Name
Lead masonry crews using fundamental jobsite communication and coordination skills.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CCP169

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CCP169 - Masonry IV

CCP180 - Cabinet Installation

Overview

Department
Applied Technologies

Course Description
This course is the curriculum for Cabinet Installation under the National Center for Construction Education (NCCER). This course covers the selection and installation of base and wall cabinets and countertops.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the different types of trim used in finish work.

Objective
State the classes and sizes of typical base and wall kitchen cabinets', Identify the cabinet components and hardware and describe their purposes', Lay out factorymade cabinets countertops and backsplashes', Explain the installation of an island base

Requirements

Simple Requirements

A minimum grade of 'C' in Course CCP124

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CCP124 - Exterior Envelope

CCP185 - Carpentry Internship I

Overview

Department
Applied Technologies

Course Description
In this course students will have the opportunity to link classroom/ lab theory with an experimental learning opportunity. Through direct observation, reflection and evaluation, students gain an understanding of the internship site's work, mission, and customers. The student will identify how these relate to their program of study, as well as the organization's position in the broader industry or field. Students will produce a critical reflection of their internship experience demonstrating how they have addressed specific learning goals.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2019

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
3

Other Hours

Other Hours
Min:
135

Course Learning Outcomes

Learning Outcomes

Name
Applies knowledge to the real world work experience.

Objective
Searches out and applies resources and methods to accomplish assigned tasks', Articulate the connection between classroomlab theory to industry experiences

Name
Observe skills associated with carpentry.

Name
Apply skills associated with carpentry.

Name
Demonstrate effective workplace behaviors.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CCP180

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CCP180 - Cabinet Installation

CCP187 - Carpentry Internship II

Overview

Department
Applied Technologies

Course Description
This course is a continuation of Carpentry Internship I in which students continue their work in experiential learning. Through observation, reflection and evaluation, students gain an understanding of the internship site's work, mission, and customers. The student will identify how these relate to their program of study, as well as the organization's position in the broader industry or field. Students will produce a critical reflection of their internship experience, demonstrating how they have addressed specific learning goals.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Spring 2019

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
3

Other Hours

Other Hours
Min:
135

Course Learning Outcomes

Learning Outcomes

Name
Applies knowledge to the real world work experience.

Objective
Searches out and applies resources and methods to accomplish assigned tasks', Articulate the connection between classroomlab theory to industry experiences

Name
Observe skills associated with carpentry.

Name
Apply skills associated with carpentry.

Name
Demonstrate effective workplace behaviors.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CCP185

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CCP185 - Carpentry Internship I

A minimum grade of 'C' in Course CCP180

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CCP180 - Cabinet Installation

CED108 - Word Processing

Overview

Department
General Education

Course Description
Emphasizes an intensive use of word processing software to create and revise business documents. Topics include: equipment and supplies maintenance and usage, work area management, word processing software, and productivity.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2012

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to equipment and supplies maintenance and usage

Objective
Identify hardware components', Describedemonstrate care and maintenance of lab and hardware', Describedemonstrate ways to organize and label diskettes', Load paper into printer', Change ribboncartridge', Identify and correct printer error messages', Explaindemonstrate how to track documents by organizing diskettes using tracking codes renaming documents and using index', Describe the important of verifying diskettes maintaining backups password protection of files and diskettes

Name
The student will be able to ..work area management

Objective
Demonstrate proper procedure for turning system on', Perform proper insertion of disks into system', Perform commands to boot up or log onto system', Perform commands to close down or log off system', Perform proper removal of disk from system

Name
The student will be able toword processing software

Objective
List the steps to create and name a document', Explaindemonstrate what default settings are and how to manage them', Describedemonstrate how to align text with the left and right margins and center it between them', Demonstrate how to use tab stops and indents', Show how to control page breaks and page numbers', Describedemonstrate hyphenation', Describedemonstrate how to use boldface underlines and typestyle to emphasize words', Describedemonstrate how to use subscripts and superscripts', Describedemonstrate how to add headers and footers and control their placement', Explain the difference between onscreen and offscreen formatting', Describedemonstrate how formats can be created saved and reused', Explaincreate and store a primary document with variables and automatically merge with secondary variables document', Explaindemonstrate the interpretation of codes on the screen to determine how a finished document will appear when printed', Describedemonstrate text entry', Describedemonstrate cursor movement', Explain the difference between hard and soft carriage returns hyphens and spaces', Explaindemonstrate how to break andor join paragraphs by the insertion of hard carriage returns', Describedemonstrate the differences between inserting and replacing over existing text', Explaindemonstrate how some programs recall deleted material', Describedemonstrate line adjustment and document repagination', Describe what a block of text is and how you copy move and delete blocks', Listdemonstrate the steps to save a file into memory or onto a disk', Listdemonstrate the steps to retrieve a file for viewing andor editing', Listdemonstrate commands to send document to the printer', List the options available when printing', Explain how to manage documents in a print queue', Produce mailable errorfree letters envelopes memos tables and reports

Name
The student will be able to..proofreading

Objective
Explaindemonstrate how to search for words and replace them', Describedemonstrate available aids such as spelling checkers style and grammar checks thesauruses and document compare features

Name
The student will be able to..documents

CED115 - Computer Applications

Overview

Department
General Education

Course Description
This course introduces students to the fundamental concepts and operations necessary to use computers. Emphasis is placed on basic functions and familiarity with computer use. Topics include: computer terminology, introduction to the windows environment, introduction to networking, introduction to word processing, introduction to spreadsheets, and introduction to databases.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Identify the specifications and configurations of computer hardware

Objective
Identify the components of a computer', Identify the different buttons and ports on a computer', Understand the difference between computer software and hardware

Name
Identify the role of an operating system

Objective
Explain what an operating system is', Choose commands from a menu', Open and exit programs within the graphical user interface', Identify the elements of the My Computer window', Use Windows explorer to locate files and folders', Move between applications', Maximize minimize and resize a window', Create save and edit a file

Name
Use the Internet to find information and determine its credibility

Objective
Understand what the Internet is', Connect to the Internet and understand the cloud concept', Use a web browsers', Understand URLs', Understand and use hyperlinks', Download and upload files and documents on the Internet', Use a search engine

Name
Use word processing software to create, edit, and produce professional documents

Objective
Create a new document and insert text', Insert modify and delete text in a document', Insert and format graphics', Insert and modify text boxes and shapes', Preview and print a document', Change document and paragraph layout', Create and modify bullet and number lists', Set and modify tab stops using dialog box and ruler', Insert a SmartArt graphic', Create a new document from an existing document', Change and reorganize text', Use spellcheck modify AutoComplete properties', Use Find Replace and Thesaurus to modify text in a document', Create a document using a template', Modify margins and paragraph spacing', Insert and modify citations', Insert a bibliography into a research paper', Insert and modify Headers and Footers

Name
Create spreadsheets and charts for problem-solving

Objective
Create save and navigate an Excel Workbook', Enter and modify data in a worksheet', Construct and copy formulas', Construct and copy functions', Format cells with Merge Center and Cell Styles', Chart data to create and modify a chart', Chart data to insert and modify Sparklines', Display formulas and print', Print single worksheets sections of worksheets and entire workbooks', Check spelling in a worksheet', Select a range enter data by range', Edit values in a worksheet', Add Headers and Footers to a worksheet', Resolve error message', Apply conditional formatting to a range of data', Use Data Time functions and modify them', Freeze panes', Rename modify and move worksheets in a workbook', Clear contents and formats', Copy and paste in excel', Create sort and filter an Excel Table', Edit and format multiple sheets at the same time

Name
Utilize a database

Objective
Define the fields in a table', Add fields and records to a table', Print the contents of a table', Use a form to enter and view data', Create and run a query', Create and run a report

Name
Use presentation software to create, edit, and produce professional presentations

Objective
Select and apply design templates to a pgraphics presentation', Create and edit slides with titles subtitles and text', Change the default font styles sizes and appearance of text in slides', Design lay out and create a slide presentation', Apply the slide outline notes and master views', Insert and modify clipart in a presentation', Add a header and footer to slides and outline pages', Apply custom animations and animation schemes to slides', Print slides handouts note pages outlines and presentations', Apply slide transitions', Format number and bulleted lists on a slide', Insert and modify text boxes and shades', Create remove and modify slide backgrounds', Customize slide backgrounds and themes', Insert WordArt', Run an animated slide show

Name
Identify the ethical and social standards of conduct regarding the use of information and technology

Objective
Learn the importance of creating strong passwords Learn how to create strong passwords', Learn how to check and web address for secure websites', Learn how to update the browser', Learn how to protect your identify and avoid email scams

Name
Identify security threats and solutions

Objective
Understand how to secure the computer', Understand how to maintain a computer', Understand how to back up computer files', Learn about the importance of antivirus software

CED116 - Advanced Word

Overview

Department
General Education

Course Description
Upon completion of this course students should understand the basic concepts of Word, perform character and paragraph formatting, manage text flow, create and modify tables, work with headers and footers, use illustrations and graphics, create and proof documents, create references and hyperlinks, and perform mail merges.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to perform basic editing concepts using Microsoft Word

Objective
Create save preview and print a document', Close and open new documents using Word', Save a document in different formats and locations', Change and organize different views using File Management', Use navigation window to search through a document', Use find replace thesaurus and highlight features', Select replace delete cut copy and paste text using keyboard shortcuts and ribbon', Format characters and use format painter', Apply styles to text

Name
The student will be able to format paragraphs using line and text spacing, listing options, and columns

Objective
Format paragraphs using indents line spacing text spacing and paragraph spacing', Create and format a bulleted list using default and customize features', Create and format a numbered list using default and customize features', Set and modify tabs', Set page and paragraph margins', Insert nonbreaking spaces hyphenation remove and insert page and section breaks', Add delete and format columns

Name
The student will be able to create and format reports

Objective
Format create and customize a report by applying a theme or customizing a theme', Use quick parts builtin building blocks and customizing building blocks', Format document background', Create and modify Headers and Footers

Name
The student will be able to insert and format pictures, graphics, shapes, WordArt, and SmartArt

Objective
Insert and format pictures by adding captions adjusting position and size applying picture styles and artistic effects', Insert and format screen shots shapes WordArt and SmartArt', Insert and format ClipArt', Compress and reset images', Apply and manipulate text boxes

Name
The student will be able to proof and finalize documents

Objective
Check content by using spelling and grammar check', Configure AutoCorrect settings', Insert and modify and view comments', Apply and format a hyperlink to text or graphic', Create Endnotes and Footnotes in a document', Create a Table of Contents in a document using default formats', Customize and update a Table of Contents', Customize Word and change research options

Name
The student will be able to perform a mail merge

Objective
Set up and perform a mail merge using the Mail Merge Wizard', Perform a mail merge manually

Name
The student will be able to maintain documents and templates

Objective
Reorganize a document outline use master documents and subdocuments', Utilize templates by adding text and formatting', Open close and create templates', Apply protection to a document using Backstage View ribbon commands and Protected Mode', Manage recover and delete draft versions', Share documents', Send documents via email SkyDrive or Internet Fax', Publish a blog account and post to it

Requirements

Simple Requirements

A minimum grade of 'C' in Course CED115

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CED115 - Computer Applications

CED117 - Advanced Excel

Overview

Department
General Education

Course Description
Upon completion of this course students should understand the basic concepts of Excel, be able to format cells, ranges, and worksheets, work with data, use basic and advanced formulas and functions, create and modify charts, insert pictures and shapes to a worksheet.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to perform basic editing skills using Microsoft Excel

Objective
Manipulate the Quick Access Toolbar and use Hotkeys', Understand how to change Excel View and how to use the different views Page Layout Normal split window view Page Break view', Open a new document save and close documents', Use Name box and Formula bar', Use different commands on Ribbon', Manipulate workbook files and folders using Backstage View', Printing with Backstage View selected worksheets current worksheet or entire workbook', Manipulate Excel default settings', Manipulate workbook properties', Access and use Excel Templates', Create a new Workbook', Saving a workbook to a different version of Excel or PDF or SPS', Manipulate workbook files and folders

Name
The student will be able to format cells and ranges in Microsoft Excel

Objective
Inserting and deleting cell data and formatting', Cutting copying and pasting data Using the fill a series option', Formatting cell contents use alignment features number format Merge and Center wrap text', Copying cell formatting using the format painter', Formatting cells with styles', Creating modifying and removing a hyperlink', Applying Conditional Formatting to cells

Name
The student will be able to format and edit worksheets in Microsoft Excel

Objective
Hide or unhide a column or series of columns', Hide or unhide a row or series or rows', Apply color to worksheet tabs', Printing row and column headings', Insert and modify Headers and Footers', Configure page margins print settings manage page scaling

Name
The student will be able to manage worksheets and sort and filter data

Objective
Move copy rename and reposition worksheets', High unhide insert and delete worksheets', Using zoom and freeze to change the onscreen view', Use Sort options', Filter data using AutoFilter Remove define and apply a filter

Name
The student will be able to create and format formulas and functions in Microsoft

Objective
Using basic operators and creating formulas', Revising formulas', Create formulas that use relative and absolute cell references', Define a cell range and edit ranges in formulas', Enter a cell range definition in the formula bar', Control the appearance of formulas

Name
The student will be able to use advanced formulas and functions in Microsoft Excel including secure and share workbooks

Objective
Use a series of conditional logic values in a formula', Edit defined conditions in a formula', Create a formula with values that match conditions', Use Formulas to look up data in a workbook', Use the IF function to apply conditional formatting', Use formulas to modify and format text', Securing your workbook formulas before sharing with others', Insert view edit and delete comments on a worksheet', Tracking changes to a workbook', Sharing a workbook by email

Name
The student will be able to create and use charts and PivotTables in Microsoft Excel

Objective
Create charts based on worksheet data', Formatting a chart with a Quick Style', Formatting parts of a chart manually', Modifying a chart', Show or hide data markers', Create format and customize a sparkline chart', Use line and column chart types', Use WinLoss chart types

Name
The student will be able to add graphics and shapes to a worksheet

Objective
Insert modify position and delete illustrations picture ClipArt shapes WordArt and SmartArt to a worksheet

Requirements

Simple Requirements

A minimum grade of 'C' in Course CED115

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CED115 - Computer Applications

CED118 - Advanced PowerPoint

Overview

Department
General Education

Course Description
Upon completion of this course students should understand the basic essentials of PowerPoint, insert and modify text on slides, add tables, graphics, and video to presentations, use transitions and animations, secure and share a presentation. Students should be able to create and present a PowerPoint presentation.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to create and edit basic PowerPoint presentations

Objective
Work with Backstage view', Open close delete presentations', Under the Quick Access Toolbar', Adjust views using the ribbon and using the status bar commands', Enter and modify text in a placeholder text box', Copy paste and delete text', Create a new blank presentation', Use PowerPoint save options', Create a presentation from a template', Delete multiple slides simultaneously', Duplicate selected slides', Include noncontiguous slides', Reuse a slide from a slide library', Print entire presentations handouts Note Pages outlines

Name
The student will be able to format and edit text in PowerPoint presentations

Objective
Use text effects', Use Format Painter', Use AutoFit', Change text format', Create new bulleted and numbered lists', Change the formatting of bulleted and numbered lists', Insert and format WordArt', Create and format Text Boxes', Use PowerPoint proofing', Use spelling and thesaurus features

Name
The student will be able to create and design a presentation in PowerPoint

Objective
Formatting and modifying themes in presentations', Changing slide backgrounds', Formatting a slide', Working and changing layout views', Inserting a date header footer and slide numbers', Linking slides to web pages and other programs Add hyperlinks to graphical elements', Customizing slide masters', Creating tables in a presentation', Inserting an Excel spreadsheet in a presentation', Adjusting columns and rows in table layout', Formatting tables in a presentation adding shading borders effects', Creating and entering charts in a presentation', Modifying charts and data in a presentation', Manually formatting a chart in a presentation', Converting text to SmartArt', Convert WordArt to SmartArt', Modifying SmartArt', Convert SmartArt to other formats', Adding formatting modifying and deleting graphics in a presentation', Adding formatting modifying and deleting shapes in a presentation', Organizing objects on a slide arranging and positioning', Creating a Photo Album Presentation

Name
The student will be able to use animation, transitions, and multimedia in PowerPoint

Objective
Create modify and delete a transition effect', Add sound to a transition', Modify transition duration', Set up manual or automatically timed advance options', Create modify and delete animation effects', Add Entrance Emphasis and Exit Effects', Add Motion Path', Change the direction of an animation', Attach a sound to an animation', Use Animation Painter', Create modify and delete media clips to a presentation', Apply a style to video or audio content', Adjust video or audio content', Arrange video or audio content', Size video or audio content', Adjust playback options', Show media controls', Compress media

Name
The student will be able to secure and share a presentation in PowerPoint

Objective
Insert delete and edit comments', Show or hide markup', Move to the previous or next comment', Merging changes from multiple copies of a presentation', Set change or delete a password to protect presentation', Mark a presentation as final', Saving a presentation in different formats picture presentation PDF XPS outline Open Document show ppsx save slide or object as picture file', Create a video from a presentation

Name
The student will be able to deliver a presentation in PowerPoint

Objective
Adjusting slide orientation and size', Create handouts and sent to Microsoft Word', Create a Custom Slide Show', Create modify delete and rehearse timings', Set up a slide show play narrations set up Presenter view show media controls', Work with presentation tools pen and highlight annotations change the ink color erase an annotation discard or retain annotations upon closing', Broadcast a presentation', Record the presentation from the beginning and from a current slide', Package a presentation for a CD delivery', Deliver a presentation from start to finish

Requirements

Simple Requirements

A minimum grade of 'C' in Course CED115

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CED115 - Computer Applications

CED120 - Advanced Computer Applications

Overview

Department
General Education

Course Description
This course enhances computer literacy and meets the needs of students in associate degree and/or certificate programs. The students will learn from hands-on experiences, advanced skills in word processing, spreadsheet applications, and graphical presentations in the Windows environment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will utilize Words advanced features in creation of complex tables,merge documents, and desktop publishing

Objective
Demonstrate how to add borders and shading to a document', Demonstrate how to change font color', Demonstrate how to use section and page breaks', Demonstrate how to use customized margin settings', Demonstrate how to create custom tabs sets', Demonstrate how to create a chart from a Word table', Demonstrate how to use the Draw Table feature to create a table', Demonstrate how to use formulas to calculate sums in a table', Demonstrate how to use the format painter', Create a header for a section', Create merge and data files', Demonstrate how to create macros', Demonstrate how to use IF statements in a merge document', Create and print envelopes and mailing labels', Demonstrate how to use desktop publishing techniques to create a newsletter', Demonstrate how to align text with the left and right margins and center in between them', Demonstrate how to use tab stops and indents', Demonstrate how to use subscripts and superscripts', Explain how to manage documents in a print queue', Prepare mailable error free envelopes memos and reports

Name
The student will gain the Excel skills necessary to create and manipulate a spreadsheet, create templates and workbooks containing formulas, and create financial formulas and data tables.

Objective
Create a template', Create formulas that reference cells in different sheets in a workbook', Demonstrate how to add comments to a cell', Demonstrate how to add headers and footers to a workbook', Demonstrate how to change print margins', Demonstrate how to use a data form to display add and delete records', Demonstrate how to use automatic subtotals', Demonstrate how to filter data to display records in a spreadsheet that meet comparison criteria', Demonstrate how to link spreadsheets', Demonstrate how to insert macros', Demonstrate how to create and manipulate various types of charts', Create financial and statistical formulas', Demonstrate how to build data tables', Demonstrate how to analyze worksheet data by changing values

Name
The student will incorporate a variety of PowerPoints advanced features tocreate slide presentations which include action buttons, action settings, sound effects,hyperlinks, and customized clipart

Objective
Create custom slide presentations', Present a PowerPoint presentation', Demonstrate how to use the drawing toolbar to create custom graphics', Demonstrate how to change existing clipart with the group and ungroup commands', Create custom handouts', Demonstrate how to put embed visuals into presentation', Create and format an organization chart', Create a custom background by adding a picture', Demonstrate how to add action buttons and action settings', Demonstrate how to add sound effects and hyperlinks to slides

Requirements

Simple Requirements

A minimum grade of 'C' in Course CED115

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- CED115 - Computer Applications

CED140 - Introduction to Social Media and Personal Branding

Overview

Department
General Education

Course Description
Students will learn how to use social media platforms to stay in touch with colleagues, promote their business and keep up with news. Students will learn how to build their own personal brand and use the social media platforms to promote themselves.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2020

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Student will learn how to create a personal brand based on their character, competencies and behaviors

Name
Students will learn what social media is and the value of keeping it relevant

Name
Students will learn how to use some basic social media applications on the market today

CFL225 - Construction Technology Floor Layer Apprenticeship

Overview

Department
Apprenticeship & Appl Learning

Course Description
This course serves as a credit placeholder for students participating in the Construction Technology Floor Layer Apprenticeship Apprenticeship program in partnership with WSU Tech, industry partners, and the Kansas Office of Apprenticeships. Students who have successfully completed the approved apprenticeship training may receive 45 credit hours of prior learning. Students must provide approved documentation outlining successful completion of apprenticeship training.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
45

Contact Hours

Contact Hours
Min:
2025

Billing Hours

Billing Hours
Min:
45

Other Hours

Other Hours
Min:
2025

Course Learning Outcomes

Learning Outcomes

Name
Students will demonstrate mastery of technical competencies gained through the Plumbing and Pipefitting Apprenticeship program

CFT101 - Introduction To Composites

Overview

Department
Aviation

Course Description
This course provides students with the fundamentals of composite theory in an interactive on line environment. Students then apply the concepts to industry based projects in a 3D interactive online environment and a world class composite laboratory. Topics include the materials, equipment, processes, components and design of polymer composite structures.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply safety standards associated with aviation composite industry

Objective
Identify the safety standards associated with the aviation composite industry including PPE and waste disposal', Apply safety standards associated with aviation industry in general and those specific to aviation composites

Name
The student will be able to apply quality concepts to the lab environment

Objective
Apply concepts to 5S to the lab environment', Apply quality controls to the lab environment appropriate documentation material control concepts and lean concepts

Name
The student will be able to effectively identify the terminology, materials, tools and equipment commonly found in the aviation composites industry.

Objective
Identify the role of documentation in the lay up process', Identify the types of materials and their properties commonly used in composites for the aerospace industry including fiberglass ESC Kevlar aramid carbon fiber graphite core materials including foam and honeycomb', Identify warp and fill and their role in the weave', Identify selvage edge and its role in the weave', Identify drapability and its role in composite fabric', Identify the primary weave categories plain twill and satin and their properties found in composite materials', Identify the styles of weave found in each of the categories including 2 x2 twills 4 harnesscrow foot 5 harness and 8 harness satins', Identify unidirectional carbon fiber tape', Identify the role of resinmatrix systems in the fabrication of composites', Identify the primary types of resin systems including thermoset resin systems epoxy and phenolic and pre impregnated materials thermoforming plastics', Identify the components with each type of resin system', Describe the properties of each type of resin system', Describe the impact of the characteristics of each type of resin system', Identify the cure temperature ranges for each type of resin system', Identify the characteristic of each resin systems and their impact', Identify the concept of glass transition temperature', Identify the role of core in composite fabrication', Identify the primary types of sandwich or core construction materials Nomex aluminum carbon fiber phenolic honeycomb and styrofoam urethane poly yinyl choloride and strux foam and their properties', Identify the different shapes of honeycomb core and their applications

Name
The student will be able to identify the process commonly associated with aviation composite industry

Objective
Identify the roles of the tools materials commonly used in preparation for the layup process toolmold release agent tacky tape', Identify the bleeder breather schedule', Identify the materials used in breather bleeder schedule and their role in the lay up process peel ply FEP perforated and non perforated bleeder blanket breather materials Airweave', Identify the bagging system', Identify the materials used in the bagging systems and their role in the lay up process bagging material', Identify the types of bagging methods flat and pleated', Identify the vacuum system and its components pump port gauge and hose', Identity the parts of the vacuum port base quick disconnect attachment and internal check valve', Identify the role of the cure process in the fabrication of composites', Identify the methods for curing a composite part including room temperature elevated temperature', Identify the elevated temperature curing process ramp up dwellsoak and cool down', Identify the role of thermocouple', Identify the components of curing ovenautoclave doors oven panel vacuum pump and hose', Identify the trim process

Name
The student will be able toidentify the concepts associated with material/ fiber orientation

Objective
Identify the role of materialfiber orientation in the layup of composites materials', Define the common terminology used with materialfiber orientation warp direction warp face fill threads', Identify ply orientation and its relationship to the warp fibers in composite materials', Identity the role of ply orientation in composite structures directional load transfer', Identify the role of the warp clock in fabrication of composite materials', Identify common types of ply orientation balanced unbalanced symmetrical and quasi isotropic and their uses', Identify the orientation of the warp face and its impact', Identify nesting and stacking and their impact', Identify layup processes for prepreg wet layup with and without core

Name
The student will be able to apply composite fabrication concepts to industry based projects including a unidirectional pre preg layup, core pre preg layoup, and wet layup

Objective
Utilize the appropriate documents in the fabrication process blueprint planning paper material time log for unidirectional pre preg layup core pre preg layup and wet layup', Demonstrate material preparation techniques unidirectional pre preg layup core pre preg layup and wet layup', Demonstrate tool preparation skills for unidirectional pre preg layup core pre preg layoup and wet layup', Demonstrate common quality control measures found in layup process for a unidirectional pre preg layup core pre preg layoup and wet layup backing paper pressure requirements', Demonstrate layup skills associated with unidirectional pre preg materials', Demonstrate breather schedule skills including measurement cutting and application of materials per the documentation for a unidirectional pre preg layup core pre preg layoup and wet layup', Apply thermocouple techniques for a unidirectional pre preg layup core pre preg layup and wet layup', Demonstrate flat bagging skills for a unidirectional pre preg layup and wet layup', Identify vacuum standards including sea level Wichita project standard', Apply industry standard for vacuum bag check - 5 HG in 5 minutes', Demonstrate vacuum processes for a unidirectional pre preg layup core pre preg layup and wet layup', Demonstrate cure procedures a unidirectional pre preg layup core pre preg layup and wet layup', Demonstrate Debagging skills including removal procedures disposal procedures and edge awareness for a a unidirectional pre preg layup core pre preg layup and wet layup', Demonstrate basic trim skills break edges by hand sanding for a a unidirectional pre preg layup core pre preg layup and wet layup', Demonstrate layup skills associated with core pre preg materials', Demonstrate lay up skills associated with pre preg materials', Demonstrate pleated bagging skills for a core pre preg layup', Calculate resin matrix for a wet layup', Demonstrate layup skills associated with wet layup', Mix resin matrix for a wet layup

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC102

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC102 - Precision Instruments

A minimum grade of 'C' in Course MTH020

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MTH020 - Math Fundamentals (Inactive)

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

CFT106 - Composite Finish Trim

Overview

Department
Aviation

Course Description
This course provides students with an understanding of the processes and procedures use to finish trim composites parts. Topics include safety, documentation, tools, procedures and inspection.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply safety standards to the trim process

Objective
Apply safety standards to net trim processes', Utilize all appropriate PPE in the net trim process', Appropriately dispose of waste materials from net trim process

Name
The student will be able to demonstrate appropriate handling of composite part techniques

Objective
Identify proper handling techniques to avoid damage to composite part', Demonstrate proper handling techniques to avoid damage to composite part

Name
The student will be able to demonstrate net trim techniques.

Objective
Identify how different composite materials impact the trim process', Identify trim processes for aramid fiberglass carbon fiber hybrid', Identify trim tools including razor blade scissors band saw router bit diamond router bit duel action sander 90 or 100 degree DOTCO drill press', Determine trim lines per planning paperengineering drawing', Layout trim lines using multiple methods including template measurements or tolerance per engineering drawing', Identify the factors involved when selecting the appropriate tool to trim composite part including the type of composite material thickness length width contour and type of peel ply', Select trim tool based on compilation of factors including the composite material thickness length of the cut contour and peel ply', Identify when a combination of trim tools will be required', Cut trim the part using appropriate tool', Demonstrate the ability to utilize all trim tools including razor blade scissors band saw router bit diamond router bit duel action sander 90 or 100 degree DOTCO drill press', Perform self inspection of the part to determine if there is any core damage holes delamination resin damage water intrusion and level of damage', Identify QA inspection point', Identify process for QA inspection', Identify surface preparation instructions on planning paper', Identify peel ply utilized', Identify processes commonly used to prepare surface after peel ply is removed including dry wipe and solvent double wipe', Identify surface preparation techniques', Remove peel ply', Perform surface preparation after peel ply is removed', Identify why sanding is done in surface preparation process', Identify materials commonly used in sanding sandpaper scotchbrite', Identify time frame between sanding and paint application

Name
The student will be able to apply skills and techniques to industry based projects

Objective
Demonstrate all trim techniques during completion of FiberglassCarbon Fiber with a honeycomb Core - 8 Plys', Demonstrate all trim techniques during completion of Contour Part 6 Ply Project', Demonstrate all trim techniques during completion of Show and Tell Project

Requirements

Simple Requirements

A minimum grade of 'C' in Course CFT130

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- CFT130 - Composite Fabrication Methods/Applications

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

A minimum grade of 'C' in Course CFT101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CFT101 - Introduction To Composites

CFT107 - Composite Assembly

Overview

Department
Aviation

Course Description
Composite Assembly teaches the fundamentals of joining composite structures. Adhesive bonding as well as mechanical fasteners are covered. Safe procedures are emphasized. Hole preparation for mechanical fasteners and surface preparation for adhesive bondings are essential elements of this course. The course consists of theory and practical application through hands on projects.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate safety techniques associated with composite materials.

Objective
Demonstrate all safety techniques', Apply safety standards drilling processes', Utilize all appropriate PPE in the drilling process', Appropriately dispose of waste materials from the drilling process

Name
The student will be able demonstrate through laboratory assignments the ability to effectively drill composite parts

Objective
Utilize the planning paperengineering drawing to determine type of make up of part materials Kevlar fiberglass carbon fiber or hybrid', Identify drilling tools used in composites including drills bits dagger drill diamond coated cutting tools hole saws grinding tools routing bits', Identify layout techniques used in composites', Identify layout template made from PVA', Utilize template to identify fastener locations', Discuss reason for utilizing heat tape adhesives', Demonstrate layout techniques', Identify color coding utilized for composite drill bits', Select appropriate drill bit for composite material being drilled', Describe process to avoid delaminationseparation during drilling', Demonstrate backing part during drilling', Identify appropriate speed of drill for composites', Identify appropriate feed of the drill for composites', Identify drilling guidescups', Demonstrate using drilling guidecup', Describe impact of friction from drilling on matrixresin system', Identify process for drilling a perpendicular hole', Identify appropriate disposal of waste composite chips from drilling process vacuum', Demonstrate drilling perpendicular hole on composite part', Identify fastener types - inserts threaded fasteners', Identify the composition of fasteners - titanium and stainless steel', Compare and Contrast fasteners types used in composites and aluminum', Identify tools used for installation based on type of fastener including click bond cherry type pull type', Demonstrate installation of inserts', Define reinforced fastener', Identify potting material', Identify mixing process for potting material', Demonstrate mixing process for potting material', Identify the process of reinforcing fastener drill insert potting material redrill', Demonstrate reinforcing fastener process', Identify tools used in this process including click bond', Describe co - bondingco - curing process', Demonstrate cobondingco curing process', Identify why countersink fastener on composite part', Identify tools used to countersink', Identify fastener types used to countersink with composites - pull type', Compare and contrast countersink process for composite and aluminum 120degree 130degree vs 100degree fastener types', Demonstrate countersinking with composites

Name
The student will be able to demonstrate a non structural secondary bonding techniques

Objective
Compare and contrast secondary bonding in composite aircraft and conventional aircraft including differences surface abrasion cleaning materials and curing procedures', Identify concept of non structural within aircraft', Utilize planning paper for non structural bonding processes and procedures', Identify adhesive commonly used in non structural bonding process', Identify common usage standards for adhesives on non structural bonding process', Identify materials commonly used to raise the surface energy prior to composite surface secondary bonding', Demonstrate raising the surface energy of the two composite surfaces to be bonded', Identify the tools and materials commonly used to perform primary cleaning of surfaces prior to secondary bonding process', Identify possible results from selecting inappropriate cleaning agent', Identify characteristics of adhesive containers and the potential for contamination', Demonstrate primary clean process', Identify common adhesive mixing ratios', Demonstrate mixing the adhesive', Identify common final cleaning process prior to bonding dry and cleaning agent', Identify final cleaning processes prior to bonding', Demonstrate final cleaning processes', Identify terminology including bond line control micro bead and shrim cloth', Demonstrate bond line control', Demonstrate appropriate adhesive application techniques', Identify characteristics of both vacuum bonding and weighted pressure bonding', Compare and contrast vacuum bonding and weighted pressure bonding', Identify selection process for vacuum or weighted pressure bonding ie planning paper', Identify common bagging skills including bagging schedule pleats vs non pleated bleeding or breathing', Demonstrate bagging skills and instructions on the planning paper', Identify common tools and materials for vacuum process', Demonstrate insertion of vacuum port', Demonstrate leak check per standards', Identify common cure processes and standards for autoclave heat blankets and air cure including cycles and temperatures', Demonstrate cure processes for secondary bonding', Demonstrate appropriate bag removal processes and procedures', Demonstrate self inspection of the secondary bond including visual and tap test', Identify procedures for Quality Assurance inspection', Demonstrate procedures for quality assurance inspection', Identify tools utilized in pressure bonding including click bond spring c clamps shot bag', List the limitations and advantages of the different types of pressure bond', Identify common bagging skills including bagging schedule pleats vs non pleated bleeding or breathing', Demonstrate bagging skills per instructions on the planning paper', Select appropriate weighted pressure bond per planning paper', Demonstrate application of weighted pressure bond', Demonstrate leak check per standards', Identify common cure processes and standards for autoclave heat blankets and air cure including cycles and temperatures', Demonstrate cure processes for secondary bonding', Demonstrate appropriate bag removal processes and procedures', Demonstrate self inspection of the secondary bond including visual and tap test', Identify procedures for Quality Assurance inspection', Demonstrate procedures for quality assurance inspection

Name
The student will be able demonstrate structural secondary bonding techniques

Objective
Identify concept of structural within aircraft', Identify the critical nature of structural secondary bond', Utilize planning paper for structural bonding processes and procedures', Identify adhesive commonly used in structural bonding process', Identify common usage standards for adhesives on structural bonding process', Identify materials commonly used to raise the surface energy prior to composite surface secondary bonding', Demonstrate raising the surface energy of the two composite surfaces to be bonded', Identify the tools and materials commonly used to perform primary cleaning of surfaces prior to secondary bonding process', Identify possible results from selecting inappropriate cleaning agent', Identify characteristics of adhesive containers and the potential for contamination', Demonstrate primary clean process', Identify common adhesive mixing ratios', Demonstrate mixing the adhesive', Identify common final cleaning process prior to bonding dry and cleaning agent', Demonstrate final cleaning processes', Identify terminology including bond line control micro bead and shrimp cloth', Demonstrate bond line control', Demonstrate appropriate adhesive application techniques', Identify characteristics of both vacuum bonding and weighted pressure bonding', Identify why weighted pressure bonding is not used on structural part', Identify common bagging skills including bagging schedule pleats vs non pleated bleeding or breathing', Demonstrate bagging skills per instructions on the planning paper', Identify common tools and materials for vacuum process', Demonstrate insertion of vacuum port', Demonstrate leak check per standards', Identify common cure processes and standards for autoclave heat blankets and air cure including cycles and temperatures', Demonstrate cure processes for secondary bonding', Demonstrate appropriate bag removal processes and procedures', Demonstrate self inspection of the secondary bond including visual and tap test', Identify procedures for Quality Assurance inspection', Demonstrate procedures for quality assurance inspection

Name
The student will be able to apply skills and techniques to industry based projects

Objective
Demonstrate all assembly techniques during completion of 3x6 Unit Tape Project', Demonstrate all assembly techniques during completion of Laminate without a Core', Demonstrate all assembly techniques during completion of Secondary Bond Project', Demonstrate all assembly techniques during completion of Clipboard Project', Demonstrate all assembly techniques during completion of HotplateCoaster Project with Picture', Demonstrate all assembly techniques during completion of Joining Project

Requirements

Simple Requirements

A minimum grade of 'C' in Course CFT106

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CFT106 - Composite Finish Trim

CFT112 - Composite Assembly I

Overview

Department
Aviation

Course Description
Composite Assembly teaches the fundamentals of joining composite structures. Adhesive bonding as well as mechanical fasteners are covered. Safe procedures are emphasized. Hole preparation for mechanical fasteners and surface preparation for adhesive bondings are essential elements of this course. The course consists of theory and practical application through hands on projects.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
1

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate safety techniques associated with composite materials.

Objective
Demonstrate all safety techniques', Apply safety standards drilling processes', Utilize all appropriate PPE in the drilling process', Appropriately dispose of waste materials from the drilling process

Objective
Utilize the planning paperengineering drawing to determine type of make up of part materials Kevlar fiberglass carbon fiber or hybrid', Identify drilling tools used in composites including drills bits dagger drill diamond coated cutting tools hole saws grinding tools routing bits', Identify layout techniques used in composites', Identify layout template made from PVA', Utilize template to identify fastener locations', Discuss reason for utilizing heat tape adhesives', Demonstrate layout techniques', Identify color coding utilized for composite drill bits', Select appropriate drill bit for composite material being drilled', Describe process to avoid delaminationseparation during drilling', Demonstrate backing part during drilling', Identify appropriate speed of drill for composites', Identify appropriate feed of the drill for composites', Identify drilling guidescups', Demonstrate using drilling guidecup', Describe impact of friction from drilling on matrixresin system', Identify process for drilling a perpendicular hole', Identify appropriate disposal of waste composite chips from drilling process vacuum', Demonstrate drilling perpendicular hole on composite part', Identify fastener types - inserts threaded fasteners', Identify the composition of fasteners - titanium and stainless steel', Compare and Contrast fasteners types used in composites and aluminum', Identify tools used for installation based on type of fastener including click bond cherry type pull type', Demonstrate installation of inserts', Define reinforced fastener', Identify potting material', Identify mixing process for potting material', Demonstrate mixing process for potting material', Identify the process of reinforcing fastener drill insert potting material redrill', Demonstrate reinforcing fastener process', Identify tools used in this process including click bond', Describe co - bondingco - curing process', Demonstrate cobondingco curing process', Identify why countersink fastener on composite part', Identify tools used to countersink', Identify fastener types used to countersink with composites - pull type', Compare and contrast countersink process for composite and aluminum 120degree 130degree vs 100degree fastener types', Demonstrate countersinking with composites

Name
The student will be able demonstrate structural secondary bonding techniques

Objective
Identify concept of structural within aircraft', Identify the critical nature of structural secondary bond', Utilize planning paper for structural bonding processes and procedures', Identify adhesive commonly used in structural bonding process', Identify common usage standards for adhesives on structural bonding process', Identify materials commonly used to raise the surface energy prior to composite surface secondary bonding', Demonstrate raising the surface energy of the two composite surfaces to be bonded', Identify the tools and materials commonly used to perform primary cleaning of surfaces prior to secondary bonding process', Identify possible results from selecting inappropriate cleaning agent', Identify characteristics of adhesive containers and the potential for contamination', Demonstrate primary clean process', Identify common adhesive mixing ratios', Demonstrate mixing the adhesive', Identify common final cleaning process prior to bonding dry and cleaning agent', Demonstrate final cleaning processes', Identify terminology including bond line control micro bead and shrimp cloth', Demonstrate bond line control', Demonstrate appropriate adhesive application techniques', Identify characteristics of both vacuum bonding and weighted pressure bonding', Identify why weighted pressure bonding is not used on structural part', Identify common bagging skills including bagging schedule pleats vs non pleated bleeding or breathing', Demonstrate bagging skills per instructions on the planning paper', Identify common tools and materials for vacuum process', Demonstrate insertion of vacuum port', Demonstrate leak check per standards', Identify common cure processes and standards for autoclave heat blankets and air cure including cycles and temperatures', Demonstrate cure processes for secondary bonding', Demonstrate appropriate bag removal processes and procedures', Demonstrate self inspection of the secondary bond including visual and tap test', Identify procedures for Quality Assurance inspection', Demonstrate procedures for quality assurance inspection

Objective
Demonstrate all assembly techniques during completion of 3x6 Unit Tape Project', Demonstrate all assembly techniques during completion of Laminate without a Core', Demonstrate all assembly techniques during completion of Secondary Bond Project', Demonstrate all assembly techniques during completion of Clipboard Project', Demonstrate all assembly techniques during completion of HotplateCoaster Project with Picture', Demonstrate all assembly techniques during completion of Joining Project

Requirements

Simple Requirements

A minimum grade of 'C' in Course CFT106

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CFT106 - Composite Finish Trim

CFT113 - Composite Assembly II

Overview

Department
Aviation

Course Description
Composite Assembly II continues the topics learned in Composite Assembly I. In this course students will focus on the skills and techniques associated with non structural bonding. Safe procedures are emphasized. The course consists of theory and practical application through hands on projects.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
1

Contact Hours

Contact Hours Min:
30

Billing Hours

Billing Hours Min:
1

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Activity
The student will be able to demonstrate safety techniques associated with composite materials.

Objective
Demonstrate all safety techniques', Apply safety standards drilling processes', Utilize all appropriate PPE in the drilling process', Appropriately dispose of waste materials from the drilling process

Name
The student will be able to demonstrate a non structural secondary bonding techniques

Objective
Compare and contrast secondary bonding in composite aircraft and conventional aircraft including differences surface abrasion cleaning materials and curing procedures', Identify concept of non structural within aircraft', Utilize planning paper for non structural bonding processes and procedures', Identify adhesive commonly used in non structural bonding process', Identify common usage standards for adhesives on non structural bonding process', Identify materials commonly used to raise the surface energy prior to composite surface secondary bonding', Demonstrate raising the surface energy of the two composite surfaces to be bonded', Identify the tools and materials commonly used to perform primary cleaning of surfaces prior to secondary bonding process', Identify possible results from selecting inappropriate cleaning agent', Identify characteristics of adhesive containers and the potential for contamination', Demonstrate primary clean process', Identify common adhesive mixing ratios', Demonstrate mixing the adhesive', Identify common final cleaning process prior to bonding dry and cleaning agent', Identify final cleaning processes prior to bonding', Demonstrate final cleaning processes', Identify terminology including bond line control micro bead and shrim cloth', Demonstrate bond line control', Demonstrate appropriate adhesive application techniques', Identify characteristics of both vacuum bonding and weighted pressure bonding', Compare and contrast vacuum bonding and weighted pressure bonding', Identify selection process for vacuum or weighted pressure bonding ie planning paper', Identify common bagging skills including bagging schedule pleats vs non pleated bleeding or breathing', Demonstrate bagging skills and instructions on the planning paper', Identify common tools and materials for vacuum process', Demonstrate insertion of vacuum port', Demonstrate leak check per standards', Identify common cure processes and standards for autoclave heat blankets and air cure including cycles and temperatures', Demonstrate cure processes for secondary bonding', Demonstrate appropriate bag removal processes and procedures', Demonstrate self inspection of the secondary bond including visual and tap test', Identify procedures for Quality Assurance inspection', Demonstrate procedures for quality assurance inspection', Identify tools utilized in pressure bonding including click bond spring c clamps shot bag', List the limitations and advantages of the different types of pressure bond', Identify common bagging skills including bagging schedule pleats vs non pleated bleeding or breathing', Demonstrate bagging skills per instructions on the planning paper', Select appropriate weighted pressure bond per planning paper', Demonstrate application of weighted pressure bond', Demonstrate leak check per standards', Identify common cure processes and standards for autoclave heat blankets and air cure including cycles and temperatures', Demonstrate cure processes for secondary bonding', Demonstrate appropriate bag removal processes and procedures', Demonstrate self inspection of the secondary bond including visual and tap test', Identify procedures for Quality Assurance inspection', Demonstrate procedures for quality assurance inspection

Objective
Identify concept of structural within aircraft', Identify the critical nature of structural secondary bond', Utilize planning paper for structural bonding processes and procedures', Identify adhesive commonly used in structural bonding process', Identify common usage standards for adhesives on structural bonding process', Identify materials commonly used to raise the surface energy prior to composite surface secondary bonding', Demonstrate raising the surface energy of the two composite surfaces to be bonded', Identify the tools and materials commonly used to perform primary cleaning of surfaces prior to secondary bonding process', Identify possible results from selecting inappropriate cleaning agent', Identify characteristics of adhesive containers and the potential for contamination', Demonstrate primary clean process', Identify common adhesive mixing ratios', Demonstrate mixing the adhesive', Identify common final cleaning process prior to bonding dry and cleaning agent', Demonstrate final cleaning processes', Identify terminology including bond line control micro bead and shrimp cloth', Demonstrate bond line control', Demonstrate appropriate adhesive application techniques', Identify characteristics of both vacuum bonding and weighted pressure bonding', Identify why weighted pressure bonding is not used on structural part', Identify common bagging skills including bagging schedule pleats vs non pleated bleeding or breathing', Demonstrate bagging skills per instructions on the planning paper', Identify common tools and materials for vacuum process', Demonstrate insertion of vacuum port', Demonstrate leak check per standards', Identify common cure processes and standards for autoclave heat blankets and air cure including cycles and temperatures', Demonstrate cure processes for secondary bonding', Demonstrate appropriate bag removal processes and procedures', Demonstrate self inspection of the secondary bond including visual and tap test', Identify procedures for Quality Assurance inspection', Demonstrate procedures for quality assurance inspection

Objective
Demonstrate all assembly techniques during completion of 3x6 Unit Tape Project', Demonstrate all assembly techniques during completion of Laminate without a Core', Demonstrate all assembly techniques during completion of Secondary Bond Project', Demonstrate all assembly techniques during completion of Clipboard Project', Demonstrate all assembly techniques during completion of HotplateCoaster Project with Picture', Demonstrate all assembly techniques during completion of Joining Project

Requirements

Simple Requirements

A minimum grade of 'C' in Course CFT112

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CFT112 - Composite Assembly I

CFT130 - Composite Fabrication Methods/ Applications

Overview

Department
Aviation

Course Description
Fundamentals of composite structure fabrication methods and applications will be covered, including hand lay-up, bonding, vacuum bagging, and resin transfer molding. Emphasis will also be placed on composites safety and inspection/ testing of composite components.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply safety standards to industry based techniques.

Objective
Apply safety standards to layup and cure processes', Utilize all appropriate PPE in the layup and cure process', Appropriately dispose of waste materials from the layup and cure process

Name
The student will be able to apply composite fabrication skills and techniques to industry-based projects.

Objective
Apply resin on composite material for Dual Core Layup', Demonstrate bagging process for this part Laminate with Core', Demonstrate bagging with pleats Dual Core Layup', Demonstrate basic trim skills Monlithic Panel Pre Preg Dual Core Layup Internal Chamfer Core Laminate with Core', Demonstrate core layup processes Dual Core Layup', Demonstrate core layup skills Laminate with Core', Demonstrate cure proceduresMonlithic Panel Pre Preg Dual Core Layup Internal Chamfer Core Laminate with Core', Demonstrate Debagging skillsMonlithic Panel Pre Preg Dual Core Layup Internal Chamfer Core Laminate with Core', Demonstrate fabric preparation skills including measurement and cuttingMonlithic Panel Pre Preg Dual Core Layup Internal Chamfer Core Laminate with Core', Demonstrate flat bagging skills Monlithic Panel Pre Preg', Demonstrate impact of different ply orientations on composite partsMonlithic Panel Pre Preg', Demonstrate internal chamfer core layup skills Internal Chamfer Core', Demonstrate pleated bagging proceduresInternal Chamfer Core Laminate with Core', Demonstrate tool preparation skillsInternal Chamfer Core Laminate with Core', Demonstrate unidirectional ply lay up skills Monlithic Panel Pre Preg', Demonstrate vacuum bag check or leak checkMonlithic Panel Pre Preg Dual Core Layup Internal Chamfer Core Laminate with Core', Demonstrate warp face up on bottom and warp face up on the top of the partInternal Chamfer Core Laminate with Core', Disengage vacuumMonlithic Panel Pre Preg Dual Core Layup Internal Chamfer Core Laminate with Core', Explain basic trim skills Monlithic Panel Pre Preg Dual Core Layup Internal Chamfer Core Laminate with Core', Explain Debagging skills Monlithic Panel Pre Preg Dual Core Layup Internal Chamfer Core Laminate with Core', Explain industry standard for vacuum bag check - 5 HG in 5 minutesMonlithic Panel Pre Preg Dual Core Layup Internal Chamfer Core Laminate with Core', Explain bagging schedule Dual Core Layup', Explain concept of warp face up on bottom of the part and warp face up on top of the part and vice versa Internal Chamfer Core Laminate with Core', Explain core layup processes Dual Core Layup', Explain core layup template Laminate with Core', Explain impact of different bagging schedule on composites Dual Core Layup', Explain impact of new variables duel core on composite materials Dual Core Layup', Explain impact of pleated bagging on composite part Internal Chamfer Core', Explain internal chamfer core layup template Internal Chamfer Core', Explain pleated bagging Internal Chamfer Core Laminate with Core', Explain resin ratio mixture Dual Core Layup', Explain stack to bleed excess resin Dual Core Layup Internal Chamfer Core Laminate with Core', Explain terminology associated with cure processMonlithic Panel Pre Preg Dual Core Layup Internal Chamfer Core Laminate with Core', Explain the types of cure including room temperature oven autoclave hot bonding and heat blanketsMonlithic Panel Pre Preg Dual Core Layup Internal Chamfer Core Laminate with Core', Explain types of bagging including flat and pleatsMonlithic Panel Pre Preg Dual Core Layup', Explain vacuum standards including sea level Wichita project standardMonlithic Panel Pre Preg Dual Core Layup Internal Chamfer Core Laminate with Core', Identify impact of pleated bagging on composites Laminate with Core', Insert vacuum terminal into bagMonlithic Panel Pre Preg Dual Core Layup Internal Chamfer Core Laminate with Core', Install vacuum gageMonlithic Panel Pre Preg Dual Core Layup Internal Chamfer Core Laminate with Core', Prepare the toolingMonlithic Panel Pre Preg Dual Core Layup', Pull down the vacuumMonlithic Panel Pre Preg Dual Core Layup Internal Chamfer Core Laminate with Core', Read vacuum gageMonlithic Panel Pre Preg Dual Core Layup Internal Chamfer Core Laminate with Core', Select the appropriate bagging materials including peel ply non perforated barrier air weave PVA bagMonlithic Panel Pre Preg Dual Core Layup', Utilize lay up templateInternal Chamfer Core Laminate with Core

Requirements

Simple Requirements

A minimum grade of 'C' in Course CFT101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CFT101 - Introduction To Composites

CFT135 - Overview of Composite Inspection

Overview

Department
Aviation

Course Description
This course is designed to provide students with an understanding of the inspection process during repair procedures. Students will learn the role of repair technicians in the inspection process. Emphasis will be placed on the importance of documentation in the inspection of repair. This course is an online course and utilizes interactive online content.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify industry standards in damage assessment

Objective
Identify damage assessment techniques', Identify visual techniques for assessment of damagedefects', Identify entry point for damage detection by visual search including lightning strike bird strike scheduled inspection', Identify the industry standards for determining damage levels including negligible or cosmetic repairable or not repairable

Name
The student will be able to identify basic NDI skills

Objective
Define NDI', Identify history and evolution of NDI', Identify the types of damage each NDI technique will detect', Identify the reliability of NDI testing techniques POD - Probability of Detection', Identify NDI equipment', Identify NDI testing techniques including tap test x Ray ultra sound thermograph exotic methods', Identify differences in inservice inspection vs production inspection

Name
The student will be able to identify inspection process in composite repair

Objective
Identify the Repair technicians role in the inspection process', Identify the role of the quality assurance and engineering in inspection process', Identify typical points of inspection during a repair procedure including before repair damage removal bagging cureset up repair completion structural inspection ready for finish', Identify value of inspection points', Identify potential process at each inspection point including return to NDI or adjustment to repair process', Identify terminology including standard repair and MRB - authorized repair

Name
The student will be able to demonstrate composite documentation skills

Objective
Identify documentation requirements for Composites', Identify repair technicians role in the documentation process', Identify manualsdocuments used in inspection process', Identify traceability concepts

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

CFT140 - Composite Inspection

Overview

Department
Aviation

Course Description
This course is designed to provide students with an understanding of the inspection process during repair procedures. Students will learn the role of repair technicians in the inspection process while obtaining hands on experience in basic NDI testing techniques. Emphasis will be placed on the importance of documentation in the inspection of repair. This course utilizes online, classroom and laboratory learning environments.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
30

Billing Hours

Billing Hours Min:
2

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate composite documentation skills

Objective
Identify documentation requirements for Composites', Identify repair technicians role in the documentation process', Identify manualsdocuments used in inspection process', Manipulate multiple documentsmanuals to complete inspection', Demonstrate documentation skills', Identify traceability concepts

Name
The student will be able to demonstrate basic NDI skills

Objective
Define NDI', Identify history and evolution of NDI', Identify the types of damage each NDI technique will detect', Identify the reliability of NDI testing techniques POD - Probability of Detection', Identify NDI equipment', Identify NDI testing techniques including tap test x Ray ultra sound thermograph exotic methods', Demonstrate tap test', Demonstrate ultrasound test', Compare contrast tap test results with more advanced NDI testing techniques', Identify differences in inservice inspection vs production inspection

Objective
Identify the Repair technicians role in the inspection process', Identify the role of the quality assurance and engineering in inspection process', Identify typical points of inspection during a repair procedure including before repair damage removal bagging cureset up repair completion structural inspection ready for finish', Identify value of inspection points', Identify potential process at each inspection point including return to NDI or adjustment to repair process', Identify terminology including standard repair and MRB - authorized repair

Name
The student will be able to apply industry standards to damage assessment

Objective
Identify damage assessment techniques', Identify visual techniques for assessment of damagedefects', Identify entry point for damage detection by visual search including lightning strike bird strike scheduled inspection', Demonstrate visual damagedefect assessment techniques', Identify the industry standards for determining damage levels including negligible or cosmetic repairable or not repairable

Requirements

Simple Requirements

A minimum grade of 'C' in Course CFT107

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CFT107 - Composite Assembly

A minimum grade of 'C' in Course AVC112

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC112 - Blueprint Reading

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

A minimum grade of 'C' in Course AVC112

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC112 - Blueprint Reading

A minimum grade of 'C' in Course CFT101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CFT101 - Introduction To Composites

CFT141 - Disassemble & Damage Removal Techniques

Overview

Department
Aviation

Course Description
This course provides student with the knowledge required to safely and effectively prepare a part for repair. In the lab setting students will learn to effectively remove finish, disassemble and remove damage composite material. Special attention will be paid to developing the student's tactile skills in all these areas. Theory in this course is taught using an interactive on line environment.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to effective utilize solvents in the composite repair process

Objective
Identify solvents used in damage including MPK Alcohol acetone', Identify process to determine which solvents to use for what composite materials specifications

Name
The student will be able to apply safety techniques.

Objective
Review safety issues during disassembly finish removal', Demonstrate appropriate disposal of waste', Identify dust collection systems', Utilize dust collection systems

Name
The student will be able to demonstrate the ability to effectively remove various finishes from composite parts

Objective
Utilize abrasive paint removal methods including sandpaper industrial scotchbrite unitized wheel', Describe why chemical paint removers are not utilized for paint removal', Execute effective tactile skills in the finish removal process', Recognize conductive coating in the finish removal process', Differentiate when each paint removal toolmethod should be applied

Name
The student will be able to demonstrate disassembly techniques in the composite repair problem

Objective
Identify what should be disassembled', Demonstrate effective removal of rivets', Demonstrate removal of two bonded composites', Demonstrate removal of sandwich panel butte end rivet', Demonstrate removal of leftover adhesive', ID process to determine if part removed for access can be salvaged MRB

Name
The student will be able to demonstrate damage removal procedures in the composite repair process

Objective
ID process of removal per documentation', Sequence the removal process', Execute effective tactile skills in the damage removal process', Identify the step removal process', Demonstrate step damage removal process', Identify the scarf removal process', Demonstrate the scarf removal process', Identify plug removal process', Demonstrate the plug removal process

Name
The student will be able to demonstrate core removal procedures in the repair process

Objective
Identify core removal techniques', Demonstrate core removal techniques', Execute effective tactile skills in the core removal process', Demonstrate mechanical methods to clean bottom of the core removal area', ID tools for cleaning core removal area including dotco putty knife sand paper pin router pencil grinder rotary file', Utilize tools for cleaning core removal area

Name
The student will be able to demonstrate layout processes

Objective
Determine size for the lay out area based on type of repair to be preformed', Demonstrate lay out of the repair skills', Discuss layout size in relation to strength of the repair

Requirements

Simple Requirements

A minimum grade of 'C' in Course CFT130

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CFT130 - Composite Fabrication Methods/Applications

Enrolled in Course CFT140

Type
Prerequisite

Enroll in the following Courses:
- CFT140 - Composite Inspection

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

A minimum grade of 'C' in Course CFT107

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CFT107 - Composite Assembly

A minimum grade of 'C' in Course AVC112

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC112 - Blueprint Reading

A minimum grade of 'C' in Course CFT101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CFT101 - Introduction To Composites

A minimum grade of 'C' in Course CFT106

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CFT106 - Composite Finish Trim

CFT142 - Composite Repair

Overview

Department
Aviation

Course Description
This course is designed to provide students with the knowledge and techniques used for structural repair of aircraft made with composite materials. Students will complete multiple industry based projects designed to challenge their skills with both wet layup and pre preg materials.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
120

Billing Hours

Billing Hours Min:
4

Lab Hours

Lab Hours Min:
120

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate structural repairs using both wet layup and pre-preg materials

Objective
Identify purpose of structural repairs', Identify the drivers which determine selection of structural repair type', Identify inspection points throughout the process', Identify if the repair is primary or secondary structural repair', Identify materials used in structural repair', Apply cleaning processes Pre Preg', Apply debagging techniques Pre Preg', Apply farring compoundPre Preg', Create template of each ply step bagging film Wet Layup Pre Preg', Cut core utilizing appropriate methodsWet Layup Pre Preg', Cut plys to templatePre Preg', Cut to templateWet Layup', Define zero axisWet Layup Pre Preg', Demonstrate application of ply to the repairWet Layup', Demonstrate appropriate storage techniques for templatesWet Layup Pre Preg', Demonstrate bagging techniquesWet Layup Pre Preg', Demonstrate bonding techniques with a variety of industry adhesivesWet Layup Pre Preg', Demonstrate cure techniques in repairWet Layup', Demonstrate elevated cure techniques in repairPre Preg', Demonstrate lay up of the repairWet Layup Pre Preg', Demonstrate squeegee process Wet Layup', Demonstrate squeegee techniques as necessaryWet Layup Pre Preg', Demonstrate the documentation proceduresWet Layup Pre Preg', Demonstrate vacuum techniques with repairsWet Layup Pre Preg', Demonstrate warp skills with various shapes including trapezoids squares etcWet Layup', Identify Adhesive bonded repairs external and flush patchesPre Preg', Identify appropriate cleaning processes including smooth and blend Pre Preg', Identify bagging techniques and bags in repairWet Layup Pre Preg', Identify debagging techniques Pre Preg', Identify farring compound Pre Preg', Identify order of ply application Wet Layup', Identify pot life of the materialWet Layup Pre Preg', Identify role of cureWet Layup Pre Preg', Identify the appropriate order of lay upWet Layup Pre Preg', Identify the documentation proceduresWet Layup Pre Preg', Identify the mixing ratio of the materialWet Layup Pre Preg', Identify the role of the squeegee process Wet Layup', Identify the role of the vacuumWet Layup Pre Preg', Identify the role of warp Wet Layup', Identify the type of cure including room temperature with post cure and elevated cure Wet Layup', Identify the types of coreWet Layup Pre Preg', Identify time saving techniques when bagging including pre - set bagging before plys use of Mylar for ease of clean upWet Layup Pre Preg', Identify tools used in cure process including heat blankets oven heat gunWet Layup Pre Preg', Identify types and characteristics of adhesivesWet Layup Pre Preg', Identify wet layup flush patches Pre Preg', Prefit core in replacement areaWet Layup Pre Preg', Re assemble as required Pre Preg', Select appropriate adhesives to match materialWet Layup Pre Preg', Select appropriate core type in appropriate thickness size and shapeWet Layup Pre Preg', Utilize the tools used in cure processWet Layup Pre Preg

Requirements

Simple Requirements

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

All of the following requirements

Enroll in the following Courses:

- CFT141 - Disassemble & Damage Removal Techniques

AND

All of the following requirements

Earn a minimum grade (UG) of C in the following:

- CFT141 - Disassemble & Damage Removal Techniques

CFT143 - Complex Composite Repairs

Overview

Department
Aviation

Course Description
This course is designed to provide the student with hands on experience working with non- structural composite repairs. Instruction will include learning to solve problems presented in non- production atmospheres in relation to composite repairs. Students will also review case studies and problem solving models.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply problem solving skills to composite repair process

Objective
Identify PDCA problem solving model', Review elements of PDCA model', Complete PDCA documentation', Apply PDCA model to case study repair project

Name
The student will be able to discuss electrical and metal bonding techniques in the composite repair

Objective
Identify Metal Bondingdissimilar metals', Determine elements of metal bondingdissimilar metals repair', Review case studies for metal bondingdissimilar metals repair', Electrical Bonding', Determine elements of electrical bonding repair', Review case studies for electrical bonding repair', Compare and contrast good and bad electrical bond

Name
The student will be able to compare and contrast bolted and bonded repairs

Objective
Identify role of bolted repair in overall composite repair processes', Identify reasons why bolted repair would be preformed', Compare and contrast bolted vs bonded repair including low z directional strength anisotropic fastener deformation fastener clearance fastener clamp up

Name
The student will be able to demonstrate processes associated with a bolted repair

Objective
Identify materials and equipment utilized in bolted repair', Identify surface preparation techniques associated with bolted repairs', Demonstrate surface preparation techniques', Identify the steps to prepare doubler material being used in the repair including measurement cutting deburring of edges', Demonstrate the doubler preparation techniques', Identify transverse pitch', Demonstrate transverse pitch', Identify the relationship between fastener diameter to edge distance', Calculate edge distance with 2D minimum and 4D maximum', Maintain 4D edge distance during the fastener installation process', Identify the techniques for layout of fastener pattern', Demonstrate layout of fastener pattern', Identify the issues associated with corrosion and fasteners in composite repair', Identify drilling issues associated with composite parts including drill speed fiber breakout', Demonstrate hole preparation procedures associated with composite parts including pilot holes including drilling pattern step - drill reaming and deburring', Identify fastener selection utilized for bolted repair', Identify fastener installation techniques including temporary fasteners and blind fastener', Demonstrate fastener installation including temporary and blind fastener', Identify the role of sealant in bolted repair', Demonstrate sealant application process including fastener wet install', Demonstrate bolted repairs in a variety of materials including solid laminate and honeycomb or sandwich structures

Name
The student will be able to demonstrate various types of complex repairs

Objective
Identify role of nonstructural Repair', Identify basic types of nonstructural repairs including sealing potting and resin injection cosmetic defects laminate', Compare contrast tolerances and orientation requirements in structural and cosmetic repairs', Identify the cosmetic standard used for repair', Identify the standard repair manual', Identify the role of the standard repair manual in determination of size and quantity of defects', Define the types of cosmetic defects', Identify why sandpaper selection impacts repair', Compare and contrast results of using different types of paper', Identify impact of too coarse a sandpaper - texture', Identify the impact of too fine a sandpaper Low surface energy', Identify other common materials', Develop PDCA plan for complex repair project', Identify procedures for cosmetic repairs including Surface porosity resin starvation Edge Erosion Delamination singleply damage cosmetic finish', Demonstrate abrasion techniques to the repair site', Apply resin', Demonstrate smoothing techniques including filling holes', Demonstrate curing techniques', Demonstrate sanding techniques', Evaluate repair in order to determine if additional work is require', Identify types of abrasion', Demonstrate abrasion techniques to the repair site', Identify types of resin including thickening agents and ferring compound', Apply resin', Demonstrate smoothing techniques including filling holes', Demonstrate curing techniques', Demonstrate sanding techniques', Evaluate repair in order to determine if additional work is require', Identify edge erosion', Identify causes of edge erosion', Demonstrate smoothing techniques including filling holes', Demonstrate sanding techniques', Demonstrate sealing techniques with adhesive', Demonstrate sealing techniques with resin', Recognize need to wrap with ply', Demonstrate wrap with ply techniques', Evaluate repair in order to determine if additional work is require', Identify delamination repair which requires structural repair process', Identify types of delamination repair', Determine which type of repair is required using standard repair manual', Demonstrate drilling techniques both ends of the repair site', Demonstrate injection resin techniques', Demonstrate injection techniques between composite layers', Demonstrate clamping techniques', Demonstrate structural repair process on delamination repair', Determine if the situation is a sacrificial ply situation', Demonstrate filling procedures', Demonstrate sealing procedures', Determine if the situation requires ply removal and replacement', Demonstrate ply removal technique', Demonstrate ply replacement per structural repair techniques', Demonstrate sanding skills to remove finish', Apply problem solving skills to determine if part is actually damaged or just needs refinish', Determine if cosmetic finish need cracks filled', Demonstrate filler skills', Return to paint for refinish', Demonstrate repair techniques using simulated leather suede laminate etc

Requirements

Simple Requirements

A minimum grade of 'C' in Course CFT144

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CFT144 - Electrical Bonding Repair

CFT144 - Electrical Bonding Repair

Overview

Department
Aviation

Course Description
This course will provide students with the knowledge and skills used in electrical bonding composite repair. Students will learn both theory and application using secondary bonding techniques.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
1

Contact Hours

Contact Hours Min:
30

Billing Hours

Billing Hours Min:
1

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the role of electrical bonding in composite repair

Objective
Identify Electrical Bonding', Discuss role of electrical bonding in composite repair', Define the relationship electrical continuity between the base part and the repair', Identify terminology of electrical bonding repair including OHMS', Identify the acceptable standards used for electrical bonding', Identify how to locate standards

Name
The student will be able to identify materials utilized in electrical bonding repair

Objective
Identify the types of materials used in electrical bonding repair stainless steel nickel coated aluminum foil expanded copper mesh expanded aluminum mesh', Identify the characteristics of each of the materials', Identify the original material role in determination of materials used', Discuss role of engineering in determination of the materials used

Name
The student will be able to determine electrical continuity between two parts

Objective
Utilize mulitmeter', Read multimeter', Apply skills to determine if electrical continuity exits in repair project

Name
The student will be able to demonstrate secondary bonding with fastener skills

Objective
Utilize process of lay up or wet lay up bagging and curing on two composite parts', Identify appropriate adhesive - per engineering', Check for the electrical bond

Name
The student will be able demonstrate secondary bonding skills

Objective
Utilize process of lay up or wet lay up bagging and curing on two composite parts with fasteners including metal and jumper wire', Identify appropriate adhesive - per engineering', Check for the electrical bond

Requirements

Simple Requirements

A minimum grade of 'C' in Course CFT142

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CFT142 - Composite Repair

CHM110 - General Chemistry

Overview

Department
General Education

Course Description
An introduction to chemistry that includes the study of matter, atoms, molecules, chemical arithmetic, chemical reactions, gas laws, acids and bases, organic chemistry and laboratory experimentation.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explain the chemical context of topics as they relate to the natural sciences and society.

Objective
Describe the scientific method', Identify organic compounds', Identify functional groups', Give examples of biopolymers and synthetic polymers', Relate the importance of the development of polymers to our society', Identify basic structure and fundamental properties of proteins carbohydrates DNA RNA and lipids

Name
The student will be able to demonstrate knowledge of atoms, the periodic table, molecular structure and bonding.

Objective
Define and appropriately use the following terms atoms elements molecules compounds cation and anion', Identify common properties of ionic compounds', List the 5 points of Daltons Atomic Theory', Write atomic symbols', Calculate the number of protons neutrons and electrons contained in an atom by reading the atomic symbol', Name chemical compounds from chemical formulas', Write chemical formulas from chemical names', Arrange a series of elements in order by atomic radius ionization energy or electronegativity using known trends and the periodic table', Utilize electronegativity values to determine the type of bonding', Write electron configurations for elements', Identify valence electrons', Explain why valence electrons are important', Rank selected bonds in order of increasing polarity', Write Lewis structures for simple molecules and ions', Predict structures using VSEPR theory for simple molecules and icons

Name
The student will be able to recognize differences between phases of matter.

Objective
Distinguish between physicalchemical properties and changes', Distinguish between elements compounds and mixtures', Distinguish techniques used to physically separate components of a mixture', Discuss properties among the three stages of matter solid liquid and gases

Name
The student will be able to identify and analyze different types of chemical reactions, including energetics and stoichiometry.

Objective
Calculate the specific heat capacity of materials', Recognize that a chemical reaction has occurred', Write and balance a chemical equation from a word problem', Classify chemical reactions according to types', Define a driving force and name the four driving forces of chemical reactions', Use solubility rules to predict the products in a chemical reaction identify products', Provide examples of common acids and bases', Write and balance acidbase reactions', Write and balance combustion reactions', Balance redox reactions by inspection', Write complete ionic and net ionic equations for precipitation reactions and acidbase reactions', Identify the pH scale and how pH is measured', Identify the role of indicators to estimate the pH of a solution', Calculate molar mass', Calculate grams of a sample if given the mols', Calculate the mols in a sample if given the grams', Determine the empirical formula of a compound', Determine the amount of reactant needed for or amount of product produced in a chemical reaction', Determine limiting reactant', Calculate percent yield

Name
The student will be able to record quantitative and qualitative data accurately. Critically analyze data and chemical information from various sources responsibly and accurately.

Objective
Acquire data using balances and volumetric glassware', Correlate observations with chemical or physical processes', Carry out suitable calculations with quantitative data recognizing when data and calculations are within a reasonable range

Name
The student will be able to apply knowledge of good laboratory practices.

Objective
Utilize chemistry lab safety rules', Work safely and effectively using equipment and chemical carefully and correctly

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Earn a minimum grade (UG) of C in the following:

OR

Earn a minimum grade (UG) of C in the following:

OR

Earn a minimum grade (UG) of C in the following:

OR

Earn a minimum grade (UG) of C in the following:
- MTH020 - Math Fundamentals (Inactive)

OR

Earn a minimum grade (UG) of C in the following:
- MTH025 - PACER Mathematics I (Inactive)

OR

Earn a minimum grade (UG) of C in the following:
- MTH030 - Elementary Algebra

OR

Earn a minimum grade (UG) of C in the following:
- MTH035 - PACER Mathematics II (Inactive)

OR

Earn a minimum grade (UG) of C in the following:
- MTH101 - Intermediate Algebra (Inactive)

OR

Earn a minimum grade (UG) of C in the following:
- MTH102 - Intermediate Algebra with Review (Inactive)

OR

Earn a minimum grade (UG) of C in the following:
- MTH105 - PACER Mathematics III (Inactive)

OR

Earn a minimum grade (UG) of C in the following:
- MTH112 - College Algebra

OR

Earn a minimum grade (UG) of C in the following:
- MTH113 - Trigonometry

OR

Earn a minimum grade (UG) of C in the following:
- MTH115 - Pre-Calculus Mathematics

OR

Earn a minimum grade (UG) of C in the following:
- MTH125 - Calculus I

OR

Earn a minimum grade (UG) of C in the following:
- MTH150 - Calculus II

OR

A minimum test score of '35' on Test ACEA

OR

A minimum test score of '64' on Test ACAR

OR

A minimum test score of '044' on Test CPPA

OR

A minimum test score of '01' on Test CPAL

OR

A minimum test score of '01' on Test CPCA

OR

A minimum test score of '01' on Test CPTR

OR

A minimum test score of '41' on Test ASNS

OR

A minimum test score of '23' on Test ASIA

OR

A minimum test score of '23' on Test ASCA

OR

A minimum test score of '16' on Test A02

OR

A minimum test score of '500' on Test S02

CHM125 - Chemistry I

Overview

Department
General Education

Course Description
An introduction to inorganic chemistry with emphasis on atomic structure, molecular bonding and structure, the periodic table, kinetic theory, changes of state, solutions and concentrations, chemical reactions and oxidation reduction, and fundamental organic chemistry.
Prerequisite: CHM 110 General Chemistry or high school chemistry with a grade of “C” or better within the past 5 years, and MTH101 Intermediate Algebra with a grade of “C” or better or a math ACT score of 21 or better within the past 5 years. MTH112 College Algebra can be taken concurrently

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
60

Requirements

Simple Requirements

A minimum grade of 'C' in Course CHM110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CHM110 - General Chemistry

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Earn a minimum grade (UG) of C in the following:
- MTH101 - Intermediate Algebra (Inactive)

OR

Earn a minimum grade (UG) of C in the following:
- MTH102 - Intermediate Algebra with Review (Inactive)

OR

Earn a minimum grade (UG) of C in the following:
- MTH105 - PACER Mathematics III (Inactive)

OR

Fulfill ALL of the following requirements:

Enroll in the following Courses:
- MTH112 - College Algebra

AND

Earn a minimum grade (UG) of C in the following:
- MTH112 - College Algebra

OR

Fulfill ALL of the following requirements:

Enroll in the following Courses:
- MTH113 - Trigonometry

AND

Earn a minimum grade (UG) of C in the following:
- MTH113 - Trigonometry

OR

Fulfill ALL of the following requirements:

Enroll in the following Courses:
- MTH115 - Pre-Calculus Mathematics

AND

Earn a minimum grade (UG) of C in the following:
- MTH115 - Pre-Calculus Mathematics

OR

Fulfill ALL of the following requirements:

Enroll in the following Courses:
- MTH125 - Calculus I

AND

Earn a minimum grade (UG) of C in the following:
- MTH125 - Calculus I

OR

Fulfill ALL of the following requirements:

Enroll in the following Courses:
- MTH150 - Calculus II

AND

Earn a minimum grade (UG) of C in the following:
- MTH150 - Calculus II

OR

A minimum test score of '81' on Test ACEA

OR

A minimum test score of '64' on Test ACAR

OR

A minimum test score of '66' on Test CPAL

OR

A minimum test score of '00' on Test CPCA

OR

A minimum test score of '00' on Test CPTR

OR

A minimum test score of '56' on Test ASIA

OR

A minimum test score of '23' on Test ASCA

OR

A minimum test score of '21' on Test A02

OR

A minimum test score of '500' on Test S02

CHM135 - Chemistry II

Overview

Department
General Education

Course Description
A continuation of CHM 125 Chemistry I. A presentation of the properties of solutions, chemical kinetics, equilibrium, acid-base theory, thermodynamics, coordination chemistry, organic and biochemistry, and electrochemistry. Includes laboratory experimentation. Prerequisite: CHM 125 Chemistry I and MTH 112 College Algebra with minimum grade of “C” or better within the past five years

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Colligative Properties

Objective
Describe the origins and relative magnitudes of intermolecular forces', Relate phase behavior to nature of intermolecular forces', Define saturated solution unsaturated solution supersaturated solution solubility solute and solvent', Understand and perform calculations using Henrys Law', Calculate concentration in molality molarity mole fraction and percent composition and interconvert between these units', Explain and calculate vapor pressure using Raoults Law', Explain other colligative properties including freezing point depression boiling point elevation and osmotic pressure', Perform calculations using colligative properties including molecular weight freezing point depression boiling point elevation and osmotic pressure', Differentiate between the behaviors of nonionizing and ionizing compounds in solution

Name
Kinetics

Objective
Discuss the meaning of the rate of a reaction', Explain the factors that affect reaction rates', Use the initial rate method to determine reaction order from experimental data', Determine orders of reaction for reactants from data expressing changes in concentration as a function of longer times', Use the rate law to determine the overall order of a reaction', Determine a reaction rate law from initial rate data', Describe the relationship between order of reaction and molecularity', Use experimental data to determine the rate law for a reaction', Use an integrated form of the rate expression to perform calculations relating reactant or product concentration with reaction time', Compare zero first and second order rate reactions', Discuss the collision theory of a reaction rate', Use the Arrhenius equation to illustrate the relationship between energy of activation and rate law constant', Describe the relationships among the mechanism the overall reaction and elementary steps', Identify reaction intermediates and catalysts in reaction mechanisms', Draw and interpret energy diagrams and illustrate the affect of a catalyst on the energy diagram

Name
Equilibrium Principles

Objective
Explain the relationship between the terms reversible reaction and dynamic equilibrium', Write the general equilibrium constant expression and explain its significance', Calculate Keq given equilibrium concentrations of reactants and products', Calculate equilibrium concentrations of reactants and products given the equilibrium concentration of other reactants and products', Calculate new equilibrium concentrations of reactants and products after an increase or decrease in the concentration of one of the reactants or products', Explain why the concentrations of pure liquids and solids are never used in equilibrium constant expressions', Show how the numerical value of the equilibrium constant changes when the stoichiometric coefficients are changed or the reaction is reversed', Explain the differences between the terms Kc and Kp and the relation of either to Qc', Explain the difference between an equilibrium position and an equilibrium constant', Given Keq and initial concentration of reactants andor products calculate the final concentrations of reactants andor products', List and explain the external factors that can affect equilibria', Using LaChateliers Principle explain how changes in temperature pressure volume or concentration affect the equilibrium position for a chemical reaction

Name
Equilibrium of Aqueous Solutions

Objective
Use the definition of acids and bases to distinguish between strong and weak acids and bases equilibrium relationships among them and the aqueous properties of their salts', Use the concepts of pH pOH Ka and Kb to calculate the pH of aqueous solutions of acids bases and their salts', Determine the specific species present in an aqueous solution and the concentrations of those species', Describe the shape of acidbase titration curves for strong acidstrong base weak acidstrong base strong acidweek base and weak acidweak base titrations', Describe the effect of common ions and calculate concentrations of all species present in solutions of weak acids and bases', Describe the ionization of polyprotic acid in aqueous solution', Explain the buffer effect predict the influence of added acids and bases on buffers and calculate the concentrations of species in solution using acid or base dissociation constant expressions or HendersonHasselbach equation', Calculate the pH of a buffer solution outside of the buffer region', Identify titration curves for strong weak and polyfunctional acids and bases', Understand the use of volumetric methods to determine the concentrations of species in solution', Understand application of indicators in titration', Write an equation to express the relationship between a solid solute and its constituent ions in a saturated solution', Calculate the Ksp from molar solubility and molar solubility from Ksp', Calculate the effect of a common ion on the molar solubility of a salt', Predict whether precipitation will occur when salt solutions are mixed and determine the concentration of ions remaining in solution after precipitation

Name
Thermodynamics

Objective
Explain the similarities and differences between such terms as enthalpy entropy and free energy', Explain how the First Second and Third Laws of Thermodynamics apply chemical and physical processes', Predict whether the entropy change in a given process is positive negative or near zero', Use data tables to determine enthalpy entropy and free energy changes', Explain how H S and G are related to reaction spontaneity', Explain how knowledge of H S and G allows one to predict the conditions under which a reaction will occur', Describe and calculate the relationship between the standard free energy of reaction and the equilibrium constant', Calculate G for a chemical reaction that occurs under nonstandard conditions

Name
Electrochemistry Biochemistry

Objective
Describe galvanic and electrolytic cells and their operation including the identification of half reactions at the anode and cathode', Write half reactions given a balanced redox reaction and generate a balanced redox reaction given redox half reactions', Calculate cell potentials and determine spontaneity of oxidation reduction reactions', Understand and useFaradays Law', Understand and apply the relationship of thermodynamics to electrochemistry', Understand and use the Nernst Equation', Understand the relationship between the cell potential E and G and use this relationship in problem solving', Give examples of natural andor commercial applications of electrochemical processes', Use the activity series of metals optional

Name
Solid state chemistry

Objective
Identify intermolecular forces given the molecular structure', Describe the origins and relative magnitudes of intermolecular forces', Relate phase behavior to nature of intermolecular forces', Determine the relative vapor pressure on the basis of intermolecular attraction', Identify the types of solids using the knowledge of bonding', Arrange substances in order of increasing melting point based on the type of structure', Find the number of atoms per unit cell given the description of a unit cell', Compare general properties of solids liquids and gases including density compressibility heat capacity and randomness intermolecular forces', Describe phase transitions and phase diagrams eg triple point and critical point

Name
Work in the laboratory in accordance with good laboratory practices

Objective
Dress in an appropriate manner as to promote safety in the laboratory wearing appropriate laboratory attire and goggles when anyone is working with chemicals in the laboratory', Follow written directions accurately', Work safely and effectively using equipment and chemical carefully and correctly d Demonstrate use of required techniques', Dispose of waste products in a proper manner', Know how to find and understand MSDSs for the chemicals used in a particular laboratory

Name
Gather and record qualitative and quantitative data accurately

Objective
Acquire data using balances and volumetric glassware', Make and record visual observations', Use computers when appropriate as data acquisition tools', List or describe experimental assumptions made and any deviations from the written experimental procedure

Name
Handle and evaluate data in logical, productive, and meaningful ways

Objective
Create notebooks and laboratory reports that are clear understandable and accurately represent the data collected', Display computer data in a spreadsheet or graphically as appropriate', Correlate observations with chemical or physical processes', Carry out suitable calculations with quantitative data recognizing when data and calculations are within a reasonable range', Use observations of experimental data to present relevant conclusions pertaining to the experimental procedure

Name
Correlate laboratory work with principal topics in College Chemistry II lecture

Requirements

Simple Requirements

A minimum grade of 'C' in Course CHM125

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CHM125 - Chemistry I

A minimum grade of 'C' in Course MTH112

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MTH112 - College Algebra

CLD113 - Introduction to Python

Overview

Department
Information Technology

Course Description
Programmers are in higher demand today than ever before. Get the essential skills and tools to become a successful software engineer and learn the fundamental concepts and practices that are critical to the task of coding—no matter what language you choose. In this course, students will develop the knowledge to begin programming in any language, connect programming theory to practice in real-life scenarios, and apply best practices from experts in the field.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Develop an awareness of programming languages.

Objective
1.1 Identify programming language design approaches. 1.2 Explain the components of programming languages. 1.3 Examine connections between elements of mathematics and computer science, including binary numbers, logic (including the Boolean Algebra), sets, and functions.

Name
Demonstrate proficiency using specialized computer software.

Objective
2.1 Use specialized computer programming software to solve problems (e.g., editor, console, IDLE, IDE, debugger). 2.2 Demonstrate proficiency using specialized computer software.

Name
Demonstrate knowledge, skills, and application of IT and communication systems to accomplish job objectives and enhance workplace performance.

Objective
3.1 Develop keyboarding skills to enter and manipulate text and data (e.g., using keyboard shortcuts, code writing). 3.2 Describe and use current and emerging computer technology and software to perform personal and business-related tasks (e.g., prepare a to-do list, plan a project, write pseudo-code). 3.3 Perform a variety of operations such as data sorting and filtering, or organizing and displaying information in a variety of ways such as number formats (conversion to different numeral systems or units).

Name
Demonstrate proficiency in using common software applications.

Objective
4.1 Compare and contrast the appropriate use of various software applications and programs (e.g. compiler vs. interpreter). 4.2 Demonstrate proficiency in the use of various software applications and programs (e.g. code editors). 4.3 Explain why different file types exist (e.g., source files, semi-compiled files, .py files). 4.4 Identify the kinds of content associated with different file types.

Name
Write and document code using the industry guidelines, coding conventions, and best practices.

Objective
5.1 Use appropriate naming conventions to define program variables, methods, functions, and classes. 5.2 Use internal documentation (e.g., single-line and multi-line comments, module docstrings) to document a program according to accepted standards. 5.3 List examples of good programming practices in Python (e.g. self-commenting code). 5.4 Use proper formatting and code layout (e.g. not exceeding the recommended line length). 5.5 Understand the importance of using coding conventions; use the most important PEP8 guidelines.

Name
Demonstrate proficiency in basic programming and Python.

Objective
6.1 Describe the structure of a simple program, and explain why sequencing is important. 6.2 Define the term algorithm and explain how it relates to problem solving. 6.3 Describe, create, and use iterative programming structures (e.g. loops). 6.4 Describe, create, and use conditional structures and explain the logic used for them (if, else, else-if, finally). 6.5 Explain the types and use of variables in programming (e.g. naming, creating, initializing, and modifying variables in Python.). 6.6 Write simple programs in pseudo code. 6.7 Find, analyze, describe, troubleshoot, and debug errors in code. 6.8 Explain the fundamental programming concepts, such as compiler, interpreter, source code, machines code, IDE, etc., and use skills learned to install and configure basic development tools. 6.9 Discuss the difference between syntax and semantics of a programming language; describe the basic data types, identifiers, and keywords in Python. 6.10 Demonstrate knowledge of Python's development history and its main traits and features. 6.11 Design, create, edit, and run Python source files using IDLE. 6.12 Use Python numeral literals, their syntax, types, and formats. 6.13 Understand and use Python assignment operators, arithmetic operators, and expressions. 6.14 Perform basic I/O operations in Python programs. 6.15 Work with Boolean data types and their features. 6.16 Work with relational operators in Python. 6.17 Perform bitwise operations in Python. 6.18 Operate with lists to perform indexing, slicing, and content manipulation. 6.19 Employ multidimensional lists in Python. 6.20 Apply the concept of functions and be able to create and invoke user-created functions. 6.21 Employ the main features of structural programming. 6.22 Understand the concept of name scopes, name shadowing, and distinguish between global and local variables. 6.23 Utilize the principles of tuples, including the immutability notion. 6.24 Use dictionaries effectively and in appropriate circumstances. 6.25 Manipulate strings using basic processing techniques 9.26 Employ various techniques to import and work with modules in code/namespace. 6.26 Use selected useful standard Python modules. 6.27 Use various techniques to identify and handle runtime errors in Python. 6.28 Utilize the control statements for exception handling (try, except). 6.29 Use Python in everyday life applications including DIY activities. 6.30 Use Python in several work-related scenarios.

Name
Perform program design, coding, and testing activities.

Objective
7.1 Demonstrate knowledge of computer concepts and terminology. 7.2 Create and document a program design. 7.3 Communicate design specifications. 7.4 Develop prototype. 7.5 Perform revisions and enhancement of software systems (e.g., code refactoring, updates, add-ons). 7.6 Demonstrate proficient use of programming development tools. 7.7 Test code by validating inputs, expected outcomes, determining boundary test cases. 7.8 Revise program code and make code fixes.

Name
Create and document a computer program that uses a variety of internal and control structures for manipulating various data types .

Objective
8.1 Use a program editor to write the source code for a program. 8.2 Write programs that use nested structures (e.g. recursions, nested loops, nested if statements). 8.3 Document a program and use consistent style to increase readability, improve maintenance, and explain the purpose and operation of given program elements. 8.4 Write programs that use a variety of common data types and operators. 8.5 Write programs that perform data conversion between numeric and string data types, and other data types (e.g. typecasting). 8.6 Write programs and functions that accept and process arguments. 8.7 Write programs and functions that return values. 8.8 Participate in peer code review to verify program functionality, programming styles, program usability, and adherence to common programming standards.

CLD118 - Cloud Fundamentals

Overview

Department
Information Technology

Course Description
This course covers cloud services from a business perspective. This includes the business value of cloud computing, cloud types, steps to a successful adoption of the cloud, impact and changes on IT service management, as well as risks and consequences.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Understand the characteristics of cloud computing from a business perspective

Name
Understand the business value of cloud computing

Name
Differentiate between cloud types and the technical challenges presented by each type

Name
Understand the steps to successful adoption of cloud computing

Name
Understand the impact and changes of cloud computing in IT management

Name
Discuss the risks and consequences of cloud computing

CLD121 - Object-Oriented Programming (JavaScript)

Overview

Department
Information Technology

Course Description
JavaScript is a scripting language of the web. As the web evolves from a static to a dynamic environment, technology focus is shifting from static markup and styling—frequently handled by content management systems or automated scripts—to dynamic interfaces and advanced interaction. Once seen as optional, JavaScript is now becoming an integral part of the web, infusing every layer with its script. Object-Oriented Programming (OOP) refers to using self-contained pieces of code to develop applications. IT professionals call these self-contained pieces of code objects, better known as Classes in most OOP programming languages and Functions in JavaScript. IT professionals use objects as building blocks for our applications. Building applications with objects allows us to adopt some valuable techniques. In this course students will build their understanding of JavaScript piece by piece, from core principles like variables, data types, conditionals, and functions through advanced topics including loops, closures, DOM printing, and learn Inheritance and Encapsulation since only these two concepts apply to OOP in JavaScript; in JavaScript objects can encapsulate functionalities and inherit methods and properties from other objects.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Create a personal cloud development suite on AWS

Objective
Create a personal AWS account Demo', Create Identity Access Management policies roles and users', Create an EC2 instance and login remotely Demo', Configure a JavaScript development suite on EC2 Demo

Name
Learn the basics of JavaScript

Objective
Navigating the JavaScript landscape Chapter Quiz Demo', The basics with writing JavaScript Chapter Quiz Demo', Working with data variables and logic Chapter Quiz Demo', Functions and objects Chapter Quiz Demo', Changing DOM elements Chapter Quiz Demo', Project create an analog clock', JavaScript events Chapter Quiz Demo', Project create a typing speed tester', Introduction to loops Chapter Quiz', Project create automated responsive images markup', Troubleshooting validating and minifying JavaScript Chapter Quiz Demo

Name
Compare and contrast Functional vs Object-Oriented Programming

Objective
What is functional programming', FirstClass functions', Array functions', Callbacks and advanced functional concepts

Name
JavaScript Prototypes

Objective
Building Blocks of Prototypes', Using Prototypal Inheritance', Using ES6 Classes

Name
JavaScript Patterns

Objective
Overview of JavaScript Design Patterns', Creational Patterns', Structural Patterns', Behavioral Patterns

Name
Programming Foundations and Design Patterns

Objective
Design Patterns', The Strategy Pattern', The Adapter Pattern', The Observer Pattern', The Decorator Pattern', The Iterator Pattern', The Factor Patterns

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- CLD129 - Programming Foundations (Swift iOS)

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- INF113 - Introduction to Programming

CLD122 - Introduction to Web Development

Overview

Department
Information Technology

Course Description
This course introduces students to basic web design using HTML (Hypertext Markup Language), CSS (Cascading Style Sheets), JavaScript, and PHP. Throughout the course students are introduced to planning and designing effective websites; implementing web pages by writing code; producing a functional, multi-page website; and navigating how to choose and set up a server to host their sites on. The course does not require any prior knowledge of coding or web design.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The Student will demonstrate the skills associated with selecting and setting up server account

Objective
Research and report on the top web server providers', List common features shared between popular providers', Successfully walk through the process of choosing and registering an account with desired server provider', Register a domain name that is descriptive and onbrand', Demonstrate how a user would register a domain name through desired host provider', Successfully navigate through the server settings available to the student', Demonstrate how a user would make changes to the server settings and adding new administrator accounts', Create an branded email account that is hosted with the server', Explore and become familiar with the options in server such as File Explorer FTP DNS Management Subdomains etc

Name
The student will describe the need for a CMS (Content Management System) and list some of the top options, and the pros and cons of each, when choosing which to use.

Objective
The student will describe the need for a CMS Content Management System and list some of the top options and the pros and cons of each when choosing which to use

Name
The student will gain an understanding of using a site builder.

Objective
Research top site builders to determine the similarities and differences between them', Successfully report on the common complaints and drawbacks of using a site builder', Explain the cases in which it would be best to use a site builder

Name
Student will demonstrate basic knowledge of HTML/CSS

Objective
Demonstrate knowledge of W3C standards for HTML', Describe common HTML tags and their uses', Report on what the treestructure format for HTML is and how one uses it', Successfully be able to explore and describe sections of an HTML document', Create a basic structure for a page including headers lists links and images', Describe what CSS is and how one uses it', Describe the differences between inline and and external stylesheets and the best time to use both', Demonstrate how to use selectors IDs and classes', Successfully create a CSS Ruleset', Use CSS units to place content on a page', Successfully style the front of a static HTML page', Demonstrate the correct way to create and link a stylesheet

Name
Student will demonstrate basic knowledge of Client-side Programming

Objective
Describe the uses for clientside programming Javascript', Demonstrate how to use the console for troubleshooting', Demonstrate knowledge on what variables are and how to use them to store data', Demonstrate how to use a variety of different data types to represent data found within your code', Demonstrate knowledge on what operators are and how to use them', Demonstrate knowledge on what functions are and how to use them', Demonstrate knowledge on what conditional logic is and how to use it', Demonstrate knowledge on what arraysloops are and how to use them', Understand Javascript frameworks such as JQuery

Name
Student will demonstrate basic knowledge of Server-side Programming

Objective
Understand what serverside programming is', Demonstrate basic knowledge of popular serverside programming languages and the differences between them', Demonstrate knowledge on what variables are and how to use them to store data', Demonstrate knowledge on how to create and use basic serverside functions', Demonstrate knowledge on what conditional logic is and how to use it', Demonstrate knowledge on what arraysloops are and how to use them', Understand programming frameworks like CakePHP or CodeIgniter

Name
Student will demonstrate basic knowledge of setting up and managing Databases

Objective
Understand basic database concepts including what a database is and how it is used to power a website', Describe the basics behind optimal database structure', Describe differences between popular options for setting up and using online databases', Demonstrate knowledge on how to store data and retrieve it from a database

Name
The student will demonstrate effective Maintenance and Security

Objective
Demonstrate knowledge on common website security vulnerabilities and how to prevent them', Depending on chosen CMS demonstrate how to update plugins and core CMS upgrades', Successfully run site reports such as Broken link Spell checker Speed Test Firewall and Malware', Demonstrate effective ways to optimize images throughout site', Demonstrate knowledge on best security practices for site

Name
The Student will report on and demonstrate best practices in Website Design Concepts

Objective
Report on outdated design concepts why they were popular and why they do not work anymore', Describe best practices for user experience on a website', Describe best practices for Accessibility standards on a website', Describe the concepts of Responsive Web Design', Evaluate popular websites for usability and best practices

CLD123 - DevNet I

Overview

Department
Information Technology

Course Description
The DevNet I course introduces the methodologies and tools of modern software development, applied to the IT and Network operations. It covers a 360 view of the domain including microservices, testing, containers, and DevOps, as well as securely automating infrastructures with Application Programming Interfaces (APIs). Students completing this course, gain practical, relevant, hands-on lab experience, including programming in Python, using GIT and common data formats (JSON, XML and YAML), deploying applications as containers, using Continuous Integration/Continuous Deployment (CI/CD) pipelines and automating infrastructure using code.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Compare Cisco platforms used for collaboration, infrastructure management, and automation.

Name
Compare software testing and deployment methods in automation and simulation environments.

Name
Create a secure REST API.

Name
Explain the processes and devices that support network connectivity.

Name
Implement a development environment using DevNet resources.

Name
Use basic Python programming and Linux skills.

Name
Use current technologies to deploy and secure applications and data in a cloud environment.

Name
Use software development and design best practices.

CLD126 - Test Driven Development (JavaScript)

Overview

Department
Information Technology

Course Description
Programmers shouldn't have to guess whether the software is working correctly. They should be able to prove it, every step of the way. A formal test-driven development (TDD) process allows programmers to build testing into their daily routine. They can run tests many times a day, getting instant feedback on the quality of the code. This course explains how to adopt a TDD mindset and process—vital skills for all modern software developers. Find out what makes a good test, why programmers should be more interested in failure than success, and how to measure and repeatedly run tests. Together students will explore the jargon: test suites, test harnesses, mock and stub objects, and more, how TDD is used in the most common programming languages, TDD environments, and what tools/frameworks exist to help programmers succeed.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
What is test-driven development?

Name
Writing test cases

Name
TDD methodology

Name
Refactoring

Name
Test structure and syntax

Name
TDD tools and frameworks

Name
Mocking

Requirements

Simple Requirements

A minimum grade of 'C' in Course CLD129

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CLD129 - Programming Foundations (Swift iOS)

CLD129 - Programming Foundations (Swift iOS)

Overview

Department
Information Technology

Course Description
Programming Foundations (Swift iOS) will introduce students to the basics of programming and app development using Apple's native language, Swift. This course will provide students with a solid foundation in programming fundamentals that can be carried over into other Object Oriented Programming (OOP) languages such as Python, C#, and JavaScript.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Programming Foundations: Fundamentals

Name
Programming Foundations: Naming and Identifiers

Name
Programming Foundations: Strings, Constants, Variables

Name
Programming Foundations: Build Photoframe

Name
Programming Foundations: Algorithms, Functions

Name
Programming Foundations: Types, Parameters, Results

Name
Programming Foundations: Boogie Bot/Question Bot

Name
Programming Foundations: Instances, Methods, Properties

Name
Programming Foundations: Structures

Name
Programming Foundations: Enums, Switches

Name
Programming Foundations: Password Security

Name
Programming Foundations: App Development

Name
Programming Foundations: Build Color Picker App

CLD131 - Continuous Integration Continuous Deployment - CICD

Overview

Department
Information Technology

Course Description
Continuous delivery (CD) answers two difficult questions: "How do we release software more quickly in response to user demand?" and "How do we release high-quality software reliably?" Using special practices and tools, teams can address both concerns. In this course, learn about continuous integration and continuous delivery (CI/CD), and see how these concepts work in practice by constructing your own build pipeline. Throughout the course, students will discuss elements of the pipeline as they show how to take an app written in the Go programming language from development to production. Students will walk through version control, building artifacts, unit testing, and deployment, demonstrating common practices and tools along the way.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Benefits of continuous delivery

Name
Building your own pipeline

Name
Version control practices

Name
Building artifacts

Name
Testing and continuous delivery

Name
Application deployment and release

Name
UI testing in action with Robot

Name
Security testing in action with gauntlet

Name
CI/CD best practices

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- CLD138 - Object-Oriented Programming (Python)

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- CLD121 - Object-Oriented Programming (JavaScript)

CLD137 - C# Programming Language

Overview

Department
Information Technology

Course Description
C# is one of the most widely used general-purpose programming languages. As a result, C# is often developers' primary choice for creating a wide range of desktop, cloud, and mobile applications. This course will take students through C# from the ground up in a step-by-step manner. By the end of this course, students will be well versed with the essentials of C# language and be ready to start creating apps with it.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Students will be able to identify the basic building blocks of C#

Objective
Learn the history of C', Understand Common Language Infrastructure', Know the NET family of frameworks', Explain assemblies in NET', Understand the basic structures of a C program

Name
Students will be able to write simple C# program using data types and operators

Objective
Basic builtin data types', Variables and constants', Reference types and value types', Nullable type', Arrays', Type conversion', Operators

Name
Students will understand how to implement control statements and exception handling into code

Objective
Control statements', Exception handling

Name
Students will understand user defined types in C#

Objective
Classes and Objects', Structures', Enumerations', Namespaces

Name
Students will learn about Object Orientated Programming (OOP)

Objective
Students will learn the core principles in OOP of abstraction encapsulation polymorphism and inheritance

Name
Students will learn to use generic classes, interfaces, structures, methods, and constraints.

Name
Students will learn how to use collections in .NET.

Name
Students will learn to use delegates to respond to events that occur in applications, including tuples, pattern matching, and extending types.

Name
Students will learn how to implement disposable types and dispose of them when no longer needed.

Name
Students will implement unit testing and utilize built-in tools in C# for unit testing.

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- CLD129 - Programming Foundations (Swift iOS)

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- CLD113 - Introduction to Python

CLD138 - Object-Oriented Programming (Python)

Overview

Department
Information Technology

Course Description
Python is an interpreted, object-oriented, high-level programming language with dynamic semantics. Its high-level built in data structures, combined with dynamic typing and dynamic binding, make it very attractive for Rapid Application Development, as well as for use as a scripting or glue language to connect existing components together. Python's simple, easy to learn syntax emphasizes readability and therefore reduces the cost of program maintenance. Python supports modules and packages, which encourages program modularity, object oriented application, and code reuse. Object Oriented Programming (OOP) refers to using self-contained pieces of code to develop applications. IT Professionals call these self-contained pieces of code objects, better known as Classes in Python. IT Professionals use objects as building blocks for scripting and applications which allows us to adopt some valuable techniques. In this course students will build their understanding of Python piece by piece starting with the basics and work into algorithms, standard libraries, GUI development, and generators. At the end of this course students will be fully proficient in python having covered advanced python development as well as parallel and concurrent programming.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Students will understand the universal concepts of computer programming

Name
Students will demonstrate proper syntax and semantics of the Python language

Name
Students will demonstrate practical skills in resolving typical Python implementation

Name
Students will understand what a libarary is and demonstrate how to utilize elements of the Python Standard Library

Name
Students will create projects that demonstrate design, development, testing and debugging of

Name
Students will display understanding of data types, basic input-output operations and basic operators

Name
Students will utilize boolean values, conditional execution, loops, and logical operators

Name
Students will create projects that utilize functions, dictionaries, exceptions and data processing.

Name
Students will demonstrate an understanding of OOP by utilizing the four pillars of OOP: abstraction, encapsulation, inheritance and polymorphism.

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- CLD129 - Programming Foundations (Swift iOS)

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- INF113 - Introduction to Programming

CLD141 - Test Driven Development (Python)

Overview

Department
Information Technology

Course Description
Programmers shouldn't have to guess whether software is working correctly. They should be able to prove it, every step of the way. A formal test-driven development (TDD) process allows programmers to build testing into their daily routine. Programmers can run tests many times a day, getting instant feedback on the quality of their code. This course explains how to adopt a TDD mindset and process—vital skills for all modern software developers. Find out what makes a good test, why programmers should be more interested in failure than success, and how to measure and repeatedly run tests. In this course students will get an overview of both unit testing and TDD, why both are crucial for developers, how to set up a development environment for TDD, and go into detail with the pytest unit-testing framework. In addition too, students will learn best practices and develop test cases in order to master TDD in Python.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
What is test-driven development?

Name
What is Unit Testing

Name
What is Test-Driven development (TDD)

Name
Setting up Your Development Environment

Name
Setting up Pytest with Eclipse and PyCharm

Name
Assertion Statements and Exceptions

Name
Test doubles

Name
TDD Best Practices

Requirements

Simple Requirements

A minimum grade of 'C' in Course CLD138

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- CLD138 - Object-Oriented Programming (Python)

CLD143 - Web Application Development I (HTML/CSS)

Overview

Department
Information Technology

Course Description
CSS is a stylesheet language that allows you to control the appearance of your webpages, and HTML is the programming language that powers the web. Like any language, once you master it, you can begin to create your own content, whether that's simple websites or complex web applications. In this hands-on course, we will take an in-depth look at the syntax of HTML and best practices for writing with CSS and JavaScript to create rich, engaging user experiences. Plus, at the end of the course, you'll walk away with an actual project—an online résumé page.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Why is HTML important?

Name
Exploring an HTML document

Name
Formatting content

Name
Displaying images

Name
Using nav, article, and div elements

Name
Linking to pages and downloadable content

Name
Creating lists

Name
Controlling styling (fonts, colors, and more)

Name
Writing basic scripts

Name
Creating a CSS file

Name
Writing basic selectors

Name
Setting properties

Name
Using different typefaces and web-safe fonts

Name
Understanding cascading and inheritance

Name
Setting a font family, font size, text color, and more

Name
Understanding the box model

Name
Using the float property

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Earn a minimum grade (UG) of C in the following:
- CLD122 - Introduction to Web Development

OR

Earn a minimum grade (UG) of C in the following:
- CLD126 - Test Driven Development (JavaScript)

CLD147 - Website Production & Management (Word Press)

Overview

Department
Information Technology

Course Description
This course is designed to teach students the necessary skills to build, customize, manage and promote a business website using the content management system WordPress. In this project-based course, students will apply classroom knowledge and skills to successfully launch a site on a live web server.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will identify the planning processes required to build a functional and professional company website.

Objective
Describe the differences between WordPressorg and WordPresscom', Explain the reasons WordPressorg was chosen for this course', Describe the steps needed to install a hardened version of WordPress on a web server', Describe how to search and register an available domain name', Describe considerations in how to choose a web host provider', Create a structural sitemap for a website meeting the required criteria', Develop a content outline draft following the structural sitemap', Create other documents needed for the initial planning of a website', Install WordPress

Name
The student will be able to effectively utilize the components of the dashboard.

Objective
List and define the dashboard roles', Effectively navigate the dashboard', Identify the dashboard menu items', Create a user account', List and define screen options

Name
The student will be able to install a WordPress theme.

Objective
Successfully choose and install a theme', Successfully customize theme options meeting specific criteria', Navigate theme widgets', Configure theme menu items', Understand how to customize a theme header image', Customize home page settings

Name
The student will be able to install specific WordPress plugins for desired functionality.

Objective
Successfully install customize and test the specified forms plugin', Successfully install customize and test the specified spam plugin', Successfully install customize and test the specified events plugin', Successfully install customize and test the specified SEO plugin', Successfully install customize and test the specified security plugin

Name
The student will create content needed to publish a website.

Objective
Create and populate a new Page according to required criteria', Create and populate a new Post according to required criteria', Search modify and delete Pages and Posts', Understand how to apply a Category to content', Successfully add new Categories', Explain content options of Status Visibility Revisions Published Date', Understand Format options of Standard Aside Gallery Link Image Quote Status Video Audio Chat', Effectively use Tags', Understand how to add Featured Images', Understand how to use the Title Tag', Understand how to use the Heading Tags', Implement Keywords', Manage website comments', Understand how to use the media library', Understand how to successfully add images', Understand how to successfully integrate video

Name
The student will be able to implement SEO practices

Objective
Understand content readability', Understand Focus Keywords', Understand Content Analysis components as described by the SEO plugin', Understand how to use SEO Grading Tools', Understand how to use Keyword Tools', Understand Google Search Console', Understand PayPerClick PPC

Name
The student will met the standards established by the portfolio excercise

Objective
Apply knowledge skills and experience to the final portfolio exercise

Name
The student will demonstrate the skills necessary to test and launch a website.

Objective
Test website on multiple browsers and devices', Test forms responses and acknowledgements', Run site through page speed tools', Validate HTML and CSS', Run site through broken link test', Optimize images', Update domain DNS

Name
The student will demonstrate skills associated with the maintenance and security of website management

Objective
Understand how to update plugins', Understand how to run firewall and malware scans', Install Secure Socket Layer certificate

Name
The students will understand the theory and processes of promoting a website.

Objective
Understand how to plan a launch party', Understand how to promote website through social media', Understand online ad campaign promotions', Understand internal and external email marketing campaigns

Name
The student will identify skills associated with advanced WordPress processes.

Objective
Identify custom WordPress theme', Identify custom WordPress plugin', Identify processes to integrate 3rd party', Identify custom functionality', Identify ECommerce store', Identify processes associated with membership Sites

CLD152 - Web Application Development II (REACT)

Overview

Department
Information Technology

Course Description
React is a JavaScript library for building user interfaces to fetch rapidly changing data that needs to be recorded and is maintained by Facebook for the development of single-page or mobile applications. The effectiveness of React.js stands out. It relies on reusable components, not templates, for UI development, allowing developers to render views where data changes over time. React applications are more scalable, maintainable, and makes developers more efficient. In this hands-on course, you will learn React.js and grow your skills through several browser-based projects leading to the completion of several web applications.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Learning React.js

Name
React.js Essential Training

Name
Learning Redux

Name
React: Building and Interface

Name
React: Creating and Hosting a Full-Stack Site

Name
React: Ecosystems

Requirements

Simple Requirements

A minimum grade of 'C' in Course CLD143

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CLD143 - Web Application Development I (HTML/CSS)

CLD153 - Multi-Cloud Administration

Overview

Department
Information Technology

Course Description
Cloud administrators must have an understanding of cloud services and architecture, as well as the top cloud platforms and tools. In this hands-on course, students will explore the top cloud platforms, AWS, Azure, and Google Cloud, as well as best practices in cloud security, operations, and services in order to obtain the skills needed to become a successful multi-cloud administrator.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Cloud Computing: Core Concepts

Name
Public Cloud Platforms

Name
Private Cloud Platforms

Name
Cloud Security

Name
Cloud Computing: IT Pros

Name
Microsoft Azure Administration

Name
Amazon Web Services for Architects

Name
Google Cloud Platform Essential Training

Name
Cloud Computing: Careers and Certifications

Requirements

Simple Requirements

A minimum grade of 'C' in Course CLD118

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- CLD118 - Cloud Fundamentals

CLD156 - Advanced Web Development (PHP)

Overview

Department
Information Technology

Course Description
This course is designed to provide students with advanced skills in the area of Web Development. In this hands on class students will have the opportunity to apply HTLM5, CSS3, and jQuery with PHP concepts to lab projects. Topics will include PHP programming , basic database functionality, and building dynamic applications.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate a basic understanding of web servers

Objective
What is dynamic web content', What is the difference between clientside and serverside scripting', What is a web server', Install and configure a local web server AAMPS

Name
Identify basic programming concepts

Objective
Basic syntax and variables', Conditional statements and loops', Creating using functions', Including and requiring files', Arrays objects and methods', Similaritiesdifferences between PHP and JavaScriptjQuery', Debuggingtroubleshooting errors

Name
Demonstrate knowledge of database structure and basic SQL commands

Objective
What is a database and how are they used', Access a MySQL database via command line andor phpMyAdmin', Data types and efficient database design', Basic MySQL queries SELECT INSERT DELETE', Connect to and manipulate a database using PHP

Name
Build a basic PHP script

Objective
Create a functional contact form

Name
Identify best practices for web applications

Objective
Sanitizing form input', Storing sensitive data', Sessions and security', W3C Compliance and Section 508W3C accessibility standards

Name
Create a dynamic web application incorporating HTML5, CSS3, and jQuery with PHP concepts

Objective
Build a functional social networking app using HTML PHP and jQueryJavascript', Will include user registration user profiles and internal messaging

CLD158 - Multi-Cloud Development Services

Overview

Department
Information Technology

Course Description
Cloud computing impacts all careers, and an awareness of the opportunities associated with this emerging field is critical. Developers need to understand what it means to develop on and migrate to the cloud—and comprehend the overall landscape before diving into the platform. In this hands-on course, you will get a high-level overview just for developers, focusing on the features and services in a multi-cloud development environment using Google Cloud, Amazon Web Services, and Microsoft Azure.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Cloud Computing Core Concepts

Name
Planning a Microsoft Cloud Solution

Name
Learning Cloud Data Storage

Name
Cybersecurity with Cloud Computing

Name
Google Cloud Storage and Data Essential Training

Name
Google cloud Compute Engine Essential Training

Name
Microsoft Azure Core Functionalities

Name
Cloud Computing Career Paths and Certifications

Name
Learning Amazon Web Services (AWS) for Developers

Name
AWS for Developers: Deploying Your Application to the Cloud

Name
AWS for Developers: Data-Driven Serverless Applications

Name
AWS for Developers: Security Best Practices

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Earn a minimum grade (UG) of C in the following:
- CLD121 - Object-Oriented Programming (JavaScript)

OR

Earn a minimum grade (UG) of C in the following:
- CLD129 - Programming Foundations (Swift iOS)

CLD166 - Cloud Application Development I (REACT on AWS)

Overview

Department
Information Technology

Course Description
Traditionally, companies have built and deployed web applications where they have some degree of control typically running on a server and are responsible for provisioning and managing the resources for it. The issues associated with this process, including server uptime, maintenance costs, managing security, and scalability is driving the realization that it is more competitive to run applications on the cloud. In this hands-on course, designed for developers that would like to build full-stack applications on Amazon Web Services, students will make a full-stack React application by creating a note-taking app from scratch. By guiding students, step-by-step through both the frontend and the backend, students will cover all the different aspects of building their first full-stack React app on the cloud.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
For the backend:Configure your AWS account

Name
For the backend:Create your database using DynamoDB

Name
For the backend:Set up S3 for file uploads

Name
For the backend:Set up Cognito User Pools to manage user accounts

Name
For the backend:Set up Cognito Iden7ty Pool to secure our file uploads

Name
For the backend:Set up the Serverless Framework to work with Lambda & API Gateway

Name
For the backend:Write the various backend APIs

Name
For the backend:Working with external APIs (Stripe)

Name
For the backend:Deploy your app through the command line

Name
For the frontend:Set up our project with Create React App

Name
For the frontend:Add favicons, fonts, and a UI Kit using Bootstrap

Name
For the frontend:Set up routes using React-Router

Name
For the frontend:Use AWS Cognito SDK to login and signup users

Name
For the frontend:Plugin to the backend APIs to manage our notes

Name
For the frontend:Use the AWS JS SDK to upload files

Name
For the frontend:Acceptng credit card payments in React

Name
For the frontend:Environments in Create React App

Name
For the frontend:Deploy your frontend to produc7on using Netlify

Name
For the frontend:Configure custom domains through Netlify

Requirements

Simple Requirements

A minimum grade of 'C' in Course CLD118

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CLD118 - Cloud Fundamentals

A minimum grade of 'C' in Course CLD152

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CLD152 - Web Application Development II (REACT)

CLD168 - AWS Cloud Practitioner

Overview

Department
Information Technology

Course Description
To date, when it comes to market share Amazon Web Services currently holds 47.8%, followed by Microsoft Azure at 15.5%, Alibaba Cloud at 7.7%, Google at 4%, and IMB at 1.8%. Get up to speed with one of the most popular and powerful cloud solutions on the market—Amazon Web Services (AWS). In this hands-on course, students will deepen their understanding of Amazon Web Services (AWS) through enterprise security, high availability, controlling cost, and preparing an AWS solution.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Cloud Computing: Core Concepts

Name
Cloud Storage

Name
Amazon Web Services for Architects

Name
Cloud Architecture

Name
Planning an AWS Solution

Name
Amazon Web Services: Enterprise Security

Name
Amazon Web Services: High Availability

Name
Amazon Web Services: Controlling Cost

Requirements

Simple Requirements

A minimum grade of 'C' in Course CLD118

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CLD118 - Cloud Fundamentals

CLD169 - Machine Learning and AI Foundations with Predictive Analytics

Overview

Department
Information Technology

Course Description
There is a lot to learn to stay on top of a rapidly expanding universe of AI and machine learning. In addition, predictive analytics is one of the richest disciplines within the realm of data science; together artificial intelligence, machine learning, and predictive analytics form a very lucrative skillset for an ever-increasing competitive market. In this hands-on course, students will be exposed to a healthy range of topics to learn and advance their skillset in AI, ML, and data science. In addition too, students will learn the tools and techniques for using data to predict future outcomes in order to get up to date with the latest advancements.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Learning Amazon SageMaker

Name
Mathematica 11 Machine Learning

Name
Spark for Machine Learning & AI

Name
Amazon Web Services Machine Learning Essential Training

Name
Google Cloud Platform for Machine Learning Essential Training

Name
Machine Learning for Marketing Essential Training

Name
Machine Learning and AI Foundations: Predictive Modeling Strategy at Scale

Name
Data Science on Google Cloud Platform: Exploratory Data Analytics

Name
The Essential Elements of Predictive Analytics and Data Mining

Name
Data Science on Google Cloud Platform: Predictive Analytics

Name
Data Analytics for Pricing Analysts in Excel

Name
Financial Forecasting with Big Data

Name
Business Analytics Foundations: Predictive, Prescriptive, and Experimental Analytics

Name
Business Analytics foundations: Descriptive, Exploratory, and Explanatory Analytics

Name
Amazon Web Services: Data Analytics

Requirements

Simple Requirements

A minimum grade of 'C' in Course CLD138

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- CLD138 - Object-Oriented Programming (Python)

CLD170 - Cloud Application Development II (Serverless REACT on AWS)

Overview

Department
Information Technology

Course Description
Traditionally companies have built and deployed web applications where they have some degree of control typically running on a server and are responsible for provisioning and managing the resources for it. There are a few issues with this be it server uptime, maintenance costs, managing security, and scalability. It is far more competitive now to run applications on the cloud. Serverless computing (or serverless for short), is an execution model where the cloud provider (AWS, Azure, or Google Cloud) is responsible for executing a piece of code by dynamically allocating the resources. And only charging for the amount of resources used to run the code. The code that is sent to the cloud provider for execution is usually in the form of a function. Hence serverless is sometimes referred to as “Functions as a Service” or “FaaS”. This hands-on course is meant for developers that would like to build full-stack serverless applications. By guiding students step-by-step through both the frontend and the backend they will cover all the different aspects of building their first full automated full-stack serverless React app on the cloud.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Automate backend deployments:

Name
Configure DynamoDB through code

Name
Configure S3 through code

Name
Configure Cognito User Pool through code

Name
Configure Cognito Iden7ty Pool through code

Name
Environment variables in Serverless Framework

Name
Working with secrets in Serverless Framework

Name
Unit tests in Serverless

Name
Automa7ng deployments using Seed

Name
Configuring custom domains through Seed

Name
Monitoring deployments through Seed

Requirements

Simple Requirements

A minimum grade of 'C' in Course CLD166

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CLD166 - Cloud Application Development I (REACT on AWS)

CLD174 - Cloud Capstone

Overview

Department
Information Technology

Course Description
In this course students, will have the opportunity to link classroom/lab theory with a capstone learning opportunity. Through hands on application, reflection and evaluations, students will demonstrate integrated knowledge and growth in the field of information technology. Students will produce a critical reflection on their capstone experience demonstrating how they have addressed specific learning goals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate effective workplace behaviors

Objective
Effectively demonstrates appropriate workplace attitudes', Effectively demonstrates appropriate workplace appearance', Effectively demonstrates appropriate workplace ambition', Effectively demonstrates appropriate workplace accountability skills', Effectively demonstrates appropriate workplace acceptance skills', Effectively demonstrates appropriate workplace appreciation skills

Name
Students will apply knowledge, skills, and experience to an assigned project

Name
Acquire new learning through research and meaningful application opportunities

Name
Reflect on content and process of learning experience

Name
Advocate for self-learning in alignment with project goals

Name
Demonstrate professional skills throughout the project

Name
Build and maintain positive professional relationships

Name
Demonstrate awareness of community/organizational issues

Name
Identify, clarify, and/or confirm professional direction as it relates to your academic studies and future career path

Name
Develop self-understanding, self-discipline, maturity, and confidence

Name
. Participate in/actively attempt to network and create mentor relationships

CLD175 - Information Technology Internship

Overview

Department
Information Technology

Course Description
In this course, students will have the opportunity to link classroom/lab theory with an experimental learning opportunity. Through direct observation, reflection and evaluation, students gain an understanding of the internship site's work, mission, and customers, how these relate to their program of study, as well as the organization's position in the broader industry or field. Students will produce a critical reflection on their internship experience demonstrating how they have addressed specific learning goals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2023

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
3

Other Hours

Other Hours
Min:
135

Course Learning Outcomes

Learning Outcomes

Name
Demonstrates effective workplace behaviors

Objective
Effectively demonstrates appropriate workplace attitudes', Effectively demonstrates appropriate workplace appearance', Effectively demonstrates appropriate workplace ambition skills', Effectively demonstrates appropriate workplace accountability skills', Effectively demonstrates appropriate workplace acceptance skills', Effectively demonstrates appropriate workplace appreciation skills

CLD177 - AWS Solutions Architect Associate

Overview

Department
Information Technology

Course Description
AWS certification is one of the most in-demand in the market, as it allows students to demonstrate proficiency in working with AWS cloud services. This hands-on course provides IT professionals who have an existing foundational knowledge of the AWS platform to learn the skills they need to prepare for the AWS Certified Solutions Architect (Associate) exam. By completing this course students will be thoroughly prepared to lock down their AWS skills for the AWS Certified Solutions Architect – Associate (SAA-C01) exam.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
AWS: Cloud Services Overview

Name
AWS: Storage Design

Name
AWS: Virtual Private Cloud

Name
AWS: Compute Services

Name
AWS: Identity and Access Management

Name
AWS: Auto-Scaling and Virtual Network Services

Name
AWS: Application Deployment

Name
AWS: Databases

Name
AWS: Services and Design Scenarios

Requirements

Simple Requirements

A minimum grade of 'C' in Course CLD168

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- CLD168 - AWS Cloud Practitioner

CLD182 - Microsoft Azure Administrator

Overview

Department
Information Technology

Course Description
Microsoft Azure is one of the leading enterprise-grade cloud computing platforms. In this hands-on course, students will be introduced to cloud computing focusing on various Azure technologies designed to support and protect companies at scale. As a more efficient alternative to traditional on-premise IT infrastructure, through this course, students will learn how to build a base of operations with Azure resource groups, configure networking, provision storage, manage active directory, implement security, govern identity and access management, and much more.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Azure: Planning a Microsoft Cloud Solution

Name
Azure: Active Directory

Name
Azure: Subscription and Resource Management

Name
Azure: Storage Management

Name
Azure: Virtual Directory

Name
Azure: Networking Concepts

Name
Azure: Virtual Networks

Name
Azure: Security Concepts

Name
Azure: Identity Management

Name
Azure: Backup and Disaster Recovery

Requirements

Simple Requirements

A minimum grade of 'C' in Course CLD153

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- CLD153 - Multi-Cloud Administration

CLD185 - Virtual Private Cloud Administration

Overview

Department
Information Technology

Course Description
Most leading private clouds provide similar features. So, how can IT professionals select the right solution with intent to scale for an organization? Through this hands-on course, students will examine industry-leading private cloud platforms and compare the services offered. Learn the fundamentals of cloud computing using a private cloud, consider reasons why you might choose a private cloud solution for a business, and discover the features and services offered by several providers—from security to integration and compatibility features.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Private Cloud Benefits

Name
Costs and Considerations

Name
Organizational Compatibility

Name
Security and Governance

Name
Reviewing OpenStack

Name
Microsoft Private Cloud

Name
VMWare vCloud Suite

Name
Apache CloudStack

Requirements

Simple Requirements

A minimum grade of 'C' in Course CLD153

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CLD153 - Multi-Cloud Administration

CLD187 - Cloud Native Infrastructure (Kubernetes)

Overview

Department
Information Technology

Course Description
Container technology caught the public's attention with the introduction of Docker in 2013. The efficiency and cost benefits containerization can offer quickly made it one of the hottest topics in cloud computing. Shortly after Dockers' release, there has been a flood of new container management platforms, aiming to reduce the complexity of managing containerized applications. One of these platforms, the open-source project Kubernetes created by Google in 2015, is by now the de facto standard for container management. In this hands-on course, students will learn the ins and outs of Kubernetes, how it automates deploying, scaling and managing containerized applications on a group (cluster) of (bare metal or virtual) servers.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Learning Docker

Name
Learning Kubernetes

Name
Kubernetes: Native Tools

Name
Kubernetes: Microservices

Name
Kubernetes: Cloud Native Ecosystem

Name
Kubernetes: Monitoring with Prometheus

Name
Kubernetes: Service Mesh with Istio

Requirements

Simple Requirements

A minimum grade of 'C' in Course CLD153

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CLD153 - Multi-Cloud Administration

CLD188 - Cloud Data and DevOps Specialist (AWS)

Overview

Department
Information Technology

Course Description
Amazon Web Services (AWS) is one of the most widely used cloud platforms and the go-to for many organizations looking to reduce costs by adopting a cloud infrastructure strategy. In this hands-on course, students will gain a comprehensive, cohesive skill for data admins, engineers, and DevOps specialists who will use AWS with data science and business analytics teams. Topics include cloud concepts, best practices, resilient infrastructure, elasticity, automation, cost optimization, server-based architectures, data science, metrics, and much more.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Amazon Web Services for Architects: Essential Training

Name
Amazon Web Services: Monitoring and Metrics

Name
Amazon Web Services: Data Services

Name
Amazon Web Services: Data Science

Name
AWS for DevOps: Monitoring, Metrics, and Logging

Name
AWS for DevOps: High Availability and Elasticity

Requirements

Simple Requirements

A minimum grade of 'C' in Course CLD118

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- CLD118 - Cloud Fundamentals

CLD191 - Microsoft Enterprise O365 Administration

Overview

Department
Information Technology

Course Description
Microsoft 365 offers enterprises a complete business solution around cloud-based office services, applications, Windows 10, and mobility and security services. In this hands-on course, students will dive into each Microsoft 365 product, providing IT professionals with the guidance they need to successfully implement and manage solutions for the modern workplace.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Introduction to Microsoft 365

Name
Windows 10 Administration

Name
Windows as a Service: Planning Deployment

Name
Windows 10: Security

Name
Microsoft Office 365: Deployment

Name
Microsoft Office 365: Administration

Name
Windows 10: Troubleshooting for IT

Name
Office 365 for Administrators: Supporting Users I

Name
Office 365 for Administrators: Supporting Users II

Name
Microsoft Cybersecurity Stack: Securing Enterprise Information

Name
Microsoft Cybersecurity Stack: Securing Enterprise Infrastructure

Name
Windows 10 Essential Training

Name
Microsoft Enterprise Mobility Suite: Management and Security

Name
Learning Microsoft Enterprise Mobility Suite

Name
Windows 10: Advanced Troubleshooting

Name
Microsoft Cybersecurity Stack: Identity and Endpoint Protection

Name
Microsoft 365 Essential Training

Requirements

Simple Requirements

A minimum grade of 'C' in Course CLD153

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- CLD153 - Multi-Cloud Administration

CLD193 - Cloud DevOps Engineer I

Overview

Department
Information Technology

Course Description
DevOps is not a framework or a workflow. It's a culture that is overtaking the business world. DevOps ensures collaboration and communication between software engineers (Dev) and IT operations (Ops). With DevOps, changes make it to production faster, resources are easier to share, and large-scale systems are easier to manage and maintain. In this part-one course, students will learn a holistic overview of the DevOps movement, focusing on the core value of CAMS (culture, automation, measurement, and sharing) in addition to both agile and lean project management principles and how old-school principles like ITIL, ITSM, and SDLC fit within DevOps.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
DevOps Foundations: Continuous Delivery/Continuous Integration

Name
DevOps Foundations: Lean and Agile

Name
DevOps Foundations: Infrastructure as Code

Name
DevOps Foundations: Monitoring and Observability

Name
DevOps Foundations: Site Reliability Engineering

Name
DevOps Foundations: DevSecOps

Name
DevSecOps: Building a Secure Continuous Delivery Pipeline

Name
DevSecOps: Automated Security Testing

Name
Lean Technology Strategy: Running Agile at Scale

Name
Lean Technology Strategy: Building High-Performance Teams

Name
Lean Technology Strategy: Starting your Business Transformation

Name
Lean Technology Strategy: Moving Fast with Defined Constraints

Requirements

Simple Requirements

A minimum grade of 'C' in Course CLD188

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CLD188 - Cloud Data and DevOps Specialist (AWS)

A minimum grade of 'C' in Course CLD168

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CLD168 - AWS Cloud Practitioner

CLD196 - Cloud DevOps Engineer II

Overview

Department
Information Technology

Course Description
DevOps is not a framework or a workflow. It's a culture that is overtaking the business world. DevOps ensures collaboration and communication between software engineers (Dev) and IT operations (Ops). With DevOps, changes make it to production faster, resources are easier to share, and large-scale systems are easier to manage and maintain. In this part-two course, students will learn the various methodologies and tools an organization can adopt to transition into DevOps, including infrastructure automation, software version control, container management via Kubernetes, and much more.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Learning Ansible

Name
Learning Puppet

Name
Learning Chef

Name
Learning Jenkins

Name
Learning Software Version Control

Name
Learning Elastic Stack

Name
Learning Nagios

Name
Graphite and Grafana: Visualizing Application Performance

Requirements

Simple Requirements

A minimum grade of 'C' in Course CLD193

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- CLD193 - Cloud DevOps Engineer I

CMA119 - Medication Aide

Overview

Department
Health Sciences

Course Description
Focuses on the knowledge and skills needed for safe medication administration in long–term care facilities. Graduates are eligible to take the Kansas certification examination to become certified medication aides.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
80

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
50

Lab Hours

Lab Hours Min:
5

Other Hours

Other Hours
Min:
25

Course Learning Outcomes

Learning Outcomes

Name
Legal and Ethical Responsibilities: Understand and adhere to legal, ethical, and regulatory guidelines, including patient confidentiality and rights.

Name
Effective Communication: Communicate effectively with healthcare teams, patients, and families regarding medication regimens and patient care.

Name
Infection Control Practices: Apply standard infection control practices, such as proper hand hygiene and the use of personal protective equipment, when handling and administering medications.

Name
Understanding Medication Fundamentals: Demonstrate knowledge of basic pharmacology principles, including drug classifications, effects, side effects, and proper storage.

Name
Safe Medication Administration: Accurately measure, prepare, and administer medications in accordance with state regulations and facility policies.

Name
Recognizing Adverse Reactions: Identify and respond appropriately to adverse drug reactions, allergic reactions, and other complications.

Name
Documentation and Reporting: Maintain accurate records of medication administration and report any changes in patient condition or medication errors promptly.

Requirements

Simple Requirements

Certified Nurse Aide

Type
Prerequisite

Complete ALL of the following Courses:
- CNA101 - Certified Nurse Aide

CNA101 - Certified Nurse Aide

Overview

Department
Health Sciences

Course Description
Prepares students to be caregivers in nursing homes while working under the supervision of licensed nurses. Includes classroom instruction, laboratory and clinical experience. Program meets Kansas State Department of Health and Environment guidelines. Graduates may take the state examination to become a certified nurse aide.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
120

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
30

Other Hours

Other Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Professional Ethics and Conduct: Demonstrate professionalism, ethical behavior, and adherence to legal standards and regulations in a healthcare setting.

Name
Patient Rights and Advocacy: Understand and respect patient rights, privacy, and confidentiality while serving as an advocate for patient needs and preferences.

Name
Effective Communication: Develop strong verbal and non-verbal communication skills to interact effectively with patients, families, and healthcare team members.

Name
Infection Control Practices: Apply proper infection control procedures, such as hand hygiene, equipment sterilization, and the use of personal protective equipment (PPE).

Name
Vital Signs Monitoring: Accurately measure and record vital signs, including temperature, blood pressure, pulse, and respiration, following standard protocols.

Name
Patient Care Skills: Demonstrate the ability to provide basic patient care, including bathing, dressing, feeding, and ensuring the comfort and safety of patients.

Name
Emergency/Disaster: Response Recognize and respond to disaster and medical emergency situations.

CNU010 - Certified Nurse Aide Update

Overview

Department
Health Sciences

Course Description
This course is for students who originally certified as a Nursing Assistant in the State of Kansas and have not worked in a Health Care Setting for two or more years. This class will prepare students to return to the Health Care Setting under the direct supervision of a licensed nurse as a Certified Nurse Assistant.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
1

Contact Hours

Contact Hours Min:
12

Billing Hours

Billing Hours Min:
1

Lecture Hours

Lecture Hours Min:
6

Lab Hours

Lab Hours Min:
6

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to adequately review and discuss core topics of the CNA class.

Objective
The CNAs responsibility in healthcare delivery', Communication', Resident rights including issues involving abuse neglect and exploitation and culture change', Safety of residents including the Heimlich maneuver', Infection control including hand washing', Basic nursing skills including measurement and recording of vital signs', Personal care skills including feeding bathing dressing elimination needs skin care transfers positioning and turning a resident', End of life care', Care of the cognitively impaired resident', Basic restorative services

Name
The student will be able to perform skills included in personal care provided by the CNA

Objective
Safety of residents including the Heimlich maneuver', Infection control including hand washing', Basic nursing skills including feeding bathing dressing elimination needs skin care transfers positioning and turning a resident

Requirements

Simple Requirements

A minimum grade of 'C' in Course GRA101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

CPR001 - CPR For Healthcare Providers

Overview

Department
Health Sciences

Course Description
Designed for practitioners whose primary work environment is in a clinical setting or those providing direct patient care. This is the most comprehensive credential, and it is often a Prerequisite for advanced training courses. Suggested participants include: physicians, dentists, nurses, paramedics, EMTs, respiratory therapists, pharmacists, medical or nursing assistants, and other allied health professionals.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Hybrid

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
Recognize the risk factors and signs of heart attack, cardiac arrest, and stroke

Name
Recognize foreign body airway obstruction on adult, child, and infant

Name
Identify the links in the chain of survival

Name
Perform 1-rescuer and 2-rescuer adult CPR

Name
Perform child and infant CPR

Name
Perform the steps to relief foreign-body airway obstruction in the responsive and unresponsive adult, child and infant victim

Name
Utilize a bag-mask device and an AED

Name
Discuss legal aspects of CPR

CRJ101 - Introduction to Criminal Justice

Overview

Department
Health Sciences

Course Description
Provides an introduction to the historical development and the internal and external issues of the various components of the criminal justice system including police, corrections and the courts. The student will illustrate how these interrelated components result in the administration of justice today.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Summarize the historical, theoretical, and philosophical developments in criminal justice

Objective
Define the social forces that work against the criminal justice system', Identify key historical events that have shaped the criminal justice system

Name
Identify and discuss the steps in the criminal justice process

Objective
Identify the three elements of the criminal justice system', Order the process of a criminal case from start to finish

Name
Distinguish the goals and philosophes of the due process and the crime control models of criminal justice

Objective
Compare and contrast the due process and crime control models', Students will identify ways in which oppression privilege discrimination and social and economic disadvantage contribute to inequalities and injustices within criminal justice systems

Name
Identify the ethical responsibilities and constitutional duties of the criminal justice professional

Objective
Assess the role the criminal justice system plays in society', Identify the stress of police officers and its sources', Outline the sources of criminal and civil law', Illustrate the importance of ethical standards in policing courts and corrections', Apply the foundations of the constitution to determine the legality of laws

Name
Summarize how law enforcement, courts, and corrections operate and interact

Objective
Identify the goals of the system', Define what elements each part of the criminal justice system are each responsible for in a case', Outline the ethical issues that affect each level of the system', Describe the different actors in the court setting that work together

Name
Explain the importance of empirical data in criminal justice policy

Objective
Be familiar with statistical analyses of data', Demonstrate the ability to meaningfully interpret outcomes of data processing', Students will articulate the link between research theory and practice

CRJ105 - Criminal Investigation

Overview

Department
Health Sciences

Course Description
Explores issues including the effective interview and interrogation techniques, crime scene management and lab processes, crime scene documentation methods, case preparation, and court presentation.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to determine criminal investigator characteristics necessary for a fair, complete and impartial investigation

Name
The student will be able to analyze facts to determine if a crime has been committed

Name
The student will be able to explain the purpose of each step in the criminal investigative process

Name
The student will be able to demonstrate documentation methods and procedures through the entire investigation process

Name
The student will be able to explain how to record a crime scene, collect, and preserve evidence

Name
The student will be able to explain appropriate protocol for collection, preservation and transportation of physical evidence to crime lab

Name
The student will be able to conduct a follow-up investigation using a variety of techniques

Name
The student will be able to identify appropriate techniques for questioning victims, witnesses and interrogating suspects

Name
The student will be able to explaina case for court presentation

Requirements

Simple Requirements

A minimum grade of 'C' in Course CRJ101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CRJ101 - Introduction to Criminal Justice

A minimum grade of 'C' in Course CRJ110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CRJ110 - Criminal Law

CRJ110 - Criminal Law

Overview

Department
Health Sciences

Course Description
Examines the history, scope, and nature of law. It focuses on the parties to a crime; classification of offenses; criminal acts and intent; the capacity to commit crime; and criminal defenses. It will cover the elements of misdemeanor and felony crimes.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the historical, methodological, and theoretical practices in the legal system.

Name
The student will be able to distinguish the elements of criminal offenses.

Name
The student will be able to explain vicarious liability and parties to crime.

Name
The student will be able to explain defenses to criminal liability.

Name
The student will be able to demonstrate the ability to read and evaluate case and statutory law.

Name
The student will be able to apply criminal law to practical scenarios.

CRJ115 - Agency Administration

Overview

Department
Health Sciences

Course Description
Conducts a practical analysis of modern administration theory and supervisory, management principles and their application to the unique operating problems of criminal justice organizations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explain the budgeting process within the criminal justice system

Name
The student will be able to outline the organizational makeup of the criminal justice system

Name
The student will be able to explain leadership and management techniques

Name
The student will be able to determine appropriate communication as a management tool

Name
The student will be able to compare and contrast various theories and practices of motivation

Name
The student will be able to determine the need for diversity and multicultural training

Name
The student will be able to evaluate the impact of employee relations on the criminal justice system

Name
The student will be able to explain the rights and legal responsibilities of criminal justice employees

Name
The student will be able to summarize the formal and informal evaluation process of criminal justice employees

Name
The student will be able to utilize stress management techniques

Name
The student will be able to summarize elements that create an ethical environment

CRJ120 - Juvenile Delinquency and Justice

Overview

Department
Health Sciences

Course Description
Examines the historical precedents and philosophical reasons for treating juveniles differently from adults. Reviews empirical evidence about child development that can illuminate the reasons for their special status within the system. It will study the major theories that have been proposed as explanations of delinquent behavior. The course will also provide a detailed overview of the juvenile justice system, from its beginnings to the current state of the institution.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to compare and contrast the adult and juvenile justice systems

Name
The student will be able to differentiate between the sources of official data

Name
The student will be able to explain the development of the juvenile justice system

Name
The student will be able to apply juvenile justice theories to practical situations

Name
The student will be able to illustrate the practical impact of juvenile law on juvenile procedures

Name
The student will be able to distinguish main procedural differences between adult and juvenile court

Name
The student will be able to summarize juvenile court and corrections options following adjudication

Name
The student will be able to explore juvenile behaviors, characteristics, and risk factors that lead to juvenile crime

Name
The student will be able to identify factors that influence police discretion

Name
The student will be able to demonstrate appropriate intervention strategies for juvenile offenders

CRJ125 - Law Enforcement Operations and Procedures

Overview

Department
Health Sciences

Course Description
Examines the role of police in society and application of key concepts to policing scenarios. Students identify, discuss, and assess critical police practices and processes to include deployment, arrest procedures, search strategies, and other operational considerations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explain the historical developments in law enforcement operations

Name
The student will be able to explain the foundations of effective police communication

Name
The student will be able to summarize a police officer's responsibilities during a domestic violence incident

Name
The student will be able to identify effective intervention techniques associated with domestic violence

Name
The student will be able to examine how police deal with street gangs

Name
The student will be able to explain the philosophy of community policing and problem solving

Name
The student will be able to compare and contrast different types of patrol and their effectiveness

Name
The student will be able to explain use of force continuum

Name
The student will be able to outline procedures involved in traffic stops

Name
The student will be able to explain law enforcement's role in response to community emergencies

Name
The student will be able to analyze challenges of law enforcement interaction with special and/or diverse populations

Name
The student will be able to conduct search operations

Requirements

Simple Requirements

A minimum grade of 'C' in Course CRJ101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CRJ101 - Introduction to Criminal Justice

A minimum grade of 'C' in Course CRJ110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CRJ110 - Criminal Law

CRJ130 - Criminal Procedures

Overview

Department
Health Sciences

Course Description
Introduces basic court system procedures and the jurisdiction of the courts. It also focuses on the constitutional and other legal requirements that affect law enforcement practices and procedures. Specific topics include confessions and interrogations, identification procedures, arrest, search and seizure, and admissibility of evidence.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explain the limits of police power regarding arrest and criminal procedure

Name
The student will be able to summarize the court system procedure and court personnel

Name
The student will be able to identify situations where constitutional rules apply

Name
The student will be able to differentiate among reasonable suspicion, probable cause, and beyond a reasonable doubt

Name
The student will be able to identify elements of lawful arrest

Name
The student will be able to determine individual pre-trial detainee rights

Name
The student will be able to explain rules of search and seizure and its exceptions

Name
The student will be able to identify the requirement that pertains to the execution of search and arrest warrants

Name
The student will be able to explain the rules of confessions and admission

CRJ135 - Criminal Justice Interview and Report Writing

Overview

Department
Health Sciences

Course Description
Focuses on the unique types of writing required in a criminal justice career. Students are required to gather pertinent information and then record that information by writing a variety of report narratives representative of those prepared by individuals working in a profession within the criminal justice system.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to conduct an interview

Name
The student will be able to use active listening skills

Name
The student will be able to distinguish among fact, opinion and inference

Name
The student will be able to develop strategies to obtain information in a variety of situations

Name
The student will be able to apply appropriate grammar and punctuation to written communication

Name
The student will be able to apply conventions of effective report writing in criminal justice

Name
The student will be able to document verbal and nonverbal behavior

Name
The student will be able to examine legal and ethical issues related to interviews

Name
The student will be able to take detailed field notes

Name
The student will be able to document facts of the case

Name
The student will be able to write comprehensive, detailed narratives using logical, coherent phrases, sentences and paragraphs

Name
The student will be able to prepare appropriate criminal justice reports

Name
The student will be able to demonstrate skills in the collection and interpretation of information from an incident

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

CRJ140 - Professional Responsibility in Criminal Justice

Overview

Department
Health Sciences

Course Description
Explores the major components involved in the study of ethics, particularly as it applies to the field of criminal justice. Focus is placed on the code of conduct and ethics of the criminal justice profession and the standards held to in their professional role. The aim of the course is to produce professionals who are not only critical thinkers, but who have the skills necessary to pursue sound ethics in their day-to-day decisions and activities.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply the criminal justice code of ethics

Name
The student will be able to compare and contrast ethical theories

Name
The student will be able to demonstrate the resolution of ethical dilemmas

Name
The student will be able to apply ethical decision making process in practical situations

Name
The student will be able to examine the effects of workplace subculture on ethical behavior

Name
The student will be able to describe the process of ethical development

Name
The student will be able to examine ethics and ethical concerns in criminal justice

Name
The student will be able to explain the relationships between practitioner's behavior and their ethical knowledge and decision making

Name
The student will be able to identify the basic functions of ethics and institutional policies

Name
The student will be able to describe how ethics function with other social control systems

Name
The student will be able to summarize the role of maintaining integrity within the institutional organization

Name
The student will be able to examine the impact of personal behavior on your profession

Name
The student will be able to describe the ethical decision-making process as it relates to the use of discretion

CRJ145 - Corrections

Overview

Department
Health Sciences

Course Description
This course provides an introduction into the history of corrections, philosophical background, processes, institutions, parole, probation, and offender reentry. Correctional theories and the relationship with other facets of the criminal justice system are examined.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the various philosophies of punishment

Objective
Describe various forms of punishment from ancient to modern times', Describe the emergence of imprisonment as punishment', Identify and discuss the ideologies of corrections including punishment rehabilitation incapacitation deterrence prevention reintegration and restoration', Describe past and future issues that have and will challenge and impact the provision of correctional services as part of the criminal justice system', Demonstrate proficiency of corrections simulations

Name
The student will be able to describe the criminal justice system and the impact of policies on corrections

Objective
Demonstrate knowledge of the contemporary goals of sentencing', List and explain the goals of sentencing', Discuss the significance of the presentence investigation', Name at least six sentencing options available to judges

Name
The student will be able to demonstrate knowledge of current correctional issues

Objective
Demonstrate knowledge of the subcomponents of Corrections as part of the American criminal justice system', Describe and differentiate between the structure functions operations and duties of the correctional subcomponents including prisons jails probation parole and communitybased intermediate corrections', Explain the use of probation and parole as alternatives to incarceration', Identify at least six types of intermediate sanctions used as alternatives to incarceration

Name
The student will be able to demonstrate an overall understanding of corrections in America

Objective
Describe the significance of discretion employed by members of the corrections field including the subculture styles and perspectives', Explain the subcultures styles and perspectives of various inmate types including male female juvenile and special category inmates', Describe the importance of ethics in corrections

CRJ155 - Policing Diverse Cultures

Overview

Department
Health Sciences

Course Description
This course examines the challenges and opportunities law enforcement faces providing public safety services in culturally diverse communities. The influences of culture, ethnicity, race, sexual orientation, and socioecomonic class will also be discussed.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the principals of cultural diversity

Objective
Define the terms multiculturalism racism institutional racism prejudice racial groups', Explain the need for multicultural law enforcement and the roles racism and prejudice may play in policecommunity relationships', Apply comprehension of multicultural law enforcement to traditional police departments', Evaluate new policing strategies employed by the contemporary police departments', Describe policing philosophies strategies and techniques used by police department to address a diverse community

Name
The student will be able to demonstrate an understanding of culture, race, and ethnicity in the workplace and in multicultural communities

Objective
Identify the changing Law Enforcement Agency', Identify the Multicultural representation in Law Enforcement for Recruitment Retention and Promotion', Discuss the new policing strategies employed by the contemporary police departments', Analyze the history of tension between the police and racial and ethnic groups

Requirements

Simple Requirements

A minimum grade of 'C' in Course CRJ101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CRJ101 - Introduction to Criminal Justice

CRJ160 - Internship in Criminal Justice

Overview

Department
Health Sciences

Course Description
The purpose of the internship program is to allow students an opportunity to gain knowledge and experience in law enforcement and public safety services and further explore careers in the field with a focus on urban policing.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able experience police work firsthand from experienced Police Officers and/or Sheriff Deputies

Objective
Learn about officer safety', Experience proactive traffic enforcement', Review police reports and examine the paperwork necessary', Examine current policing practices and assess their effectiveness

Name
The student will be able experience forensic and crime scene examination with Crime Scene Investigators

Objective
Observe crime scene management', Experience evidence collection and submission', Identify hazards and concerns for law enforcement in regards to crime scene contamination

Name
The student will be able experience interview and interrogation skills along with victim follow-up with a Detective

Objective
Identify differences between Interview and Interrogation', Understand principals for an effective and legal interrogation', Understand the difference in bookingarrest and charging affidavits', Experience the necessity of followup on individual crimes

Name
The student will be able experience the local Jail while working with a Detention Deputy

Objective
Functional understanding of the differences between a Jail and a Prison', Experience the different roles deputies play in a Jail

Name
The student will be able to experience security work firsthand from experienced Security Officers

Objective
Learn about officer safety', Experience electronic surveillance enforcement', Review security reports and examine the paperwork necessary', Examine current security practices and assess their effectiveness

Requirements

Simple Requirements

A minimum grade of 'C' in Course CRJ101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CRJ101 - Introduction to Criminal Justice

A minimum grade of 'C' in Course CRJ125

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CRJ125 - Law Enforcement Operations and Procedures

A minimum grade of 'C' in Course CRJ135

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CRJ135 - Criminal Justice Interview and Report Writing

A minimum grade of 'C' in Course CRJ140

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CRJ140 - Professional Responsibility in Criminal Justice

CRJ180 - KLETC or Equivalent Law Enforcement Academy Training

Overview

Department
Health Sciences

Course Description
This course provides credit for the training required for certified law enforcement officers in the state of Kansas. This credit is awarded through the completion of the Kansas Law Enforcement Training Center or other appropriate Law Enforcement Academy.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2019

Credits

Credit Hours

Credit Hours
Min:
12

Contact Hours

Contact Hours
Min:
540

Billing Hours

Billing Hours
Min:
12

Other Hours

Other Hours
Min:
540

CUL105 - Culinary Fundamentals

Overview

Department
Hospitality & Culinary Arts

Course Description
The Culinary Fundamentals course offers an overview of rudimentary cooking skills and techniques as well as basic knife skills. Students will experience instructional demonstrations and gain experience building their skills (roast, sauté, sear, pan fry, boil, simmer, braise, blanche, grill, broil) with a variety of ingredients (proteins, starches and vegetables). Additional topics and instruction in this course include sauces, plate presentation and garnishes. Culinary vocabulary is introduced in this course and carried throughout the program.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Display a professional level of various knife cuts such as classic, mirepoix, large dice, small dice, julienne, and oblique.

Name
Fabricate various types of fish, beef, and poultry.

Name
Demonstrate cooking techniques of proteins, starches and vegetables including roast, saut, sear, pan fry, deep fry, boil, simmer, braise, blanche, grill, broil, steam.

Name
Identify and understand production of all mother sauces and types of stock.

Name
Identify and produce various derivative sauces such as demi-glace and barnaise.

Name
Understand basic a la carte plate presentation and garnishes.

Name
Understand basic culinary vocabulary.

Name
Describe the historical significance of Chef Auguste Escoffier.

Name
Articulate the career and significance of a modern-day chef.

Requirements

Simple Requirements

Enrolled in Course HEM105

Type
Prerequisite

Enroll in the following Courses:
- HEM105 - Sanitation and Safety

CUL110 - Introduction to Gastronomy & Sustainability

Overview

Department
Hospitality & Culinary Arts

Course Description
The Introduction to Gastronomy and Sustainability course introduces students to a number of basic scientific principles underpinning the methodology of cooking, food preparation and the enjoyment of food. Students will gain knowledge of the consumption of cooked food, the physiological and evolutionary implication of the senses, geographic and cultural influences on food, and the rationale behind food preparation. Topics and skills include an understanding of the coupling of senses to improve sense stimulation; altering flavor by chemical means; and modification of the coloration to improve the appearance of dishes.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Explain the foundations of gastronomy and food culture, including sensory analysis, communication through food, and cultural influences on eating practices.

Name
Evaluate the relationship between food, identity, and society by analyzing how cultural traditions, values, and global forces shape personal and collective food choices.

Name
Assess the impact of technology, production systems, and globalization on food systems, sustainability, and the environment.

Name
Apply principles of localization and sustainability to explore solutions that promote responsible food production and community food access.

Requirements

Simple Requirements

Enrolled in Course ENG101

Type
Prerequisite

Enroll in the following Courses:
- ENG101 - Composition I

Enrolled in Course HEM105

Type
Prerequisite

Enroll in the following Courses:
- HEM105 - Sanitation and Safety

CUL115 - Culinary Nutrition

Overview

Department
Hospitality & Culinary Arts

Course Description
The Culinary Nutrition course introduces the roles of proteins, carbohydrates, fats and the process of metabolism in the human body. The students will be given opportunities to understand the benefits and limitations of specific dietary protocols. Students will build their skills in adapting recipes from traditional diets to meet therapeutic protocols. These protocols are the industry standard for specific dietary needs and students will learn to identify and use the therapeutic ingredients. Instructional demonstrations will include scratch recipes and information related to culinary innovation. The goal of the course is for students to understand how one's diet influences their holistic lifestyle.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Requirements

Simple Requirements

A minimum grade of 'C' in Course CUL105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CUL105 - Culinary Fundamentals

CUL120 - Modern Banquet Cookery

Overview

Department
Hospitality & Culinary Arts

Course Description
The Modern Banquet Cookery course provides best practices and instructional strategies for the industry standard in executing banquets and catering events. This course focuses on maintaining food quality and is based in foundational cooking methodology.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate improved knowledge of culinary fundamentals by enhancing established skills with varied products and techniques

Name
Understand the appropriate ways in which various types banquets and catering events can be executed.

Name
Understand the role seasonality plays in planning and executing banquets

Name
Identify traditional banquet menu concepts and offerings.

Name
Define banquet vocabulary and concepts relating to equipment, food preparation, service, and presentation.

Name
Understand banquet food presentation and garnishes.

Name
Execute menus during lab time following the principles and techniques associated with preparing and serving food to large groups, as well as concentrating on principles of modern batch cookery.

Name
Organize, plan, budget and execute a menu for a banquet.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CUL105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CUL105 - Culinary Fundamentals

CUL125 - Baking & Pastry Skill Development

Overview

Department
Hospitality & Culinary Arts

Course Description
The Baking and Pastry Skill course establishes essential baking and pastry techniques including blending, creaming, foaming, lamination, icing, and tempering. This course develops core professional competencies required in contemporary baking and pastry operations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Acquire a working understanding of basic bakery science principles, including leavening, tempering, aeration, foaming, crystallization, and caramelization.

Name
Students will establish a foundation of baking and pastry workplace skills including professionalism, sanitation, teamwork, and organization.

Name
Prepare, taste, serve, and evaluate pastries including muffins, cookies, cakes, pies, meringues, custards, éclairs, puff pastry, yeast-raised breads, and chocolate truffles.

Name
Acquire a working understanding of the ingredients, equipment, and techniques used commonly in bakeries.

Requirements

Simple Requirements

Enrolled in Course HEM105

Type
Corequisite

Enroll in the following Courses:
- HEM105 - Sanitation and Safety

CUL130 - Culinary Innovation & Sustainability

Overview

Department
Hospitality & Culinary Arts

Course Description
The Culinary Innovation and Sustainability Course provides a strong focus on customer service. Instruction is structured using "Design Thinking" within the context of a social, environmental, fiscal and personal sustainability with particular emphasis given to the "citizen chef".

Academic Level (Course Level)
Undergraduate

Effective Start Term
Summer 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Continue building on the foundation of culinary fundamentals by enhancing established skills while introducing new/alternative products and techniques.

Name
Identify inequities and environmental impacts within the food system and their implications.

Name
Assess the health, social, and environmental consequences of the food system.

Name
Structure a basis of customer-focused design thinking within the context of a social, environmental, fiscal, and personal sustainability, with particular concern given to the citizen chef.

Name
Identify and explore concepts of farm to table, seasonality, and forward-thinking food concepts when construction menus.

Name
Articulate how to make decisions that are good for business, its customers, and its employees within the framework of sustainability.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CUL120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CUL120 - Modern Banquet Cookery

CUL133 - Bistro Practicum I

Overview

Department
Hospitality & Culinary Arts

Course Description
Immerse yourself in the dynamic world of culinary entrepreneurship in this practicum class. Under faculty guidance, students will rotate through diverse roles, managing all aspects of a student-run restaurant. This hands-on experience enhances culinary skills, fosters teamwork, and provides insights into real-world restaurant operations. From crafting menus to food preparation and customer service, students gain practical expertise while refining communication, problem-solving, and time management abilities. This course equips aspiring culinary professionals with the skills and confidence for success in the restaurant industry.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Summer 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Execute Culinary Excellence: Skillfully prepare, cook, and present a variety of dishes, showcasing mastery of culinary techniques and artistic plating.

Name
Manage Diverse Roles: Proficiently rotate through culinary and restaurant roles, including cooking, kitchen management, front-of-house operations, and financial oversight, highlighting adaptability and proficiency.

Name
Integrate Culinary Theory: Seamlessly apply theoretical culinary knowledge to practical cooking and restaurant functions, ensuring the delivery of high-quality, innovative dishes in the student-run restaurant.

Name
Collaborate Effectively: Display excellent teamwork and communication skills while working alongside peers, contributing to smooth kitchen operations and exceptional dining experiences.

Name
Strategic Decision-Making: Analyze real-time culinary and operational challenges, making well-informed decisions that balance culinary creativity, customer preferences, and overall restaurant efficiency.

Name
Customer-Centric Focus: Cultivate an acute awareness of customer preferences and feedback, adapting menu offerings and culinary creations to enhance guest satisfaction, emphasizing the pivotal role of customer relationships in culinary ventures.

CUL135 - Cuisines and Cultures of the United States

Overview

Department
Hospitality & Culinary Arts

Course Description
The Cuisines and Cultures of the United States course offers the students instruction and experiences preparing, tasting, serving and evaluating traditional and regional dishes of the Unites States of America. Topics include exploring the flavor profiles, preparations and techniques representative of the cuisines from New England, the Mid-Atlantic, the South, the Floribean, Cajun / Creole, the Midwest, Texas, the Southwest, the Rocky Mountains, California, Pacific Northwest, Alaska and Hawaii.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate capabilities in preparing traditional and regional dishes and understanding the food ingredients prepared from the United States.

Name
Understand how history influences traditional and regional foods in the United States.

Name
Identify what states make up the regions of the United States.

Name
Analyze the relationship between climate, topography, and diet of the region and the use of staple ingredients in United States cuisine.

Name
Discuss the importance of food preservation and sustainability in supporting small business in regions of the United States.

Name
Identify, uses, and evaluate the quality of meat, poultry, seafood, produce, and other ingredients used in United States recipes.

Name
Display a professional level of knife skills, sanitation, and kitchen food safety as appropriate for each region examined.

Name
Display a professional level of demonstration of mis en place.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CUL120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CUL120 - Modern Banquet Cookery

CUL137 - Bistro Practicum II

Overview

Department
Hospitality & Culinary Arts

Course Description
Delve deeper into the art of culinary creation in this advanced practicum. Building upon foundational skills, students will embark on a journey of creative menu innovation. Guided by experienced faculty, participants will curate unique dining experiences, experimenting with flavors, techniques, and presentation. Through this hands-on exploration, students will refine their culinary voice, mastering the balance between tradition and innovation. Engaging in specialized roles within the student-run restaurant, they will further elevate their teamwork, leadership, and critical thinking abilities. This course is tailored for those aspiring to lead culinary trends and excel in the evolving gastronomic landscape. This course is designed as the second Bistro Practicum course in a series of four.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Summer 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Foundational Bistro Flavors: Develop an appreciation for classic bistro flavors and master the art of creating comforting and flavorful lunch dishes.

Name
Bistro Technique Proficiency: Gain expertise in essential bistro cooking techniques, including sauting, braising, and pan sauces, showcasing mastery of these foundational skills.

Name
Seasonal Ingredient Focus: Embrace the importance of seasonal ingredients in bistro cuisine, selecting and incorporating fresh, local produce into limited menu offerings.

Name
Menu Coherence: Create a coherent and well-balanced limited lunch menu that captures the essence of a bistro dining experience and complements each dish.

Name
Efficient Kitchen Collaboration: Excel in a compact kitchen setting, effectively collaborating with peers to ensure smooth lunch service operations and uphold bistro standards.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CUL133

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CUL133 - Bistro Practicum I

CUL140 - Global Cuisines and Cultures

Overview

Department
Hospitality & Culinary Arts

Course Description
The Global Cuisines and Cultures course offers the student instruction and experiences preparing, tasting, serving and evaluating traditional and regional dishes of the Caribbean, Central and South America, Africa and Persia. Topics include exploring the flavor profiles, preparations and techniques representative of the cuisines from the Caribbean, Mexico, Brazil, Argentina, Chile, South Africa, Ethiopia, The DRC, Lebanon, The Arab Emirates and Iran.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Students will continue to build and expand on the foundation of culinary fundamentals by enhancing established skills with varied products and techniques

Name
Students will prepare, taste, serve, and evaluate traditional and regional dishes of the Middle East, Africa, Mexico, Canada, Australia, New Zealand, South America, and Russia.

Name
Students will have a working understanding of the ingredients, flavor profiles, preparations, and techniques representative of the cuisines from the Middle East, Africa, Mexico, Canada, Australia, New Zealand, South America, and Russia

Name
Students will develop an expanded understanding and appreciation of why and how people from diverse cultures approach food and beverages differently

Requirements

Simple Requirements

A minimum grade of 'C' in Course CUL120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CUL120 - Modern Banquet Cookery

CUL143 - Bistro Practicum III

Overview

Department
Hospitality & Culinary Arts

Course Description
Delve deeper into the art of culinary creation in this advanced practicum. Building upon foundational skills, students will embark on a journey of creative menu innovation. Guided by experienced faculty, participants will curate unique dining experiences, experimenting with flavors, techniques, and presentation. Through this hands-on exploration, students will refine their culinary voice, mastering the balance between tradition and innovation. Engaging in specialized roles within the student-run restaurant, they will further elevate their teamwork, leadership, and critical thinking abilities. This course is tailored for those aspiring to lead culinary trends and excel in the evolving gastronomic landscape. This course is designed as the third Bistro Practicum course in a series of four.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Summer 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Sophisticated Bistro Flavor Profiles: Develop complex and layered flavor profiles that elevate bistro lunch dishes, integrating advanced seasoning and ingredient pairing techniques.

Name
Precision in Bistro Techniques: Demonstrate mastery in refined bistro techniques, including precise temperature control, reduction sauces, and artistic plating.

Name
Artful Menu Presentation: Curate a limited lunch menu that not only embodies the bistro ethos but also showcases refined visual presentation and artistic flair.

Name
Bistro Menu Innovation: Innovate within the limitations of a limited menu, creating dishes that surprise and delight while adhering to the bistro's cozy and approachable identity.

Name
Leadership in Bistro Excellence: Take leadership roles in managing the bistro's lunch operations, overseeing the execution of dishes, and fostering an environment of culinary excellence.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CUL137

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CUL137 - Bistro Practicum II

CUL145 - Cuisines and Cultures of the Mediterranean

Overview

Department
Hospitality & Culinary Arts

Course Description
The Cuisines and Cultures of the Mediterranean course offers the student instruction and experiences preparing, tasting, serving and evaluating traditional and regional dishes of the Mediterranean. Topics include exploring the flavor profiles, preparations and techniques representative of the cuisines from North, Central and South Italy, Spain, Portugal, Greece, the Middle East and North Africa.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate capabilities in preparing traditional and regional dishes and understanding the food ingredients prepared from the Mediterranean.

Name
Understand how history influences traditional and regional foods in the Mediterranean.

Name
Identify what regions make up the Mediterranean.

Name
Analyze the relationship between climate, topography, and diet of the region and the use of staple ingredients in Mediterranean cuisine.

Name
Discuss the importance of food preservation and sustainability in supporting small business in regions of the Mediterranean.

Name
Identifies, uses, and evaluates the quality of meat, poultry, seafood, produce, and other ingredients used in Mediterranean recipes.

Name
Display a professional level of demonstration of mis en place.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CUL120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CUL120 - Modern Banquet Cookery

CUL147 - Bistro Practicum IV

Overview

Department
Hospitality & Culinary Arts

Course Description
Delve deeper into the art of culinary creation in this advanced practicum. Building upon foundational skills, students will embark on a journey of creative menu innovation. Guided by experienced faculty, participants will curate unique dining experiences, experimenting with flavors, techniques, and presentation. Through this hands-on exploration, students will refine their culinary voice, mastering the balance between tradition and innovation. Engaging in specialized roles within the student-run restaurant, they will further elevate their teamwork, leadership, and critical thinking abilities. This course is tailored for those aspiring to lead culinary trends and excel in the evolving gastronomic landscape. This course is designed as the fourth Bistro Practicum course in a series of four.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Summer 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Mastery of Bistro Gastronomy: Showcase an in-depth understanding of bistro gastronomy, infusing classic bistro dishes with modern twists and innovative reinterpretations.

Name
Contemporary Bistro Techniques: Employ advanced contemporary cooking techniques to transform bistro lunch offerings, including sous-vide, deconstruction, and molecular gastronomy.

Name
Artistic Bistro Menu Design: Craft a limited lunch menu that showcases culinary artistry, incorporating both traditional and avant-garde elements to surprise and engage diners.

Name
Bistro Culinary Storytelling: Develop dishes that tell a narrative, connecting bistro traditions with contemporary culinary narratives, enriching the dining experience.

Name
Culinary Visionary Leadership: Assume a visionary role in the bistro's lunch concept, leading peers in pushing the boundaries of bistro cuisine, setting new trends, and creating an unforgettable gastronomic journey.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CUL143

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CUL143 - Bistro Practicum III

CUL150 - Cuisines and Cultures of Northern Europe

Overview

Department
Hospitality & Culinary Arts

Course Description
The Cuisines and Cultures of Northern Europe course offers the student instruction and experiences preparing, tasting, serving and evaluating traditional and regional dishes of Northern Europe. Topics include exploring the flavor profiles, preparations and techniques representative of the cuisines from France: Provence, Alsace, Bordeaux, Burgundy and Paris; Germany, Austria, Switzerland, Scandinavia, Great Britain, Eastern Europe.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate capabilities in preparing traditional and regional dishes and understanding the food ingredients prepared from Northern Europe.

Name
Discuss the importance of food preservation and sustainability in supporting small business in regions of Northern Europe.

Name
Describe the sociological and cultural aspects of Northern European cuisine

Name
Analyze the relationship between climate, topography, and diet of the region and the use of staple ingredients in Northern European cuisine.

Name
Identify, uses, and evaluate the quality of meat, poultry, seafood, produce, and other ingredients used in Northern European recipes.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CUL120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CUL120 - Modern Banquet Cookery

CUL155 - Cuisines and Cultures of Asia

Overview

Department
Hospitality & Culinary Arts

Course Description
The Cuisines and Cultures of Asia course offers the student instruction and experiences preparing, tasting, serving and evaluating traditional and regional dishes of the Asia. Topics include exploring the flavor profiles, preparations and techniques representative of the cuisines from China, Korea, Japan, Vietnam, Thailand, and India.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate capabilities in preparing traditional and regional dishes and understanding the food ingredients prepared from various regions of Asia.

Name
Discuss the importance of food preservation and sustainability in supporting small business in regions of Asia.

Name
Describe the sociological and cultural aspects of Asian cuisine

Name
Analyze the relationship between climate, topography, and diet of the region and the use of staple ingredients in Asian cuisine.

Name
Identify, uses, and evaluate the quality of meat, poultry, seafood, produce, and other ingredients used in Asian recipes.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CUL120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CUL120 - Modern Banquet Cookery

CUL160 - Garde Manger

Overview

Department
Hospitality & Culinary Arts

Course Description
"Garde Manger" is the name of the discipline, the position in the kitchen, and the physical environment in the kitchen in which it is performed. In the kitchen, it is a cool, well-ventilated area where cold dishes (such as salads, hors d'oeuvres, appetizers, canapes, pates and terrines) are prepared and other foods are stored under refrigeration. The person in charge of this area is known as the chef garde manager or the pantry chef. This course provides students with a basic understanding and instruction on preparatory skills which produce cold soups, sauces, salads, sandwiches, cured and smoked foods; sausages, terrines, pates, galantines and roulades; cheese, appetizers and hors d'oeuvre; condiments, crackers and pickles as well as buffet development. Additional topics in this course include buffet plating and presentation as well as cheese and charcuterie board design.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Describe the discipline, position, and kitchen environment as it pertains to Garde Manger.

Name
Describe the different functions of salt as it pertains to Garde Manger processes.

Name
Describe the process of preserving different foods.

Name
Demonstrate different methods of preserving including curing/brining, smoking, drying, and preserving in fat.

Name
Display a professional level of precision and intricacy in aesthetic plating.

Name
Display a professional level of knife skills, sanitation, and kitchen food safety as appropriate for each dish.

Name
Display a professional level of demonstration of mise en place.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CUL110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CUL110 - Introduction to Gastronomy & Sustainability

A minimum grade of 'C' in Course CUL120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CUL120 - Modern Banquet Cookery

CUL165 - Culinary Arts Internship

Overview

Department
Hospitality & Culinary Arts

Course Description
This course offers professional experience in the context of an educationally focused internship. Students will be placed in a culinary industry setting for the completion of this course.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Summer 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Applied your knowledge, skills, experience to a work environment

Name
Acquired new learning through challenging and meaningful activities

Name
Reflected on the content and process of the learning experience

Name
Advocated for your own learning in alignment with internship goals

Name
Demonstrated professional skills in the workplace

Name
Built and maintained positive professional relationships

Name
Demonstrated awareness of community and/or organizational issues

Name
Identified, clarified and/or confirmed professional direction as it relates to your academic studies and future career path

Name
Developed self-understanding, self-discipline, maturity and confidence

Name
Developed strong networking/mentoring relationships

Requirements

Simple Requirements

A minimum grade of 'C' in Course CUL120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CUL120 - Modern Banquet Cookery

CUL170 - Advanced Baking: Chocolate and Confectionary Techniques

Overview

Department
Hospitality & Culinary Arts

Course Description
The Advanced Baking: Chocolate and Confectionary Techniques course offers the student instruction and experiences preparing, tasting, serving and evaluating traditional and contemporary confections and pastries including chocolates, ganache, jellies, sugar confections, nut centers, cookies, tarts, and mignardises. Course activities include instruction that develops a foundational understanding of the ingredients, flavor profiles, preparations, equipment, and advanced techniques reflective of the chocolate and confection industry.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Students will enhance the foundation of baking and pastry workplace skills including professionalism, sanitation, teamwork, and organization.

Name
Students will prepare, taste, serve, and evaluate traditional and contemporary confectionery techniques for chocolates, ganache, jellies, sugar confections, nut centers, cookies, tarts, and mignardises.

Name
Students will gain a foundational understanding of the ingredients, flavor profiles, preparations, equipment, and advanced techniques reflective of the chocolate and confection industry.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CUL125

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CUL125 - Baking & Pastry Skill Development

CUL175 - Advanced Baking: Cakes and Desserts

Overview

Department
Hospitality & Culinary Arts

Course Description
The Advanced Baking: Cakes and Desserts course offers the student instruction and experiences preparing, tasting, serving and evaluating traditional and contemporary cakes, tarts, custards, creams, mousses, soufflés, icings, sauces, fillings, and frozen desserts. Course activities include instruction that develops a working knowledge of ingredients, flavor profiles, preparations and techniques representative of cakes and desserts from around the world.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Students will enhance the foundation of baking and pastry workplace skills including professionalism, sanitation, teamwork, and organization.

Name
Prepare, taste, serve, and evaluate traditional and contemporary cakes, tarts, custards, creams, mousses, soufflés, icings, sauces, fillings, and frozen desserts.

Name
Acquire a working understanding of the ingredients, flavor profiles, preparations, and techniques representative of cakes and desserts from around the world.

Name
Research, develop, and produce plated desserts utilizing advanced baking and pastry techniques gained throughout this course.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CUL125

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CUL125 - Baking & Pastry Skill Development

CUL180 - Advanced Baking: Breads and Rolls

Overview

Department
Hospitality & Culinary Arts

Course Description
The Advanced Baking: Breads and Rolls course offers the student instruction and experiences preparing, tasting, serving and evaluating traditional and contemporary breads and pastries. Course activities include instruction that develops a working knowledge of ingredients, flavor profiles, preparations and techniques representative of breads and pastries of Europe and the United States.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Students will enhance the foundation of baking and pastry workplace skills including professionalism, sanitation, teamwork, and organization.

Name
Students will prepare, taste, serve, and evaluate various breads including lean doughs, enriched doughs, sourdoughs, flatbreads, laminated breakfast pastries, and savory pastries.

Name
Students will observe and demonstrate bread baking techniques which include mixing, fermenting, folding, resting, shaping, proofing, scoring, and baking.

Name
Students will gain a working understanding of sustainable grains, innovative processes and preparations, and seasonal flavors reflective of the breads and pastries of Europe and the United States.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CUL125

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CUL125 - Baking & Pastry Skill Development

CWG103 - Blue Print Reading for Welders

Overview

Department
Manufacturing

Course Description
Blue Print Reading for Welders gives instruction in the universal language of drawing interpretation from which information is conveyed for the manufacture of parts and assemblies. Students will fabricate a total of 4-5 projects from shop drawings. Welding symbols and abbreviations for well- meant fabrications: fillet welds, groove welds, back or backing and melt thru welds, plug and slot welds, surfacing welds, edge welds, spot welds, projection welds, seam welds, stud welds.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify basic welding joints and structural shapes

Objective
Identify basic welding joints and structural shapes in a written or oral evaluation, Use instructor-provided materials, Identify welding joints, Identify structural shapes

Name
The student will be able to interpret a bill of materials

Objective
Use an instructor-provided blueprint, Identify the material description, Identify the quantities of materials, Identify parts and item numbers, Compile a bill of materials

Name
The student will be able to identify standard AWS weld symbols

Objective
Identify standard AWS welding symbols, Use an instructor-provided blueprint, Identify a joint design, Identify a weld process, Identify other symbol's components

Name
The student will be able to fabricate projects from blue prints

Objective
Cut parts from material list, Assemble project by Blueprint using proper welding as indicated on prints

Name
The student will be able to identify basic lines and views

Objective
Identify the types of lines: Object, Hidden, Center, Dimension, Leader, Break and Section, Identify three orthographic views: Front, Top and Right-hand Side, Identify Oblique and Isometric views

Name
The student will be able to demonstrate basic sketching techniques

Objective
Draw a circle, arc and eclipse

Name
The student will be able to identify types of dimensions

Objective
Identify linear and angular dimensions, Understand conversion between factional and decimal conversions, Identify radius and arc dimensions, Understand concept of tolerance, Understand term of scale drawings

Name
The student will be able to identify the structural shapes and correct way of dimensioning with reference to a bill of material

Objective
Identify common structural shapes: rectangular bar, sheet, strip or band, plate or flat bar, solid round bar, angle iron, square and rectangle tubing, pipe and round tube, Explain how to read a pipe chart

Name
The student will be able to interpret notes and specifications

Objective
Identify the 13 parts of a Title Block: Name of part or project, Quantity required, Material, Scale size used to depict drawing (full, enlarged or reduced). Value is shown as a ratio, Specification (general), Drawn By, Checked By, Drawing number, Date, Tolerances, Company Name, Revision record, Differentiate between specific notes and general notes

Requirements

Simple Requirements

A minimum grade of 'C' in Course CWG105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CWG105 - Welding Safety OSHA and Orientation

CWG105 - Welding Safety OSHA and Orientation

Overview

Department
Manufacturing

Course Description
This course provides students with essential safety knowledge and orientation to prepare for work in technical and industrial environments, with an emphasis on welding applications. Students will gain broad awareness of occupational hazards and safe work practices through OSHA's 10-Hour General Industry Outreach training, along with hands-on instruction specific to welding processes and equipment.

Topics include hazard recognition, avoidance, control, and prevention, as well as safe setup and operation of welding tools and machinery. Students will be introduced to WSU Tech's welding lab standards and procedures, comparing them to industry practices. A safety exam must be successfully completed before independent equipment use is permitted. Instruction stresses the importance of meeting occupational safety standards, working under proper supervision, and building safe habits that transfer directly to the workplace.

Upon completion, students will have the foundational safety knowledge required for both general industry and welding environments, ensuring they are prepared to enter lab and industry settings responsibly and effectively.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Recall an introduction to OSHA Safety Standards and general safe work practices.

Objective
Students will be able to explain the role of OSHA in maintaining workplace safety and describe how general safety standards apply to industrial and welding environments.

Name
Identify common safety hazards in walking and working surfaces, electricity, and other workplace environments, and apply proper precautionary measures.

Objective
Students will recognize unsafe walking/working conditions, electrical risks, and apply preventative measures to reduce accidents.

Name
Demonstrate correct use of personal protective equipment (PPE) and follow requirements for Hazard Communication.

Objective
Students will properly select and wear PPE and accurately interpret hazard communication labels and safety data sheets.

Name
Recognize the importance of safety precautions, hazard prevention, and safe habits that reduce workplace risks.

Objective
Students will explain how consistent safety practices and habits contribute to preventing workplace injuries.

Name
Demonstrate knowledge of safety hazards and safe practices in welding-related environments and operations.

Objective
: Students will identify risks specific to welding, such as burns, fumes, and fire hazards, and demonstrate methods to control them.

Name
Operate equipment commonly found in a welding facility in accordance with industry standards.

Objective
Students will correctly operate equipment including a 20 Variable Speed Side Sander on pedestal finishing machine, floor standing variable speed drill press, pedestal grinder with wire wheel and hard disc, and a metal cutting shear hydraulic.

Name
Safely utilize welding equipment and tools in compliance with established lab and workplace procedures.

Objective
Students will demonstrate safe use of the Piranha metal worker with various functions, horizontal and vertical band saws, abrasive cutoff saw, oxygen and acetylene equipment, and apply electrical safety procedures.

Name
Apply safety knowledge and equipment operation skills in both classroom and lab environments to prepare for industry work settings.

Objective
Students will integrate safety standards and equipment operation practices in simulated and real-world scenarios to demonstrate industry readiness.

CWG107 - Principles of Welding

Overview

Department
Manufacturing

Course Description
This course introduces students to foundational welding concepts and practices using the Lincoln Electric Education Partner Schools (LEEPS) curriculum. Designed to align with NC3 certification standards, the course emphasizes industry-relevant terminology, welding theory, and hands-on skill development. Students will learn to interpret welding specifications, apply proper procedures, and evaluate weld quality through both visual inspection and testing methods. Emphasis is placed on understanding the factors that influence weld integrity, including material condition, current, arc length, and travel speed. Learners will also explore common and advanced welding challenges, equipment troubleshooting, and repair techniques. Upon successful completion, students will be prepared to pursue NC3 certifications and demonstrate the competencies required for entry-level welding positions in manufacturing and construction industries.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Interpret terminology, theory, and procedures

Objective
Interpret and apply welding terminology, theory, and procedures consistent with industry-recognized sources, including power sources, characteristics, and performance of various welding processes.

Name
Evaluate specification Evaluation and Requirements

Objective
Evaluate welding job specifications and requirements to recommend appropriate welding procedures, considering both basic and advanced welding practices.

Name
Examination of root, intermediate and completed welds

Objective
Examine tacks, root passes, intermediate layers, and completed welds while identifying common and advanced problems in welding practices and equipment.

Name
Describe weld characteristics

Objective
Describe and assess the characteristics of a quality weld, including material condition, current, arc length, and travel speed, and evaluate weld quality based on operator and equipment performance.

Name
Perform destructive and Nondestructive Testing

Objective
Describe and perform destructive and nondestructive testing methods to evaluate weld quality and identify distortion and defects in the welding environment.

Name
Identification and Resolution of Basic Equipment Problems

Objective
Identify and resolve basic equipment problems, recommending repairs per industry and manufacturer guidelines to ensure optimal welding performance.

Requirements

Simple Requirements

A minimum grade of 'C' in course CWG 105

Type
Completion Requirement

Complete ALL of the following Courses:
- CWG105 - Welding Safety OSHA and Orientation

CWG110 - Welding Applications

Overview

Department
Manufacturing

Course Description
In this course student will learn the basic elements of SMAW, GMAW and GTAW. Additionally, students learn the equipment, processes and skills associated with welding cutting equipment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate basic skills in shield metal arc welding

Objective
Identify all equipment used in shield metal arc welding', Compare and contrast filler metal', Select appropriate filler metal for the weld', Utilize appropriate measurement tool', Demonstrate a Surfacing Weld', Demonstrate Fillet Weld', Cut metal using Power Equipment', Demonstrate General Welding Safety Practices', Identify duty cycles and general operational procedures of SMAW equipment

Name
The student will be able to demonstrate basic skills in gas tungsten arc welding

Objective
Identify all equipment used in gas tungsten arc welding', Utilize appropriate measurement tool', Demonstrate a GTAW Surfacing Weld', Demonstrate a Fillet Weld', Identify filler metals', Cut metal using Power Equipment', Demonstrate General Welding Safety Practices

Name
The student will be able to demonstrate basic skills in gas metal arc welding

Objective
Identify all equipment used in gas metal arc welding', Utilize appropriate measurement tool', Demonstrate a GMAW Surfacing Weld', Demonstrate a GMAW Fillet Weld', Demonstrate General Welding Safety Practices', Cut metal using Power Equipment

Name
The student will be able to distinguish different types of Oxygen cutting equipment and processes used in the welding trade

Name
The student will be able to inspect quality and tolerance of cuts according to industry standards

Name
The student will be able to distinguish different types of Oxy-fuel (OFC) equipment and processes used in the welding trade

Name
The student will be able to demonstrate the safe and correct set up, operation and shut down of the Oxy-fuel (OFC) workstation

Name
The students will demonstrate proper operation ofcutting equipment used in the welding industry

Requirements

Simple Requirements

A minimum grade of 'C' in Course CWG105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- CWG105 - Welding Safety OSHA and Orientation

CWG112 - Work Ethics

Overview

Department
Manufacturing

Course Description
This course focuses on applying ethical principles in the manufacturing industry, preparing students to navigate the ethical challenges they will encounter in their professional careers. Emphasizing professionalism, reliability, teamwork, and decision-making, students will explore how these values impact workplace dynamics, productivity, and safety. Through case studies, discussions, and practical exercises, students will develop the skills to navigate ethical dilemmas and positively contribute to a diverse and dynamic manufacturing environment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate professionalism in various workplace scenarios, including communication, reliability, attention to detail, and adherence to company policies.

Name
Analyze ethical dilemmas in manufacturing, including conflicts of interest and safety violations, using critical thinking to assess possible solutions. Propose solutions that uphold industry standards and demonstrate integrity.

Name
Demonstrate adaptability and proactive problem-solving when faced with ethical challenges, including managing change and addressing unexpected workplace issues

Name
Collaborate effectively with team members in an inclusive environment, demonstrating ethical behavior in teamwork and decision-making processes.

Name
Reflect on the impact of ethical behavior on workplace culture, productivity, and personal responsibility within a manufacturing context

Name
Apply ethical principles to ensure workplace safety, health, and quality of work by following protocols, preventing common hazards, demonstrating emergency preparedness, while maintaining high production standards.

CWG115 - SMAW

Overview

Department
Manufacturing

Course Description
Through classroom and/or lab/shop learning and assessment activities, students in this course will: describe the Shielded Metal Arc Welding process (SMAW); demonstrate the safe and correct set up of the SMAW workstation; associate SMAW electrode classifications with base metals and joint criteria; demonstrate proper electrode selection and use based on metal types and thicknesses; demonstrate a surfacing weld with selected electrodes in the flat and horizontal positions; perform SMAW welds on selected weld joints; and perform visual inspection of welds.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explain the Shielded Metal Arc Welding process (SMAW).

Objective
Differentiate between types and uses of current', Identify the advantages and disadvantages of SMAW', Identify types of welding power sources', Identify different components of a SMAW station', Describe basic electrical safety

Name
The student will be able to demonstrate the safe and correct set up of the SMAW workstation.

Objective
Demonstrate proper inspection of equipment', Demonstrate proper use of PPE', Demonstrate proper placement of workpiece connection', Check for proper setup of equipment', Inspect area for potential hazardssafety issues

Name
The student will be able to relate SMAW electrode classifications with base metals and joint criteria

Objective
Explain the AWS electrode nomenclature', Determine proper electrode for given joint based on material and position of weld', Determine proper type of electrodes to be used in a variety of industry applications', Identify proper electrode storage and handling

Name
The student will be able to demonstrate proper electrode selection and use based on metal types and thicknesses

Objective
Select the proper electrode type and size relative to metal size type and thickness', Select the proper electrode type and size based on material specifications

Name
The student will be able to build pads of weld beads with selected electrodes in the flat position

Objective
Use the proper safety procedures and PPE', Use the proper setup procedures', Create a pad of beads using SMAW electrode', Weld exhibits proper uniformity and profile

Name
The student will be able to build pads of weld beads with selected electrodes in the horizontal position

Objective
Use the proper safety procedures and PPE', Use the proper setup procedures', Create a pad of beads using SMAW electrode', Weld exhibits proper uniformity and profile

Name
The student will be able to perform basic SMAW welds on selected weld joints.

Objective
Use the proper setup procedures', Use the proper safety procedures and PPE', Perform a fillet weld in horizontal position', Perform fillet weld in flat position', Perform a groove weld in a flat position', Perform a groove weld in a horizontal position', Use tools appropriate for the task

Name
The student will be able to perform visual inspection of welds

Objective
Identify common visual discontinuities and defects on welds', Determine causes of discontinuities and defects of welds', Inspect welds for passfail ratings according to industry standards', Use appropriate inspection tools

Name
The student will be able to execute surfacing welds with selected electrodes in the horizontal position

Objective
Use the proper safety procedures and PPE', Use the proper setup procedures', Create a surfacing weld using SMAW electrode', Weld exhibits proper uniformity and profile

Requirements

Simple Requirements

A minimum grade of 'C' in Course CWG105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CWG105 - Welding Safety OSHA and Orientation

CWG116 - SMAW II

Overview

Department
Manufacturing

Course Description
This course is designed to give students learning opportunities in the form of assessments and activities in the classroom, lab and/or shop. Students in this course will: describe the Shielded Metal Arc Welding process (SMAW); demonstrate the safe and correct set up of the (SMAW) workstation; associate (SMAW) electrode classifications with base metals and joint criteria; demonstrate proper electrode selection and use based on metal types and thicknesses; build t-joint and lap weld beads with selected electrodes in the flat position; build t-joint and lap weld beads with selected electrodes in the horizontal position; perform basic (SMAW) welds on selected metal thicknesses; and perform visual inspection of said welds. Student will also start out of position welds in the vertical (3) and overhead (4) positions. Including but not limited to fillet and groove welds.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explain the Shielded Metal Arc Welding Process (SMAW)

Objective
Complete a written or oral instructor provided evaluation tool', Differentiate between types and uses of current', Identify the advantages and disadvantages of SMAW', Identify types of welding power sources', Identify different components of a SMAW station', Describe basic electrical safety

Name
The student will be able to demonstrate the safe and correct set up of the SMAW workstation

Objective
Demonstrate proper inspection of equipment', Demonstrate proper use of PPE', Demonstrate proper placement of work piece connection', Check for proper setup of equipment', Inspect area for potential hazardssafety issues

Name
The student will be able demonstrate proper electrode selection and use based on metal types and thicknesses

Objective
Select the proper electrode type and size relative to metal size type and thickness', Select the proper electrode type and size based on material specifications

Name
The student will be able to perform basic SMAW welds on selected weld joints

Objective
Use the proper setup procedures', Use the proper safety procedures and PPE', Perform a fillet weld in horizontal position', Perform fillet weld in flat position', Perform a groove weld in a flat position', Perform a groove weld in a horizontal position', Use tools appropriate for the task

Name
The student will be able to perform visual inspection of welds

Objective
Identify common visual discontinuities and defects on welds', Determine causes of discontinuities and defects of welds', Inspect welds for passfail ratings according to industry standards', Use appropriate inspection tools

Name
The student will be able build t-joint and lap weld beads with selected electrodes in the flat and horizontal positions

Objective
Use the proper safety procedures and PPE', Use the proper setup procedures', Create a tjoint and lap weld beads using SMAW electrode', Exhibit proper uniformity and profile

Requirements

Simple Requirements

A minimum grade of 'C' in Course CWG115

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CWG115 - SMAW

CWG120 - GMAW

Overview

Department
Manufacturing

Course Description
Through classroom and/or shop/lab learning and assessment activities, students in this course will: explain gas metal arc welding process (GMAW); demonstrate the safe and correct set up of the GMAW workstation; correlate GMAW electrode classifications with base metals and joint criteria; demonstrate proper electrode selection and use based on metal types and thicknesses; perform surfacing welds with selected electrodes in the flat position; perform surfacing welds with selected electrodes in the horizontal position; produce basic GMAW welds on selected weld joints; and conduct visual inspection of GMAW welds.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Explain gas metal arc welding process (GMAW)

Objective
Describe different modes of transfer', Differentiate between types and uses of current', Identify the advantages and disadvantages of GMAW', Identify types of welding power sources', Identify different components of a GMAW station', Describe basic electrical safety

Name
Build pads of weld beads with selected electrodes in the flat position

Objective
Implement safety procedures and PPE', Implement proper equipment setup', Use the proper metal transfer', Create a pad of beads using GMAW', Exhibit proper Weld uniformity and profile

Name
Demonstrate the safe and correct set up of the GMAW workstation

Objective
Demonstrate proper inspection of equipment', Demonstrate proper use of PPE', Demonstrate proper placement of workpiece connection', Check for proper setup of equipment', Inspect area for potential hazardssafety issues', Troubleshoot the GMAW equipment and perform minor maintenance

Name
Correlate GMAW electrode classifications with base metals and joint criteria

Objective
Explain the AWS electrode nomenclature', Determine proper electrode for given joint based on material and position of weld', Determine proper type of electrodes to be used in a variety of industry applications', Identify proper electrode storage and handling', Identify consumables

Name
Demonstrate proper electrode selection and use based on metal types and thicknesses

Objective
Identify consumables for various electrode sizes', Select the proper electrode type and size relative to metal size type and thickness', Select the proper electrode type and size based on material specifications

Name
Build pads of weld beads with selected electrodes in the horizontal position

Objective
Implement safety procedures and PPE', Implement proper equipment setup', Use the proper metal transfer', Create a pad of beads using GMAW', Exhibit proper weld uniformity and profile

Name
Produce basic GMAW welds on selected weld joints

Objective
Implement safety procedures and PPE', Implement proper equipment setup', Perform fillet weld in flat position', Perform a fillet weld in horizontal position', Perform a groove weld in a flat position', Perform a groove weld in a horizontal position', Use tools appropriate for the task

Name
Conduct visual inspection of GMAW welds

Objective
Identify common visual discontinuities and defects on welds', Determine causes of discontinuities and defects of welds', Inspect welds for passfail ratings according to industry standards', Use appropriate tools for inspection

Name
Perform surfacing welds with selected electrodes in the flat position

Objective
Implement safety procedures and PPE', Implement proper equipment setup', Use the proper metal transfer', Create a surfacing weld using GMAW', Exhibit proper Weld uniformity and profile

Name
Perform surfacing welds with selected electrodes in the horizontal position

Objective
Implement safety procedures and PPE', Implement proper equipment setup', Use the proper metal transfer', Create a surfacing weld using GMAW', Exhibit proper weld uniformity and profile

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

A minimum grade of 'C' in Course CWG105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CWG105 - Welding Safety OSHA and Orientation

CWG121 - GMAW II

Overview

Department
Manufacturing

Course Description
Through classroom and/or shop/lab learning and assessment activities, students in this course will: explain gas metal arc welding process (GMAW); demonstrate the safe and correct set up of the GMAW work station. Correlate GMAW electrode classifications with base metals and joint criteria; demonstrate proper electrode selection and use based on metal types and thicknesses. Build t-joint and lap-joint with selected electrodes in the flat position; build t-joint and lap-joint with selected electrodes in the horizontal position; perform basic GMAW welds. Student will perform welds in the vertical (3) and overhead (4) positions; this will include, but not limit to, fillet welds and groove welds.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explain gas metal arc welding process (GMAW)

Objective
Describe different modes of transfer', Differentiate between types and uses of current', Identify the advantages and disadvantages of GMAW', Identify types of welding power sources', Identify different components of a GMAW station', Describe basic electrical safety

Name
The student will be able to correlate GMAW electrode classifications with base metals and joint

Objective
Explain the AWS electrode nomenclature', Determine proper electrode for given joint based on material and position of weld', Determine proper type of electrodes to be used in a variety of industry applications', Identify proper electrode storage and handling', Identify consumables

Name
The student will be able produce basic GMAW welds on selected weld joints

Objective
Implement safety procedures and PPE', Implement proper equipment setup', Perform fillet weld in flat position', Perform a groove weld in a flat position', Perform a groove weld in a horizontal position', Use tools appropriate for the task

Name
The student will be able to conduct visual inspection of GMAW welds

Objective
Identify common visual discontinuities and defects on welds', Determine causes of discontinuities and defects of welds', Inspect welds for passfail ratings according to industry standards', Use appropriate tools for inspection

Objective
Use the proper safety procedures and PPE', Use the proper setup procedures', Create a tjoint and lap weld beads using GMAW', Exhibit proper uniformity and profile

Name
The student will be able perform welds in the vertical and overhead positions

Objective
Use the proper safety procedures and PPE', Use the proper setup procedures', Perform a groove weld in the overhead and vertical positions', Perform a fillet weld in the overhead and vertical positions', Exhibit proper uniformity and profile

Name
The student will be able to build t-joint and lap-joints with selected electrodes in the flat and horizontal positions

Objective
Use the proper safety procedures and PPE', Use the proper setup procedures', Create a tjoint and lapjoint using GMAW', Exhibit proper uniformity and profile

Requirements

Simple Requirements

A minimum grade of 'C' in Course CWG120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CWG120 - GMAW

CWG125 - GTAW

Overview

Department
Manufacturing

Course Description
Through classroom and/or lab/shop learning and assessment activities, students in this course will: explain the gas tungsten arc welding process (GTAW); demonstrate the safe and correct set up of the GTAW workstation; relate GTAW electrode and filler metal classifications with base metals and joint criteria; build proper tungsten electrode and filler metal selection and use based on metal types and thicknesses; perform surfacing welds with selected tungsten electrodes and filler material in the flat position; perform surfacing welds with selected tungsten electrodes and filler material in the horizontal position; perform basic GTAW welds on selected weld joints; and perform visual inspection of GTAW welds.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Explain the gas tungsten arc welding process (GTAW)

Objective
Differentiate between types and uses of current', Identify the advantages and disadvantages of GTAW', Identify types of welding power sources', Identify different components of a GTAW workstation', Describe basic electrical safety

Name
Demonstrate the safe and correct set up of the GTAW workstation

Objective
Demonstrate proper inspection of equipment', Demonstrate proper use of PPE', Demonstrate proper placement of workpiece connection', Check for proper setup of equipment', Inspect area for potential hazardssafety issues', Troubleshoot GTAW equipment and perform minor maintenance

Name
Relate GTAW electrode and filler metal classifications with base metals and joint criteria

Objective
Identify electrode classifications', Explain the AWS electrode and filler metal nomenclature', Determine proper electrode and filler metal for given joint based on material and position of weld', Determine proper type of electrodes to be used in a variety of industry applications

Name
Build proper electrode and filler metal selection and use based on metal types and thicknesses

Objective
Use safety hazard precautions and PPE', Prepare the tungsten electrode profile relative to base material', Perform weld using GTAW process appropriate to electrode size and filler metal size', Select the proper electrode and filler metal type and size relative to metal size type and thickness', Select the proper electrode and filler metal type and size based on material specifications', Use tools appropriate for the task

Name
Build pads of weld beads with selected electrodes and filler material in the flat position

Objective
Use safety hazard precautions and PPE', Demonstrate proper equipment setup and troubleshooting', Create a pad of beads using GTAW process', Exhibit proper welduniformity and profile

Name
Build pads of weld beads with selected electrodes and filler material in the horizontal position

Objective
Use safety hazard precautions and PPE', Demonstrate proper equipment setup and troubleshooting', Create a pad of beads using GTAW process', Exhibit proper weld uniformity and profile

Name
Perform basic GTAW welds on selected weld joints

Objective
Conduct proper base metal preparation', Use safety hazard precautions and PPE', Demonstrate proper equipment setup and troubleshooting', Perform fillet weld in flat position', Perform a fillet weld in horizontal position', Perform a groove weld in a flat position', Perform a groove weld in a horizontal position', Use tools appropriate for the task

Name
Perform visual inspection of GTAW welds

Objective
Identify common visual discontinuities and defects on welds', Determine causes of discontinuities and defects of welds', Inspect welds for passfail ratings according to industry standards', Use tools appropriate for the inspection

Objective
Identify electrode classifications', Explain the AWS electrode and filler metal nomenclature', Determine proper electrode and filler metal for given joint based on material and position of weld', Determine proper type of tungsten electrodes to be used in a variety of industry applications

Name
Build proper tungsten electrode and filler metal selection and use based on metal types and thicknesses

Objective
Use safety hazard precautions and PPE', Prepare the tungsten electrode profile relative to base material', Perform weld using GTAW process appropriate to electrode size and filler metal size', Select the proper tungsten electrode and filler metal type and size relative to metal size type and thickness', Select the proper tungsten electrode and filler metal type and size based on material specifications', Use tools appropriate for the task

Name
Perform surfacing welds with selected tungsten electrodes and filler material in the flat position

Objective
Use safety hazard precautions and PPE', Demonstrate proper equipment setup and troubleshooting', Create a surfacing weld using GTAW process', Exhibit proper weld uniformity and profile

Name
Perform surfacing welds with selected tungsten electrodes and filler material in the horizontal position

Objective
Use safety precautions and PPE', Demonstrate proper equipment setup and troubleshooting', Create a surfacing weld using GTAW process', Exhibit proper weld uniformity and profile

Requirements

Simple Requirements

A minimum grade of 'C' in Course CWG105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CWG105 - Welding Safety OSHA and Orientation

CWG126 - GTAW II

Overview

Department
Manufacturing

Course Description
Through classroom and/or shop/lab learning and assessment activities, students in this course will: explain the gas tungsten arc welding process (GTAW); demonstrate the safe and correct set up of the (GTAW) work station; correlate (GTAW) electrode and fill metals classifications with base metals and joint criteria; demonstrate proper tungsten electrode and filler metal selection used based on metal types and thicknesses. Students will build t-joint and lap-joints with selected electrodes and filler metal in the flat position; build t-joint and lap-joints with selected tungsten electrodes and filler metal in the horizontal position; perform basic (GTAW) welds. Students will perform welds in the vertical (3) and overhead (4) positions; this will include but not be limited to fillet welds and groove welds. Students will also be introduced to aluminum and stainless steel.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explain gas metal arc welding process (GTAW)

Objective
Describe different modes of transfer', Differentiate between types and uses of current', Identify the advantages and disadvantages of GTAW', Identify different components of a GMAW station', Describe basic electrical safety

Name
The student will be able to correlate (GTAW) electrode classifications with base metals and joint criteria

Objective
Explain the AWS electrode nomenclature', Determine proper electrode for given joint based on material and position of weld', Determine proper type of electrodes to be used in a variety of industry applications', Identify proper electrode storage and handling', Identify consumables

Name
The student will be able to produce basic (GTAW) welds on selected weld joints

Objective
Implement safety procedures and PPE', Implement proper equipment setup', Perform fillet weld in flat position', Perform a fillet weld in horizontal position', Perform a groove weld in a flat position', Use tools appropriate for the task

Name
The student will be able to conduct visual inspection of (GTAW) welds

Objective
Identify common visual discontinuities and defects on welds', Determine causes of discontinuities and defects of welds', Inspect welds for passfail ratings according to industry standards', Use appropriate tools for inspection

Name
The student will be able build t-joint and lap weld beads with selected electrodes in the flat and horizontal positions

Objective
Use the proper safety procedures and PPE', Use the proper setup procedures', Create a tjoint and lap weld beads using GTAW', Exhibit proper uniformity and profile

Objective
Use the proper safety procedures and PPE', Use the proper setup procedures', Perform a groove weld in the overhead and vertical positions', Perform a fillet weld in the overhead and vertical positions', Exhibit proper uniformity and profile

Name
The student will be introduced to aluminum and stainless steel

Name
The student will be able to explain gas tungsten arc welding process (GTAW)

Objective
Differentiate between types and uses of current', Identify the advantages and disadvantages of GTAW', Identify different components of a GTAW station', Describe electrical safety

Name
The student will be able to correlate (GTAW) electrode classifications with base metals and joint criteria

Objective
Explain the AWS electrode nomenclature', Determine proper tungsten electrode and filler metal for given joint based on material and position of weld', Determine proper type of tungsten electrodes and filler metal to be used in a variety of industry applications', Identify proper electrode storage and handling', Identify consumables

Name
The student will be able to build t-joint and lap-joints with selected tungsten electrodes and filler metal in the flat and horizontal positions

Objective
Use the proper safety procedures and PPE', Use the proper setup procedures', Create a tjoint and lapjoint using GTAW', Exhibit proper uniformity and profile

Requirements

Simple Requirements

A minimum grade of 'C' in Course CWG125

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CWG125 - GTAW

CWG130 - Robotic Welding

Overview

Department
Manufacturing

Course Description
This course is designed to give students learning Robotic Welding opportunities in the form of assessments and activities in the classroom, lab and/or shop. Topics in the course will include robot axes, programing, backups and protection, safety, and maintenance of the welding and robot equipment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
120

Billing Hours

Billing Hours
Min:
4

Lab Hours

Lab Hours Min:
120

Course Learning Outcomes

Learning Outcomes

Name
Student will demonstrate safety in robot work cell

Objective
Complete pre-Inspection of all components in robotic work cell, Identify pinch points, Identify, engage, and clear all Emergency stop buttons for normal operation, Identify light curtains and cell safety switches, Perform safe entry into robotic work cell for inspection, maintenance, and editing programs

Name
Student will identify/explain operation of teach pendant

Objective
Identify and understand robot axes and movement of each, Program robot “Home” position, Program TCP (Tool Center Point)

Name
Student will demonstrate basic robotic welding programming

Objective
Basic programming language, Write basic program for robot movement (no part), Write program to weld a part with at least 3 joints, Run programmed part, Edit program

Name
Student will perform basic daily operational maintenance associated with robotic welding equipment

Objective
Routine maintenance checks of all robot and cell components

Requirements

Simple Requirements

A minimum grade of 'C' in Course CWG121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CWG121 - GMAW II

CWG135 - Measurement and Specification

Overview

Department
Manufacturing

Course Description
This course introduces students to the essential skills for using precision measurement tools in the welding field. Students will learn to safely operate and maintain tools such as calipers, tapes, and micrometers, ensuring accurate measurements. Practical applications will prepare students for industry certification, focusing on the use of these tools in real-world welding scenarios.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will demonstrate skills associated with Certification in Tape and Rule Measurement

Objective
Understand basic safety guidelines as related to the use of precision measuring tools in shops and laboratories, Describe the basic design of various tapes, rules, and calipers to include features, sizes, variations, and the technology behind the tool, Describe the difference between calibration and field check, determine when they should be done, and be able to properly demonstrate field checks on various tapes, rules, and calipers, Demonstrate application of various tapes, rules, and calipers to include proper usage, obtaining and reading measurements accurately, and performing tool maintenance.

Name
The student will demonstrate skills associated with Certification in Slide Caliper Measurement

Objective
Understand basic safety guidelines as related to the use of precision measuring tools in shops and laboratories, Describe the basic design of various dial calipers to include features, sizes, variations, and the technology behind the tool, Describe the difference between calibration and field check, determine when they should be done, and be able to properly demonstrate field checks on various dial calipers, Demonstrate application of various dial calipers to include proper usage, obtaining and reading measurements accurately, and performing tool maintenance.

Name
The student will demonstrate all skills associated with Certification in Angle Measurement

Objective
Understand basic safety guidelines as related to the use of precision measuring tools in shops and laboratories, Describe the basic design of the steel protractor and combination square set to include features, sizes, variations, and the technology behind the tool, Describe the difference between calibration and field check, determine when they should be done, and be able to properly demonstrate field checks on the steel protractor and combination square set, Demonstrate application of the steel protractor and combination square set to include proper usage, obtaining and reading measurements accurately, and performing tool maintenance.

CWG141 - Oxy Acetylene Welding & Cutting

Overview

Department
Manufacturing

Course Description
The Oxy-Acetylene Welding and Cutting Course is designed to introduce students to the competencies required to safely and successfully demonstrate oxy-acetylene techniques in the classroom, lab and shop setting.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to distinguish different types of Oxygen cutting equipment and processes used in the welding trade

Objective
Define the cutting process advantage', Define the cutting process disadvantage', Identify different components of the process equipment', Describe required safety procedures of the process', Describe the setup procedures of the process

Name
The student will be able to demonstrate the safe and correct set up, operation and shut down of the Oxy-fuel (OFC) workstation.

Objective
Use the proper personal protective equipment PPE', Identify safety hazards of the equipment', Properly set up the equipment to begin with and properly shut down the equipment when finished', Properly light and adjust the torch', Make a variety of quality cuts

Name
The student will be able to inspect quality and tolerance of cuts according to industry standards

Objective
Identifying quality cuts via visual inspection', Inspect that the quality of edges are to industry standard', Use the proper inspection tools for the cutting process

Name
The student will be able to distinguish different types of Oxy-fuel (OFC) equipment and processes used in the welding trade

Objective
Define the cutting process advantage', Define the cutting process disadvantage', Identify different components of the process equipment', Describe required safety procedures of the process', Describe the setup procedures of the process

Name
The student will be able to demonstrate the safe and correct set up, operation and shut down of the Oxy-fuel (OFC) workstation

Objective
Use the proper personal protective equipment PPE', Identify safety hazards of the equipment', Properly set up the equipment to begin with and properly shut down the equipment when finished', Properly light and adjust the torch to a neutral flame', Make a variety of quality cuts

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

A minimum grade of 'C' in Course CWG105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CWG105 - Welding Safety OSHA and Orientation

CWG145 - Fabrication & Design

Overview

Department
Manufacturing

Course Description
This course challenges students to plan, design, and fabricate a project that demonstrates creativity, accuracy, and industry-level craftsmanship. Students will engage in project planning, blueprint drafting, material selection, and safe operation of fabrication equipment. Emphasis is placed on producing work that is plumb, level, square, and weld-quality compliant. The course concludes with students presenting their projects through a professional paper and oral presentation that connect design intent to final results.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Develop and document a complete fabrication project plan

Objective
Concept sketching, material selection, cut lists, and welding parameters.

Name
Create detailed fabrication blueprints

Objective
Orthographic view with accurate weld symbols and industry-standard notations.

Name
Apply the design process to evaluate feasibility and safety

Objective
Incorporating OSHA/ANSI standards and best practices in fabrication.

Name
Operate fabrication tools and equipment safely and effectively

Objective
Demonstrating proper PPE use, machine setup, and shop organization.

Name
Fabricate a functional project

Objective
Meets design specifications for plumb, level, square, appearance, and weld quality.

Name
Communicate project outcomes effectively

Objective
Written technical paper and oral presentation that explain purpose, process, and results.

Name
Critically assess and improve fabrication projects

Objective
Applying self-evaluation, peer feedback, and instructor critique to identify design or process improvements.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CWG103

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CWG103 - Blue Print Reading for Welders

A minimum grade of 'C' in Course CWG 105

Type
Prerequisite

A minimum grade of 'C' in Course CWG120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CWG120 - GMAW

A minimum grade of 'C' in Course CWG141

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CWG141 - Oxy Acetylene Welding & Cutting

CWG149 - Materials & Testing

Overview

Department
Manufacturing

Course Description
This course provides comprehensive instruction aligned with the AWS D1.1 Structural Welding Code, equipping students with essential knowledge and skills in metallurgy, weld design, and weld testing. Students will explore the properties and applications of steel, stainless steel, aluminum, and various alloys, with a strong emphasis on welds approved for testing by the American Welding Society. The curriculum covers the development and interpretation of Welding Procedure Specifications (WPS), ensuring students understand industry standards for producing quality structural welds. Through a combination of theoretical study and practical application, students will learn proper testing procedures and gain the expertise necessary to perform welds that meet AWS D1.1 code requirements, preparing them for careers in structural welding and inspection.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Fundamental Principles of Metallurgy

Objective
Explain the fundamental principles of metallurgy as they relate to steel, stainless steel, aluminum, and various alloys used in structural welding applications.

Name
Interpret and Apply D1.1 Requirements

Objective
Interpret and apply the requirements of the AWS D1.1 Structural Welding Code to design and testing of welds.

Name
Welding Procedure Specifications (WPS)

Objective
Develop, evaluate, and implement Welding Procedure Specifications (WPS) in compliance with AWS standards.

Name
Demonstration of Processes

Objective
Demonstrate proficiency in welding processes and techniques approved by the American Welding Society for structural welds.

Name
Perform and Assess Testing Procedures

Objective
Perform and assess weld testing procedures, ensuring quality control according to AWS D1.1 guidelines.

Name
Welding Defects and Troubleshooting

Objective
Identify common welding defects and troubleshoot issues in structural welds based on AWS code criteria.

Name
Ferrous Metals Concepts

Objective
The student will be able to identify the basic concepts associated with ferrous metals

Requirements

Simple Requirements

A minimum grade of 'C' in Course CWG105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CWG105 - Welding Safety OSHA and Orientation

CWG155 - Flux Cored Arc Welding

Overview

Department
Manufacturing

Course Description
Through classroom and/or shop/lab learning and assessment activities, students in this course will: explain Flux Cored Arc Welding process (FCAW); demonstrate the safe and correct set up of the FCAW workstation; correlate FCAW electrode classifications with base metals and joint criteria; demonstrate proper electrode selection and use based on metal types and thicknesses; perform surfacing welds with selected electrodes in the flat position; perform surfacing welds with selected electrodes in the horizontal position; produce basic FCAW welds on selected weld joints; and conduct visual inspection of FCAW welds.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Explain Flux Cored Arc Welding process (FCAW)

Name
Build pads of weld beads with selected electrodes in the flat position

Name
Demonstrate the safe and correct set up of the FCAW workstation

Name
Correlate FCAW electrode classifications with base metals and joint criteria

Name
Build pads of weld beads with selected electrodes in the horizontal position

Name
Produce basic FCAW welds on selected weld joints

Name
Conduct visual inspection of FCAW welds

Name
Perform surfacing welds with selected electrodes in the flat position

Requirements

Simple Requirements

A minimum grade of 'C' in Course CWG121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CWG121 - GMAW II

CWG160 - Welding Internship

Overview

Department
Manufacturing

Course Description
The internship represents an educational strategy linking the classroom with the acquisition of knowledge in the workplace. Through direct observation, reflection and evaluation, students gain an insight into the internship site's work, mission, and audience, how these relate to their academic study, as well as the organization's position in the broader industry or field. Students will produce a critical reflection on their internship experience demonstrating how they have addressed specific learning goals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
180

Billing Hours

Billing Hours
Min:
4

Other Hours

Other Hours
Min:
180

Course Learning Outcomes

Learning Outcomes

Name
Applied your knowledge, skills, experience to a work environment

Name
Acquired new learning through challenging and meaningful activities

Name
Reflected on the content and process of the learning experience

Name
Advocated for your own learning in alignment with internship goals

Name
Demonstrated professional skills in the workplace

Name
Built and maintained positive professional relationships

Name
Demonstrated awareness of community and/or organizational issues

Name
Identified, clarified and/or confirmed professional direction as it relates to your academic studies and future career path

Name
Developed self-understanding, self-discipline, maturity and confidence

Name
Developed strong networking/mentoring relationships

CWG242 - SMAW D1.1 Qualification

Overview

Department
Manufacturing

Course Description
Assists students in preparing to take the shielded metal arc welding (SMAW) qualification test. Students follow all safety procedures related to the various tools and equipment involved in this course. They understand the qualification and code system for structural qualification; identify, measure, cut and prepare the material required for this qualification; and learn the skills for structural welding. Students have time in class to practice these skills in preparation for the structural certification test(s). Completion of this course does not ensure qualification. A destructive bend test is performed during the last week of this course.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
120

Billing Hours

Billing Hours Min:
4

Lab Hours

Lab Hours Min:
120

Course Learning Outcomes

Learning Outcomes

Name
The student will demonstrate proficiency at welding 3G and 4 G welding positions (SMAW)

Name
The student will have the opportunity to qualify in both positions

Name
The student will demonstrate safety procedures associates with SMAW equipment

Name
The student will understand the qualification and code system for SMAW

Requirements

Simple Requirements

A minimum grade of 'C' in Course CWG116

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CWG116 - SMAW II

CWG243 - GMAW D1.1 Qualification

Overview

Department
Manufacturing

Course Description
Assists students in preparing to take the gas metal arc welding (GMAW) qualification test. Students follow all safety procedures related to the various tools and equipment involved in this course; understand the qualification and code system for structural qualification; identify, measure, cut and prepare materials required for this qualification; and learn the skills for structural welding. Students have time in class to practice these skills in preparation for the structural qualification test(s). Completion of this course does not ensure qualification. A destructive bend test is performed during the last week of this course.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
120

Billing Hours

Billing Hours Min:
4

Lab Hours

Lab Hours Min:
120

Course Learning Outcomes

Learning Outcomes

Name
The student will demonstrate proficiency at welding 3G and 4G welding positions (GMAW)

Name
The student will demonstrate safety procedures associated with GMAW equipment

Name
The student will understand the qualification and code system for GMAW

Requirements

Simple Requirements

A minimum grade of 'C' in Course CWG121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CWG121 - GMAW II

DMK110 - Introduction to Media Arts

Overview

Department
Professional Studies

Course Description
Offers an introduction to media arts and the interconnectedness of audio, film, animation and gaming. Introduces fundamental concepts in analyzing and interpreting popular media delivery. The course will employ lectures, guest speakers, collaborative projects and experimental modes of learning. Content will also cover resources available on campus and in the community. Written assignments will encourage students to think about how various media and entertainment influences culture and their response to these influences. Attendance at outside events, lectures and festivals is required.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Articulate the ways that Media Arts disciplines work together and separately to deliver messages to mass audiences.

Objective
Articulate the ways that Media Arts disciplines work together and separately to deliver messages to mass audiences

Name
Critically analyze and interpret the way various media influence audiences.

Objective
Critically analyze and interpret the way various media influence audiences

Name
Demonstrate familiarity with terminology and conventions of style, composition and iconography in media arts.

Objective
Demonstrate familiarity with terminology and conventions of style composition and iconography in media arts

Name
Describe the various environments and projects of Media Arts professionals

Objective
Describe the various environments and projects of Media Arts professionals

DMK120 - Basic Digital Editing

Overview

Department
Professional Studies

Course Description
Introduction to skills, principles and ethics of using audio, images and video to tell stories via Internet-based media.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Understand and identify good elements of graphic design

Name
Incorporate basic web development design that includes text and media

Name
Plan, design, and create digital video projects incorporating graphic and audio elements

Name
Edit and compress video for use in various delivery modes of digital media using standard digital video editing software.

Name
Demonstrate proficiency in creating graphics using Photoshop

Name
Recognize appropriate sources for obtaining license-free images, video, and audio

Name
Complete digital media projects with respects to brand guidelines, any feedback from clients and the required specs.

Name
Combine audio, video, and still photographs to produce a multimedia story

Name
Demonstrate proficiency in motions graphics using Adobe software

DMK125 - Community Building and Management

Overview

Department
Professional Studies

Course Description
Students will be equipped with the knowledge and skills needed to create and support an online community that drives awareness, interest, and conversion for brands.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Define what is an online community and how they affect business

Objective
Define what is an online community and how they affect business

Name
Describe how to build an online community

Objective
Describe how to build an online community

Name
Explain how to work alongside online influencers and how it impacts their brand

Objective
Explain how to work alongside online influencers and how it impacts their brand

Name
Distinguish the proper platforms for building community based on the social media strategy of the brand

Objective
Distinguish the proper platforms for building community based on the social media strategy of the brand

Name
Create an online community strategy

Objective
Create an online community strategy

Name
Analyze and report the effectiveness of the online community for a brand

Objective
Analyze and report the effectiveness of the online community for a brand

DMK135 - Social Media Marketing and Management

Overview

Department
Professional Studies

Course Description
Students will be equipped with the relevant knowledge, perspective and practical skills required to develop marketing strategies that leverage the opportunities inherent in social media for achieving business and marketing goals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Understand what social media is and how this new type of media and communications technology influences how businesses and marketing is done

Name
Explain how to develop effective social medial marketing strategies for various types of industries and businesses

Name
Use social media platforms to influence consumers and promote a company, brand, sites, services or person

Name
Track progress in achieving social media goals with a variety of powerful measurement tools, services and metrics

Name
Create social media marketing plans with targeted objectives and key performance indicators

Name
Demonstrate how to use various social media channels to publish and disseminate relevant branded content to engage consumers and to increase social impact, influence ,and value.

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

DMK140 - Introduction to Audio/Visual Production

Overview

Department
Professional Studies

Course Description
This course will provide students with the skills associated with production and direction of video and audio programs. Hands-on use of standard audio and video production equipment to learn the most current and effective techniques will be integral to the course.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Competently use various audio equipment to record and mix sound.

Name
Show ability to share and/or post digital content online.

Name
Demonstrate basic camera skills

Name
Demonstrate the basic principles associated with video production

Name
Demonstrate ability to create a podcast

Name
Competently use lighting during the recording process

Name
Demonstrate the ability to create a YouTube video

Requirements

Simple Requirements

Enroll in DMK 120

Type
Corequisite

Enroll in the following Courses:
- DMK120 - Basic Digital Editing

DMK150 - Search Engine Optimization & Marketing

Overview

Department
Professional Studies

Course Description
This course is designed to introduce the student to the core concepts of Search Engine Optimization (SEO) and Search Engine Marketing (SEM). Students will learn to ensure their site is digestible by Google and other users resulting in better search engine rankings.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will demonstrate the ability to use SEO technology to increase web site ranking across primary search engines

Objective
Demonstrate an understanding of Goal setting in relation to SEO', Demonstrate an understanding of Keywords in relation to SEO', Demonstrate an understanding of On Page SEO', Demonstrate an understanding of Content Marketing in relation to SEO', Demonstrate an understanding of Off Page SEO', Demonstrate an understanding of Metrics in relation to SEO', Utilize the website structure for optimal SEO through creating

Name
The student will be able to explain the function and operation of search engines

Objective
Describe what a search engine is', Summarize how the indexing process works', Identify what a bot can see on a site vs what a human can see on a site', Explain the ranking factors

Name
The student will be able to explain Search Engine Marketing

Objective
Define SEM', Identify platforms for buying search ads', Paraphrase how ads are bought', Explain what a quality score is', Express how campaigns are set up

Name
The student will understand the process of placing ads

Objective
Perform keyword research', Choose ad groups', Write ads', Describe the importance of monitoring', Communicate the importance of testing', Construct reports

Name
The student will be able to suggest basic optimizations

Objective
Define metrics of success for SEO', Practice keyword research', Apply on page optimizations', Summarize off page SEO tactics', Construct reports to give to clients

Name
The Student will understand how the SEO relates to the overall digital strategy

Objective
Social Media', Paid Digital Content', Content Creation', Public Relations

DMK155 - Photography Fundamentals

Overview

Department
Professional Studies

Course Description
This photography course aims to provide students with a comprehensive understanding of photography's fundamental principles and techniques. Through practical hands-on experience, students will develop the skills necessary to create visually compelling and technically proficient photographs.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Operate Digital and Smart Phone Cameras

Objective
Demonstrate proficiency in operating digital singlelens reflex DSLR cameras', Operate and understand the functions of smartphone cameras

Name
Master Camera Settings

Objective
Adjust camera settings including ISO shutter speed aperture and white balance to achieve desired photographic effects', Explain the relationship between these settings and their impact on image exposure and composition

Name
Compose Visually Pleasing Images

Activity
Compose Visually Pleasing Images

Assessment
Compose Visually Pleasing Images

Objective
Apply principles of composition such as the rule of thirds leading lines and framing to create wellbalanced and engaging photographs', Analyze and critique photographic compositions

Name
Understand Lighting Techniques

Objective
Utilize natural and artificial lighting sources to create various moods and effects in photographs', Control exposure in different lighting conditions to produce wellexposed images

Name
Develop a Personal Style

Objective
Explore different genres of photography eg portrait landscape street and documentary and identify personal preferences', Create a portfolio that reflects a unique photographic style

Name
Communicate Through Visual Storytelling

Activity
Communicate Through Visual Storytelling

Assessment
Communicate Through Visual Storytelling

Objective
Use photography as visual storytelling conveying emotions ideas or narratives through images', Develop a series of photographs that tell a cohesive story or convey a specific message

Name
Practice Ethical and Legal Considerations

Objective
Understand copyright laws and ethical responsibilities for photographing people places and objects', Obtain necessary permissions and releases for photography in various contexts

DMK160 - Introduction to Analytics

Overview

Department
Professional Studies

Course Description
This course is designed to introduce students to the core concepts of digital analytics. The course will explore the effectiveness of marketing campaigns and how to optimize results. This course will prepare students to take the Google Analytics Certification.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the basic functions of analytics platforms in the field of internet marketing

Objective
Describe the function of an analytics platform', Identify the options available in analytic platforms', Explain why marketing professionals use analytics', Identify why Google Analytics is considered the gold standard in the industry', Demonstrate setting up tags

Name
The student will be able to utilize analytics to understand the audience

Objective
Navigate through the audience section of analytics', Determine the different types of site users', Identify the audiences which are part of the marketing funnel

Name
The student will be able to utilize analytics to track the effectiveness of marketing campaigns

Objective
Understand the campaign wants and needs', Know which metricsKPIs are most related to the campaign objectives', Create goals in the analytics software to meet the objectives', Identify the form and function of UTM codes', Create UTM Code', Find the UTM code in the analytics platform', Identify how users from different sources are moving through the site', Utilize UTM code to track users

Name
The student will be able to effectively analyze the data provided in the Analytics platform to provide customer with useful suggestions

Objective
Identify the patterns in the data', Make suggestions based on the patterns', Identify the best practices in presenting analytics data to customer

Name
The student will be able to demonstrate the effective usage of Google Analytics

Objective
Practice using Google Analytics data sets', Demonstrate how to effectively utilize the data from Google Analytics', Create and deliver a customer focused presentation based on usage of Google Analytics data sets

Requirements

Simple Requirements

A minimum grade of 'C' in Course DMK150

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- DMK150 - Search Engine Optimization & Marketing

DMK163 - Introduction to Digital Advertising

Overview

Department
Professional Studies

Course Description
Introduction to the skills, principles, and design of digital advertising that drives business value and engages with online audiences.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Understand the foundations of digital advertising

Name
Define customer journey-based advertising and where their ads will fit within the awareness, consideration, and decision phases of paid advertising

Name
Execute a digital advertising strategy that considers their customer demographics and the customer journey

Name
Identify audiences through demographic, behavioral, and contextual targeting

Name
Assemble a digital ad that implements copy, creative, and conversion

Name
Describe social media advertising

Name
Analyze and understand how analytics are used to improve ads reach and engagement

Name
Create advertising reports that reflect the effectiveness of their ad

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

DMK170 - Digital Marketing Capstone

Overview

Department
Professional Studies

Course Description
In this project-based course, students will apply the skills and knowledge acquired throughout the Digital Marketing program to a real-world project. In partnership with a local non-profit organization, students will create a digital marketing strategy designed to meet the customer needs. Students will produce a critical reflection on their capstone experience demonstrating how they have addressed specific learning goals. A successful project will include a project presentation to representatives of the non-profit organization, faculty and fellow students.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
180

Billing Hours

Billing Hours
Min:
4

Other Hours

Other Hours
Min:
180

Course Learning Outcomes

Learning Outcomes

Name
Applied your knowledge, skills, experience to your capstone project

Name
Acquired new learning through challenging and meaningful activities

Name
Reflected on the content and process of the learning experience

Name
Advocated for your own learning in alignment with capstone goals

Name
Demonstrated professional skills when working with customer

Name
Built and maintained positive professional relationships

Name
Demonstrated awareness of community and/or organizational issues

Name
Identified, clarified and/or confirmed professional direction as it relates to your academic studies and future career path

Name
Developed self-understanding, self-discipline, maturity and confidence

Name
Students will apply knowledge, skills, experience to a capstone project

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

DMK175 - Digital Marketing Internship

Overview

Department
Professional Studies

Course Description
The internship represents an educational strategy linking the classroom with the acquisition of knowledge in the workplace. Through direct observation, reflection and evaluation, students gain an insight into the internship site's work, mission, and audience, how these relate to their academic study, as well as the organization's position in the broader industry or field. Students will produce a critical reflection on their internship experience demonstrating how they have addressed specific learning goals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
180

Billing Hours

Billing Hours
Min:
4

Other Hours

Other Hours
Min:
180

Course Learning Outcomes

Learning Outcomes

Name
Applied your knowledge, skills, experience to a work environment;

Name
cAquired new learning through challenging and meaningful activities;

Name
Reflected on the content and process of the learning experience

Name
Advocated for your own learning in alignment with internship goals

Name
Demonstrated professional skills in the workplace

Name
Built and maintained positive professional relationships

Name
Demonstrated awareness of community and/or organizational issues

Name
Identified, clarified and/or confirmed professional direction as it relates to your academic studies and future career path

Name
Developed self-understanding, self-discipline, maturity and confidence

Name
Developed strong networking/mentoring relationships

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

ECO105 - Principles of Macroeconomics

Overview

Department
General Education

Course Description
This course explores the fundamental aspects of the United States economy including growth, fiscal and monetary policies, unemployment, inflation, national debt, money and the Federal Reserve System. National and international policy topics are discussed.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate the economic way of thinking including scarcity, opportunity cost, production possibility, and marginal analysis.

Name
Utilize the supply and demand model to analyze market outcomes.

Name
Apply the key macroeconomic indicators to interpret the performance of the aggregate economy including output, price level, and employment.

Name
Utilize economic models to explain changes in short-run fluctuations and long-term growth.

Name
Evaluate the impacts of fiscal policy on the macroeconomy.

Name
Define money and banking, then evaluate the impacts on the monetary policy on the macroeconomy.

Requirements

Simple Requirements

A minimum test score of '39' on Test GMID

Type
Prerequisite

A minimum test score of '39' on Test GMID

ECO110 - Principles of Microeconomics

Overview

Department
General Education

Course Description
Attention will be given to the methods of producing the goods and services that our economy provides. The following areas are explored: supply, demand, pricing, scarcity, business firms and business anti-trust and public interest, incomes, wages and salaries, income distribution, taxes, and tax reform.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate the economic way of thinking including scarcity, opportunity cost, production possibility, and marginal analysis.

Name
Utilize the supply and demand model, including elasticity, to analyze market outcomes.

Name
Determine the functional relationships between production and costs.

Name
Compare and contrast the operation of different market structures.

Name
Identify causes and explain effects of market failures.

Requirements

Simple Requirements

A minimum test score of '39' on Test GMID

Type
Prerequisite

A minimum test score of '39' on Test GMID

EDU120 - Introduction to Teaching

Overview

Department
Professional Studies

Course Description
This is a preparation course introducing students to the field of teaching. Topics include current learning standards, lesson plan components, the realities of teaching as a career, certification requirements, professional expectations, and an introduction to teaching strategies. This course provides students with the opportunity to explore the field of teaching, reflect on their interest in education, create and present an instructional lesson, and develop connections with other future educators.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Reflect on the opportunities and responsibilities associated with education as a profession

Objective
Define the role of todays teacher', Define recognize and represent characteristics of effective schools', Select and discuss the characteristics of effective schools', Develop awareness of the state licensure process options and requirements', Develop awareness of the various positions available in the field of education', Demonstrate an understanding of the process for applying to an accredited education program in which offers the required degree needed for licensure consideration', Recognize discipline knowledge curriculum content knowledge and', pedagogical content knowledge andor instructional strategies', Recognize learning styles and be able to utilize Gardners multiple', intelligences in lesson planning', Recognize classroom and behavior management techniques', Will analyze various assessment tools and strategies and their effectiveness

Name
Synthesize the relationship between the foundations and trends in education

Objective
Compare and contrast education of past and present', Apply educational philosophies of education and personal views', Demonstrate an understanding of the various influences contributing to reform in the American schools', Understand the various purposes of formalized schooling and develop a statement of purpose

Name
Demonstrate an awareness of diversity in teaching and learning

Objective
Recognize the diversity of todays students and discuss the various challenged which might be presented in the classroom', Develop an awareness of the social and economic challenges faced by many of todays students', Recognize various learning styles or needs and discuss ways to implement varied lessons to meet student needs', Understand the different motivations of students', Demonstrate an understanding of how society affects schools or how schools can affect society', Recognize the importance of understanding human growth and development in the learning process

Name
Examine effective practices in planning, engaging, and assessing learning

Objective
Discuss how technology affects teaching and student learning', Evaluate key issues in educational technology', Demonstrate introductory knowledge skills and understanding of concepts related to technology', a set up and manage an email account send and receive email', b create documents using word processing software', c use a search engine or directory for research', d practice acceptable use according to universitycollege policies', e submit assignments by email

Objective
Review the different types of curriculum and gain an understanding of who and what shapes the curriculum', Be familiar with the different assessment procedures the advantages and disadvantages of assessment', Understand and evaluate classroom management techniques

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

EDU140 - Children's Literature

Overview

Department
Professional Studies

Course Description
This course introduces students to the literary and visual styles in Children’s Literature. Students will understand the role of literature in instruction including meeting state standards and reading development.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Students will trace the evolution of childrens literature from its historical roots through current trends.

Name
Students will analyze the themes, awards, controversies, censorship, and social contexts impacting children's literature.

Name
Students will identify and evaluate elements of literary and visual style in childrens literature in the following areas: structural elements (e.g. plot development, characterization, setting, theme, style, point of view); genres within and across childrens literature including stories, poems, prose and drama; and artistic quality (e.g., visual elements and illustrative techniques).

Name
Students will explain how children's development (including physical, cognitive, language, cultural, moral, emotional, and personality) influences their response to literature.

Name
Students will demonstrate an understanding of the role of children's literature in planning instruction, including meeting state standards in curricular/content areas in various learning environments, including the criteria of an effective read aloud/oral presentation and the development of reading (emergent through critical thinking).

Name
Students will identify and interpret the relationships among text, author/ illustrator and reader, to understand how children's literature conveys culture, identity, and social context across historical and contemporary works.

EDU160 - Educational Technology

Overview

Department
Professional Studies

Course Description
This course will introduce students to a variety of technology used in educational settings to enhance instruction. Students will learn how to integrate technology and assist students and parents with technology. The importance of cybersecurity and online safety will be discussed.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Assess and evaluate specific educational technologies and their strengths, weaknesses, and usefulness to the learning environment

Name
Develop materials/lessons/units across different modalities(e.g. , in person, online, blended) that responsibly incorporate educational technologies to enhance student learning

Name
Prepare materials/lesson/units that provide learners with equity and accessibility

Name
Identify the social, ethical, and legal issue inherent in educational technologies

Name
Explain the development of digital citizenship through safe, responsible, and positive uses of technology to the participate in a digital world.

EDU180 - Educating Exceptional Students

Overview

Department
Professional Studies

Course Description
This course introduces students to the strengths and needs of learners with exceptional needs, including those with physical and cognitive disabilities and those who exhibit gifts and talents. Students will explore the effects of cultural differences, human development, and education policy.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Students will define the range of exceptionalities present within PreK-12 settings

Name
Students will provide an overview of the history of special education

Name
Students will explain the laws which govern services and accessibility for individuals with exceptionalities

Name
Students will outline the identification process and the continuum of services in PreK-12

Name
Students will analyze the impact of societal attitudes (i.e. culture, gender, family dynamics) on services provided for students with exceptionalities

Name
Students will examine various types of exceptionalities and analyze the impact on teaching and learning (i.e. intellectual, social, emotional, physical, communication, and multiple disabilities)

Name
Students will identify resources to serve families, schools, and communities in support of students with exceptionalities

Name
Students will apply the principles of Universal Design for Learning to meet the needs of all students

EDU200 - Classroom Management

Overview

Department
Professional Studies

Course Description
This course will introduce students to best practices in classroom management and assessment. Topics include time management, organizing materials and classroom space, and managing student behavior.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Identify the foundations of classroom management and adapt appropriately to various learning styles and needs of the students.

Name
Develop and design programs to meet IEP's and incorporate effective behavior management strategies, such as positive reinforcement, clear expectations and conflict resolution within the classroom and behavior management plans.

Name
Differentiate and develop methods of instruction, cultural competence to provide success to an inclusive environment including students with exceptionalities.

Name
Evaluate classroom management routines by analyzing their teaching experiences and according to stereotypes and biases to adapt them appropriately.

Name
Discuss various instructional routines that influence classroom dynamics, including student diversity, instructional, and behavioral needs that are modified appropriately.

Name
Students will implement communication skills, both verbal and non-verbal, to effectively convey information, manage classroom discussions, and address student concerns.

Name
Students will create a positive and supportive classroom environment that fosters learning, collaboration, and mutual respect among students.

EDU210 - Assessing Student Learning

Overview

Department
Professional Studies

Course Description
This course will examine approaches to assessment and evaluation of student learning. Students will be introduced to the basic concepts of standardized and non-standardized assessment including formative and curriculum-based assessments.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Students will understand quantitative and qualitative methodologies.

Name
Students will interpret formative assessment data and apply results to instructional decisions.

Name
Students will evaluate commercially available curriculum-based assessment tools.

Name
Students will develop an assessment plan aligned to state standards.

Name
Students will understand professional responsibilities and legal requirements in assessment for diverse populations.

Name
Students will discuss the learner’s development of assessment across domains and other learning environments.

Name
Students will compare the differences and similarities between criterion references and norm-referenced tests.

Name
Students will interpret and create instructionally specific rubrics and scores.

Name
Students will compare competency-based and standards-based grading philosophies, curriculum, and grading tools.

EDU220 - Field Experience

Overview

Department
Professional Studies

Course Description
This course provides an opportunity for hands-on experiences in a PreK-12 classroom. Students are required to complete 25 hours in the field during the semester. Students will reflect upon topics and issues such as diversity, effective teaching strategies, and educational structures as they are experienced in the PreK-12 classroom.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
25

Billing Hours

Billing Hours
Min:
1

Other Hours

Other Hours
Min:
25

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to successfully achieve classroom behavior expectations and interact with fellow students appropriately, completing tasks as assigned in a timely manner, demonstrating professionalism and skills to insure successful completion of the course and preparedness for the teaching profession

Name
Reflect on the opportunities and responsibilities associated with education as a profession

Name
Synthesize the relationship between the foundations and trends in education

Name
Demonstrate an awareness of diversity in teaching and learning

Name
Examine effective practices in planning, engaging, and assessing learning

Name
The student will be able to demonstrate an understanding of the organization and structure of academic institutions; including, governing bodies, political, societal and individual influences, policies, laws and legislation

Requirements

Simple Requirements

A minimum grade of 'C' in Course EDU245

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- EDU245 - Foundations in Early Literacy

EDU235 - Foundations of Writing

Overview

Department
Professional Studies

Course Description
Introduces students to a multisensory approach to teaching the basic elements of English grammar to children in grades 2-12. This course will introduce and reinforce the eight basic parts of speech utilizing a color-coding system and strategies that promote multisensory teaching techniques and activities. This includes instruction on how to teach basic sentence and paragraph structure transitioning into expanded sentence and paragraph structure.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate the ability to use central concepts, tolls of inquiry, and structures of each discipline to create opportunities and create meaningful subject matter for their students.

Name
Demonstrate the understanding of how individuals learn and develop intellectually, socially,and personally provide learning opportunities to their students.

Name
Demonstrate the ability to provide different approaches to learning and create instructional opportunities that are equitable and based on developmental levels.

Name
Understands individual and group motivation, behavior to create a learning environment that encourages positive social action.

Name
Plans effective verbal and non-verbal communication techniques to foster active inquiry

Name
Plans effectives instruction based on the knowledge of all students, community, subject matter, curriculum outcomes, and current methods of teaching reading and writing.

Name
Demonstrates the ability to integrate across and within content fields to enrich the curriculum, develop reading and thinking skills, and facilitate all students' ability to understand relationships between subject areas.

Requirements

Simple Requirements

A minimum grade of 'C' in Course EDU245

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- EDU245 - Foundations in Early Literacy

EDU240 - Music in the Elementary Classroom

Overview

Department
Professional Studies

Course Description
This course is designed to prepare students for teaching music to children in grades K-6. Emphasis is placed on developing a philosophy of music education that considers the developmental needs of children as foundational in the process of teaching music concepts. Students will develop skills in teaching music that incorporates singing, movement, playing instruments, listening, creating, and writing.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Prepare and teach a song by rote.

Name
Integrate artistic elements like active listening, movement, dramatization, poetry, visual and media arts in the classroom.

Name
Construct standards-based, music-integrated lessons to encourage students ability to form connections between multiple disciplines including the arts.

Name
Demonstrate strategies that use music to positively influence social relationships, creativity, and affective needs in a classroom.

Name
Create a collection of professional resources to enhance musical experiences in the classroom.

Name
Demonstrate proficiency on the use of technology, voice, or other instruments

Name
Demonstrate conversance of cultural diversity within musical communities

EDU245 - Foundations in Early Literacy

Overview

Department
Professional Studies

Course Description
This is a preparation course introducing students to research related to dyslexia and the importance of phonological awareness. Phonological awareness is a necessary foundational skill for reading, writing, and spelling. Research tells us phonological awareness skills can be taught through direct instruction and practice. Discover the principles of planning strategic lessons to address these critical skills. Students will be taught through lecture, modeling, and hands on practice.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Understand the developmental sequence of language for birth to elementary age students.

Name
Know the nature and characteristics of individuals with a phonological deficit.

Name
Utilize proven screening techniques to identify, accommodate and instruct a student who has a phonological deficit.

Name
Learn the proper pronunciation of the 44 sounds in the English language.

Name
Participate in class activities and class assignments designed to develop skills in phonological awareness.

Name
Be familiar with the technical terms related to phonological awareness.

Name
Demonstrate course proficiency by peer teaching Phonological Awareness Activities to a partner in class.

Name
Learn strategies and explore resources for teaching young children to phonologically aware

Name
Be introduced to the research at the National Institute of Health as it relates to language development and its importance to developing successful reading skills

Name
Explore Jeanne Challs six stages of reading

Name
Learn to administer an early identification and skills assessment

Name
Explore the program and practice the concepts with a partner in class.

ELE110 - Print Reading

Overview

Department
Applied Technologies

Course Description
Students learn to read specification manuals and prints as applied to residential, commercial, and industrial buildings.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

ELE120 - AC/DC Circuits

Overview

Department
Applied Technologies

Course Description
AC/DC circuits address the basics of direct and alternating current circuits.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Describe and apply Ohms, Watts, and Kirchhoff laws

Name
Define, demonstrate and apply the characteristics of series, parallel, and combination circuits

Name
Explain DC theory concepts

Name
Explain AC theory concepts

Name
Perform and interpret electrical measurements using industry standard equipment

Requirements

Simple Requirements

A minimum grade of 'C' in Course SAF135

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SAF135 - Safety/OSHA 30

ELE130 - Commercial Wiring I

Overview

Department
Applied Technologies

Course Description
An introductory course on commercial wiring methods that includes practical applications and hands-on experience in implementing code requirements.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Identify various types of feeder/branch circuit wiring methods

Name
Perform conduit bending

Name
Identify and perform conductor installation

Name
Calculate raceway and box fill per NEC

Name
Identify components of distribution equipment

Name
Identify the NEC requirements for grounding and bonding

Name
Perform service calculations per NEC

Name
Apply NFPA 70 E requirements

Requirements

Simple Requirements

A minimum grade of 'C' in Course ELE120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ELE120 - AC/DC Circuits

Enrolled in Course ELE132

Type
Prerequisite

Enroll in the following Courses:
- ELE132 - Commercial Wiring Lab

ELE132 - Commercial Wiring Lab

Overview

Department
Applied Technologies

Course Description
This course focuses on electrical installation techniques, safety procedures, and compliance with the National Electrical Code (NEC) and NFPA 70E requirements. Students will gain hands-on experience in performing conduit bending, conductor installation, and applying NFPA 70E guidelines. This course serves as the lab component for ELE 130 that covers feeder/branch circuit wiring methods, raceway and box fill calculations, distribution equipment components, grounding and bonding requirements, and service calculations per NEC.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
120

Billing Hours

Billing Hours
Min:
4

Lab Hours

Lab Hours Min:
120

Course Learning Outcomes

Learning Outcomes

Name
Perform conduit bending

Name
Perform conductor installation

Name
Apply NFPA 70 E requirements

Requirements

Simple Requirements

A minimum grade of 'C' in Course ELE120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ELE120 - AC/DC Circuits

Enrolled in Course ELE130

Type
Prerequisite

Enroll in the following Courses:
- ELE130 - Commercial Wiring I

ELE135 - Low Voltage Wiring

Overview

Department
Applied Technologies

Course Description
This course provides comprehensive training in low voltage wiring, focusing on the installation and maintenance of various subsystems and equipment commonly found in commercial and residential settings. Participants will gain a solid understanding of the key components and techniques involved in low voltage wiring, including identification, termination, installation, grounding, and testing.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Identify campus backbone systems

Name
Identify equipment/telecom room subsystems

Name
Identify riser subsystems Identify horizontal subsystems

Name
Identify work are subsystems

Name
Identify distributed antenna systems

Name
Terminate UTP jacks and plugs

Name
Terminate RG6 F-type coaxial cable

Name
Install fiber-optic cable Ground and test VDV systems

Requirements

Simple Requirements

A minimum grade of 'C' in Course ELE120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ELE120 - AC/DC Circuits

ELE140 - Motor Controls

Overview

Department
Applied Technologies

Course Description
This course provides instruction in two-wire motor control circuits using relays, contractors, and motor starts with application sending devices. Topics include: wiring limit switches, wiring pressure switches, wiring float switches, wiring temperature switches, wiring proximity switches, wiring photo switches, sequencing circuits, reduced voltage starting, motor control centers, and troubleshooting.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Install and adjust a variety of switches

Name
Install time delay relay and sequence with two motors

Name
Install and operate reduced voltage starting

Name
Perform Installation process in a motor control center

Name
Perform troubleshooting process

ELE150 - National Electrical Code I

Overview

Department
Applied Technologies

Course Description
An introductory course on the use of and interpretation of the current national electric code.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Explain the purpose and history of NEC and layout

Name
Interpret and apply general requirements of the NEC

Name
Interpret and apply wiring and protection requirements

Name
Interpret and apply wiring methods and materials

Name
Install equipment for general use

ELE160 - National Electrical Code II

Overview

Department
Applied Technologies

Course Description
A continuation of the National Electrical Code I course on the use and interpretation of the current national electric code.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Interpret and apply special occupancies per NEC

Name
Interpret and apply special equipment per NEC

Name
Interpret and apply special conditions per NEC

Name
Interpret and apply communications per NEC

Name
Interpret and apply tables per NEC

Requirements

Simple Requirements

A minimum grade of 'C' in Course ELE150

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ELE150 - National Electrical Code I

ELE170 - Programmable Logic Controllers

Overview

Department
Applied Technologies

Course Description
This course on Programmable Logic Controllers (PLCs), focuses on the installation, setup, programming, and operation of PLC hardware and software. Participants will gain a solid understanding of PLC functions, terminology, safety procedures, and practical skills required to perform basic programming and connect field devices.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Install PLC hardware and software

Name
Discuss functions and terminology associate with PLC

Name
Complete a PLC installation and setup

Name
Perform basic PLC programming

Name
Execute relay logic instructions

Name
Execute timer and counter functions

Name
Connect field devices to I/O cards

Name
Perform PLC safety procedures

ELE180 - Residential Wiring I

Overview

Department
Applied Technologies

Course Description
An introductory course on residential wiring methods that includes practical applications and hands-on experience in implementing code requirements.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Identify and install required branch circuits per NEC

Name
Install and calculate residential services per NEC

Name
Identify and install various types of luminaries

Name
Describe branch circuit requirements for appliances per NEC

Name
Identify and install various types of switches and receptacles per NEC

Name
Identify the NEC requirements for grounding and bonding

Name
Identify and install over current/short circuit and ground fault protection

Requirements

Simple Requirements

A minimum grade of 'C' in Course ELE120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ELE120 - AC/DC Circuits

Enrolled in Course ELE182

Type
Prerequisite

Enroll in the following Courses:
- ELE182 - Residential Wiring Lab

ELE182 - Residential Wiring Lab

Overview

Department
Applied Technologies

Course Description
This course provides foundational knowledge and practical skills in electrical installation techniques for residential settings. Students will learn to install branch circuits, residential services, luminaires, switches, receptacles, and various protective devices in accordance with the National Electrical Code (NEC) requirements. This course serves as the lab component for ELE 180 that covers the identification and calculation of branch circuits and residential services, branch circuit requirements for appliances, grounding and bonding requirements, and the installation of overcurrent, short circuit, and ground fault protection devices.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
120

Billing Hours

Billing Hours
Min:
4

Lab Hours

Lab Hours Min:
120

Course Learning Outcomes

Learning Outcomes

Name
Install required branch circuits per NEC

Name
Install residentail services per NEC

Name
Install various types of luminaris

Name
Install various types of switches and receptacles per NEC

Name
Install over current/short circuit and ground fault protection

Requirements

Simple Requirements

Enrolled in Course ELE180

Type
Prerequisite

Enroll in the following Courses:
- ELE180 - Residential Wiring I

A minimum grade of 'C' in Course ELE120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ELE120 - AC/DC Circuits

ELE185 - Solar and Wind Power Generation

Overview

Department
Applied Technologies

Course Description
This course provides a comprehensive overview of solar and wind energy, including their definitions, harnessing methods, energy generation processes, advantages and disadvantages, historical context, current status, and future prospects. Students will also explore various applications of solar and wind energy in different industries and sectors.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Define solar power, how it is harnessed, and how it is used to generate energy

Name
Define wind power, how it is harnessed, and how it is used to generate energy

Name
List the advantages and disadvantages of solar and wind energy

Name
Describe the past, present, and future of solar and wind energy

Name
Identify and describe solar and wind applications

ELE190 - Fire Alarm, Emergency, and Health Care Systems

Overview

Department
Applied Technologies

Course Description
This comprehensive course provides in-depth knowledge of electrical systems in health care facilities, focusing on the power requirements, distribution circuits, emergency and standby systems, battery and UPS systems. Additionally, the course provides students with in-depth knowledge of fire alarm systems. Participants will gain a thorough understanding of the different types of health care facilities, wiring methods, maintenance requirements, relevant codes and standards, and installation guidelines for fire alarm systems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
List the types of health care facilities and their power requirements

Name
Describe the categories and branch portions of the distribution circuits

Name
List the required wiring methods in health care facilities

Name
Differentiate between emergency and standby stytems and identify their primary components

Name
Describe battery and UPS system types and explain their maintenance requirements

Name
Describe the NEC requirements for emergency/standby power and lighting systems

Name
Describe the various codes and standards that relate to fire alarm systems

Name
Describe the basic types of fire alarm systems and their primary components

Name
Describe fire alarm control panels and their primary features

Name
Identify and describe approaches to fire alarm notification and communication/monitoring

Name
Describe fire alarm system installation guidelines and requirements

Requirements

Simple Requirements

A minimum grade of 'C' in Course ELE135

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ELE135 - Low Voltage Wiring

ELE200 - Electrician Internship I

Overview

Department
Applied Technologies

Course Description
In this course students will have the opportunity to link classroom/ lab theory with an experimental learning opportunity. Through direct observation, reflection and evaluation, students gain an understanding of the internship site's work, mission, and customers. The student will identify how these relate to their program of study, as well as the organization's position in the broader industry or field. Students will produce a critical reflection of their internship experience demonstrating how they have addressed specific learning goals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
3

Other Hours

Other Hours
Min:
135

Course Learning Outcomes

Learning Outcomes

Name
Applies knowledge to the real world work experience.

Objective
Searches out and applies resources and methods to accomplish assigned tasks', Articulate the connection between classroom lab theory to industry experiences

Name
Observe skills associated with electrical.

Name
Apply skills associated with electrical.

Name
Demonstrate effective workplace behaviors.

ELE210 - Electrician Internship II

Overview

Department
Applied Technologies

Course Description
This course is a continuation of Electrician Internship I in which students continue their work in experiential learning. Through observation, reflection and evaluation, students gain an understanding of the internship site's work, mission, and customers. The student will identify how these relate to their program of study, as well as the organization's position in the broader industry or field. Students will produce a critical reflection of their internship experience, demonstrating how they have addressed specific learning goals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
3

Other Hours

Other Hours
Min:
135

Course Learning Outcomes

Learning Outcomes

Name
Applies knowledge to the real world work experience.

Objective
Searches out and applies resources and methods to accomplish assigned tasks', Articulate the connection between classroom lab theory to industry experiences

Name
Observe skills associated with electrical.

Name
Apply skills associated with electrical.

Name
Demonstrate effective workplace behaviors.

Requirements

Simple Requirements

A minimum grade of 'C' in Course ELE200

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ELE200 - Electrician Internship I

ELT101 - Fundamentals of Electronics Technology

Overview

Department
Aviation

Course Description
This course is designed to introduce the student to the electronics profession through a review of required skills, abilities and the understanding of key concepts: safety awareness, conductors, circuit protection and controls, the soldering of conductors and electronic components, magnetism, electromagnetism, magnetic induction, DC and AC motors and generators, and AC power distribution through laboratory experimentation including the use of measurement devices and measuring electrical characteristics. The course completes with the execution of a module certification exam from the Electronics Technology Association International (ETA-i) in Comprehensive Basics.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate an understanding of the electrical and electronic technical profession

Name
The student will be able to demonstrate laws and concepts of the problem-solving process

Name
The student will be able to demonstrate laws and concepts of statistical analysis

Name
The student will be able to demonstrate laws and concepts related to making measurements and using significant digits in calculations

Name
The student will be able to demonstrate the ability to use proper electronic soldering techniques

Name
The student will be able to demonstrate the ability to use a voltage signal generator

Name
The student will be able to demonstrate the ability to use a digital multimeter

Name
The student will be able to demonstrate the ability to use a dual DC power supply

Name
The student will be able to demonstrate the ability to use an oscilloscope

Name
The student will be able to demonstrate the ability to build simple electronic circuits

Name
The student will be able to demonstrate laws and concepts related to critical thinking, decision making, communication, and collaboration through participation in a LEGO Mindstorm EV3 Engineering Design project

Requirements

Simple Requirements

Enrolled in Course MTH101

Type
Prerequisite

Enroll in the following Courses:
- MTH101 - Intermediate Algebra (Inactive)

ELT105 - DC Electronics

Overview

Department
Aviation

Course Description
This course is designed to introduce the student to the fundamental concepts of electricity and electronics that involve direct current (DC) including the use of analog and digital multimeters, resistors, conductors, insulators, primary and secondary voltage cells, Ohm's Law, the Power Law, and Kirchhoff's Voltage and Current Laws, and application of these laws to the analysis of series, parallel, series/parallel resistive circuits, voltage dividers and current dividers. The course completes with the execution of a module certification exam from the Electronics Technology Association International (ETA-i) in DC Basics.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate laws and concepts of electricity in classroom assignments.

Name
The student will be able to apply laws and concepts of resistors to classroom assignments.

Name
The student will be able apply Ohm's Law to classroom assignments.

Name
The student will be able to apply laws and concepts of analog and digital multi-meters.

Name
The student will be able to apply conductors and insulators to classroom assignments.

Name
The student will be able to apply batteries to classroom assignments.

Name
The student will be able to apply laws and concepts of series circuits.

Name
The student will be able to apply laws and concepts of parallel circuits to classroom assignments.

Name
The student will be able to apply laws and concepts of series-parallel circuits.

Name
The student will be able to apply laws and concepts of voltage dividers and current dividers.

Requirements

Simple Requirements

A minimum grade of 'C' in Course ELT101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ELT101 - Fundamentals of Electronics Technology

Enrolled in Course ELT106

Type
Prerequisite

Enroll in the following Courses:
- ELT106 - DC Electronics Lab (Inactive)

A minimum grade of 'C' in Course MTH101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MTH101 - Intermediate Algebra (Inactive)

ELT108 - Fundamentals of Small UAS Operations

Overview

Department
Aviation

Course Description
This course is an introduction to small unmanned aircraft systems (UAS) including knowledge areas covered on the airman knowledge test for a Remote Pilot Certificate with a Small Unmanned Aircraft Systems Rating. Successful completion will prepare the student for the FAA Part 107 Remote Pilot Certificate.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Apply regulations relating to small unmanned aircraft system rating privileges, limitations, and flight operation.

Name
Demonstrate an understanding of airspace classification, operating requirements, and flight restrictions affecting small unmanned aircraft operation.

Name
Demonstrate an understanding of aviation weather sources and effects of weather on small unmanned aircraft performance.

Name
Demonstrate an understanding of small unmanned aircraft loading.

Name
Demonstrate an understanding of emergency procedures.

Name
Demonstrate an understanding of crew resource management.

Name
Demonstrate an understanding of radio communication procedures.

Name
Demonstrate the ability to determining the performance of small unmanned aircraft.

Name
Demonstrate an understanding of physiological effects of drugs and alcohol.

Name
Demonstrate an understanding of aeronautical decision-making and judgment.

Name
Demonstrate an understanding of airport operations.

Name
Demonstrate an understanding of aircraft maintenance and pre-flight inspection procedures.

ELT110 - AC Electronics

Overview

Department
Aviation

Course Description
This course is designed to introduce the student to the fundamental concepts of electricity and electronics that involve alternating current (AC) including the use of signal waveform generators, oscilloscopes, capacitors, inductors, and measurement of capacitance, inductance, capacitive reactance, inductive reactance, and RC and L/R time constants. Students will also learn the fundamentals of magnetism, electro-magnetism, and the use of transformers. The course completes with the execution of a module certification exam from the Electronics Technology Association International (ETA-i) in AC Basics.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply laws and concepts of alternating voltage and current to classroom assignments.

Name
The student will be able to apply laws and concepts of oscilloscopes.

Name
The student will be able to apply laws and concepts of signal waveform generators.

Name
The student will be able to apply laws and concepts of capacitance to classroom assignments.

Name
The student will be able to apply laws and concepts of capacitance reactance to classroom assignments.

Name
The student will be able to apply laws and concepts of capacitance circuits to classroom assignments.

Name
The student will be able to apply laws and concepts of inductance to classroom assignments.

Name
The student will be able to apply laws and concepts of inductive reactance to classroom assignments.

Name
The student will be able to apply laws and concepts of inductive circuits to classroom assignments.

Name
The student will be able to apply laws and concepts of RC and L/R time constants to classroom assignments.

Name
The student will be able to apply concepts of magnetism to classroom assignments.

Name
The student will be able to apply laws and concepts of electromagnetism to classroom assignments.

Name
The student will be able to apply laws and concepts of transformers.

Requirements

Simple Requirements

A minimum grade of 'C' in Course ELT105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ELT105 - DC Electronics

A minimum grade of 'C' in Course ELT106

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ELT106 - DC Electronics Lab (Inactive)

Enrolled in Course ELT111

Type
Prerequisite

Enroll in the following Courses:
- ELT111 - AC Electronics Lab (Inactive)

ELT115 - Digital Electronics Fundamentals

Overview

Department
Aviation

Course Description
This course is designed to provide students with the concepts and terminology utilized in digital electronics. The student will be exposed to the most basic concepts of digital electronics to a wide variety of the fundamentals for circuits used in today's avionics equipment and aircraft switching circuits. Once an understanding of the numbering system is achieved the course proceeds to basic logic circuits. The course completes with the execution of a module certification exam from the Electronics Technology Association International (ETA-i) in Digital Basics.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to work with various numeration systems

Name
The student will be able to perform basic binary arithmetic

Name
The student will be able to understand basic logic gates

Name
The student will be able to understand switch appplications

Name
The student will be able to relay applications

Name
The student will be able to understand combinational logic

Name
The student will be able to understand multivibrators

Name
The student will be able to understand counters

Name
The student will be able to understand shift registers

Name
The student will be able to understand digital-analog conversion

Name
The student will be able to understand basic digital communications

Requirements

Simple Requirements

A minimum grade of 'C' in Course ELT101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ELT101 - Fundamentals of Electronics Technology

Enrolled in Course ELT105

Type
Prerequisite

Enroll in the following Courses:

- ELT105 - DC Electronics

Enrolled in Course ELT106

Type
Prerequisite

Enroll in the following Courses:
- ELT106 - DC Electronics Lab (Inactive)

Enrolled in Course ELT116

Type
Prerequisite

Enroll in the following Courses:
- ELT116 - Digital Electronics Fundamentals Lab

A minimum grade of 'C' in Course MTH101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MTH101 - Intermediate Algebra (Inactive)

ELT116 - Digital Electronics Fundamentals Lab

Overview

Department
Aviation

Course Description
This course is designed to provide students with the concepts and terminology utilized in digital electronics. The student will be exposed to the most basic concepts of digital electronics to a wide variety of the fundamentals for circuits used in today's avionics equipment and aircraft switching circuits. During this lab portion the student will be introduced to test equipment used to diagnose digital electronic discrepancies.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
2

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to locate, identify, and connect digital circuits, and demonstrate digital logic states

Name
The student will be able to determine the input/ output relationship of AND, NAND, OR, and NOR logic gates using the DIGITAL LOGIC FUNDAMENTALS circuit board

Name
The student will be able to demonstrate the input/output relationship of EXCLUSIVE-OR and EXCLUSIVE-NOR gates

Name
The student will be able to demonstrate the operating characteristics of a Schmitt-trigger LS inverter, a standard LS inverter, and an open collector

Name
The student will be able to demonstrate the operation of a set/reset (RS) flip-flop and a D-type flip

Name
The student will be able demonstrate the operation and configurations of a JK flip-flop

Name
The student will be able to demonstrate the operation of a tri-state buffer

Name
The student will be able to determine the differences between a TTL gate and a CMOS gate by comparing static and dynamic transfer characteristics

Name
The student will be able to demonstrate computer read and write data transfer operations by using the DATA BUS CONTROL circuit block

Name
The student will have a working knowledge of an asynchronous ripple counter configured from JK flip-flops

Name
The student will have a working knowledge of an UP/DOWN synchronous counter

Name
The student will have a working knowledge of the 4-BIT SHIFT REGISTER circuit block.

Name
The student will have a working knowledge of a 4-BIT ADDER

Name
The student will have a working knowledge of a 4-bit comparator

Name
The student will be able operate, and control a decoder and encoder circuit combination.

Name
The student will be able to operate, and control ADC and DAC circuits

Name
The student will be able operate and control a multiplexer and demultiplexer circuit

Name
The student will be able to control a 7-segment LED display by using a decoder/driver IC

Name
The student will be able to establish the parity of an 8-bit word by using a parity generator and checker

Requirements

Simple Requirements

A minimum grade of 'C' in Course MTH101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MTH101 - Intermediate Algebra (Inactive)

A minimum grade of 'C' in Course ELT101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- ELT101 - Fundamentals of Electronics Technology

Enrolled in Course ELT105

Type
Prerequisite

Enroll in the following Courses:
- ELT105 - DC Electronics

Enrolled in Course ELT106

Type
Prerequisite

Enroll in the following Courses:
- ELT106 - DC Electronics Lab (Inactive)

Enrolled in Course ELT115

Type
Prerequisite

Enroll in the following Courses:
- ELT115 - Digital Electronics Fundamentals

ELT120 - Solid State Electronics

Overview

Department
Aviation

Course Description
This course is designed to introduce the student to the fundamental concept and uses of solid state devices including diodes, bipolar junction transistors, and field effect transistors in circuit designs such as rectifiers, clamping circuits, switching circuits, single- stage and multi-stage transistor amplifiers, and power amplifiers. The course completes with the execution of a module certification exam from the Electronics Technology Association International (ETA-i) in Analog Basics.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate the application of Analog Concepts to Real World Signals.

Name
The student will be able to apply laws and concepts of Diodes.

Name
The student will be able to apply laws and concepts of Bipolar Junction Transistors (BJTs).

Name
The student will be able to apply laws and concepts of Field Effect Transistor (FETs).

Name
The student will be able to apply laws and concepts of Multistage Amplifiers.

Name
The student will be able to apply laws and concepts of Power Amplifier Classes.

Requirements

Simple Requirements

A minimum grade of 'C' in Course ELT110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ELT110 - AC Electronics

Enrolled in Course ELT121

Type
Prerequisite

Enroll in the following Courses:
- ELT121 - Solid State Electronics Lab (Inactive)

A minimum grade of 'C' in Course ELT111

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ELT111 - AC Electronics Lab (Inactive)

ELT129 - Advanced Wiring

Overview

Department
Aviation

Course Description
The Advanced Wiring course will instruct students in the fabrication and installation of electronic wiring interconnect systems. This instruction will include termination of individual stranded wires, shielded wires, twisted shielded pairs, and co-axial cables to cannon plugs, plastic connectors, terminal lugs, and terminal and ground blocks. Through classroom discussion and hands-on training, students will learn about handling wire harnesses, ESD protection, proper wire routing, wire protection, electrical bonding, connector buildup, contact insertion, and extraction.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will fabricate and repair damage to an aircraft wiring harness

Requirements

Simple Requirements

A minimum grade of 'C' in Course ELT127

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ELT127 - Wiring & Cannon Plug Lab (Inactive)

ELT134 - Principles of Troubleshooting

Overview

Department
Aviation

Course Description
The Troubleshooting Essentials course instructs today's aircraft maintenance technicians on a logical approach to solving aircraft problems. The course consists of lectures and hands-on practice using computer simulations of aircraft systems and related test equipment. Using the simulation, the technician analyzes the fault and chooses maintenance actions such as continuity tests, bench checking, and component swapping that they might apply to correct the problem. In addition, the simulation program not only evaluates the logic used but also keeps track of the time and expenses incurred by the technician while solving problems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will assess operation and recognize malfunctions

Name
The student will efficiently recommend corrective action for system malfunctions

ELT145 - Integrated Circuits and Systems

Overview

Department
Aviation

Course Description
This course is designed to introduce the student to the uses of commercially-available integrated circuit devices including operational amplifiers, oscillators, and voltage regulators in circuit designs such as comparators, converters, summing amplifiers, integrators, differentiators, active filters, timing circuits, series and shunt voltage regulators, radio frequency amplifiers, basic receivers, amplitude and frequency modulators, and phase locked loops.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply laws and concepts of Operational Amplifiers.

Objective
1.1. Describe what is meant by the term operational amplifier 1.2. Explain the finite limits of operational amplifiers in terms of offset input voltage, offset input current, input impedance, output impedance 1.3. Explain the finite limits of operational amplifiers in terms of finite gain, common mode gain, and power supply rejection 1.4. Explain the basic operation of an operational amplifier circuit when negative feedback is applied around the amplifier

Name
The student will be able to apply laws and concepts of Operational Amplifier Responses.

Objective
2.1. Describe what is meant by an internally-compensated operational amplifier 2.2. Describe in terms of 3-dB frequency, finite gain, slope, unity gain, and gain bandwidth product the open loop frequency response of the compensated operational amplifier 2.3. Describe in terms of 3-dB frequency, finite gain, slope, unity gain, and gain bandwidth product the closed loop frequency response of the compensated operational amplifier 2.4. Describe under what conditions positive feedback will cause instability in operational amplifier designs

Name
The student will be able to apply laws and concepts of Basic Operational Amplifier Circuits.

Objective
3.1. Demonstrate the use of the operational amplifier as an analog comparator 3.2. Describe the use of comparators in flash analog-to-digital (ADC) converters 3.3. Demonstrate the use of the operational amplifier as a voltage buffer or unity gain amplifier 3.4. Demonstrate the use of the operational amplifier as a non-inverting amplifier 3.5. Demonstrate the use of the operational amplifier as an inverting amplifier 3.6. Demonstrate the use of the operational amplifier as a summing amplifier 3.7. Calculate gain coefficients for input terms for the summing amplifier 3.8. Derive the output voltage equation in terms of input voltages for the summing amplifier 3.9. Calculate gain coefficients for input terms for the integrating amplifier 3.10. Derive the output voltage equation in terms of input voltages for the integrating amplifier 3.11. Calculate gain coefficients for input terms for the differentiating amplifier 3.12. Derive the output voltage equation in terms of input voltages for the differentiating amplifier 3.13. Demonstrate the use of the operational amplifier as a differential amplifier 3.14. Calculate the gain coefficients for input terms for the differential amplifier 3.15. Calculate the trigger voltages for the non-inverting comparator used as a Schmitt trigger

Name
The student will be able to apply laws and concepts of Active Filters.

Objective
4.1. Define frequency bandwidth in terms of pass band, stop band, transition band. 4.2. Define low pass filter frequency characteristics in terms of pass band gain, 3-dB frequency, and rate of frequency roll-off 4.3. Define high pass filter frequency characteristics in terms of pass band gain, 3-dB frequency, and rate of frequency roll-off 4.4. Define band pass filter frequency characteristics in terms of pass band gain, 3-dB frequencies, bandwidth, quality factor, and rate of frequency roll-off 4.5. Define band stop filter frequency characteristics in terms of pass band gain, 3-dB frequencies, stop band bandwidth, quality factor, and rate of frequency roll-off 4.6. Describe what meant by a first-order, second order, and higher order filters 4.7. Calculate the gain and 3-dB frequency of a non-inverting operational amplifier first order low pass filter 4.8. Calculate the gain and 3-dB frequency of an inverting operational amplifier first order low pass filter 4.9. Calculate the gain and 3-dB frequency of a Sallen-Key Butterworth operational amplifier second order low pass filter 4.10. Calculate the gain and 3-dB frequency of a Sallen-Key Tschebyscheff operational amplifier second order low pass filter 4.11. Calculate the gain and 3-dB frequency of a Sallen-Key Butterworth operational amplifier fifth order low pass filter 4.12. Calculate the gain and 3-dB frequency of a non-inverting operational amplifier first order high pass filter 4.13. Calculate the gain and 3-dB frequency of an inverting operational amplifier first order high pass filter 4.14. Calculate the gain and 3-dB frequency of a Sallen-Key Butterworth operational amplifier second order high pass filter 4.15. Calculate the gain and 3-dB frequency of a Sallen-Key Butterworth operational amplifier third order high pass filter 4.16. Calculate the gain and 3-dB frequency of a Sallen-Key Butterworth operational amplifier second order band pass filter 4.17. Calculate the gain and 3-dB frequency of a Sallen-Key Butterworth operational amplifier fourth order band pass filter 4.18. Calculate the gain and 3-dB frequency of a Sallen-Key Butterworth operational amplifier second order band stop filter

Name
The student will be able to apply laws and concepts of Oscillators.

Objective
5.1. Describe the theory of operation of the RC phase shift oscillator 5.2. Explain the conditions required for unstable oscillations in RC phase shift feedback oscillators in terms of phase shift and gain 5.3. Calculate the expected frequency of oscillation for an RC feedback operational amplifier oscillator 5.4. Calculate the expected frequency of oscillation for a Wein-Bridge operational amplifier oscillator 5.5. Calculate the expected frequency of oscillation for a quadrature operational amplifier oscillator 5.6. Describe the theory of operation of the LC tuned circuit oscillator 5.7. Explain the conditions required for unstable oscillations in tuned circuit oscillators in terms of Q, gain and phase 5.8. Calculate the expected frequency of oscillation for a Hartley common emitter oscillator 5.9. Calculate the expected frequency of oscillation for a Colpitts common emitter oscillator 5.10. Describe the theory of operation of the relaxation oscillator 5.11. Explain the conditions required for unstable oscillations in relaxation oscillators in terms of rate of discharge, delay, and time constant 5.12. Calculate the expected frequency of oscillation for a comparator-based hysteretic operational amplifier oscillator 5.13. Describe the theory of operation of the 555 timer integrated circuit 5.14. Calculate the duty cycle and oscillation frequency of the 555 timer integrated circuit 5.15. Calculate the pulse width of the 555 timer integrated circuit in the one shot mode of operation

Name
The student will be able to apply laws and concepts of Voltage Regulators.

Objective
6.1. Explain what is meant by voltage regulation of a voltage regulator 6.2. Explain what is meant by line regulation of a voltage regulator 6.3. Explain what is meant by the load regulation of a voltage regulator 6.4. Explain what is meant by a shunt voltage regulator 6.5. Explain what is meant by a series voltage regulator 6.6. Explain what is meant by a shunt-series regulator

Requirements

Simple Requirements

A minimum grade of 'C' in Course ELT120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ELT120 - Solid State Electronics

A minimum grade of 'C' in Course ELT121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ELT121 - Solid State Electronics Lab (Inactive)

Enrolled in Course ELT146

Type
Prerequisite

Enroll in the following Courses:
- ELT146 - Integrated Circuits and Systems Lab (Inactive)

Enrolled in Course ELT150

Type
Prerequisite

Enroll in the following Courses:
- ELT150 - Antennas and Wave Propagation

Enrolled in Course ELT151

Type
Prerequisite

Enroll in the following Courses:
- ELT151 - Antennas and Wave Propagation Lab (Inactive)

ELT150 - Antennas and Wave Propagation

Overview

Department
Aviation

Course Description
This course introduces the student to the basic principles of transmission lines and electromagnetic wave propagation and applies these principles to antenna theory and microwave devices with applications to terrestrial and satellite communications systems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply laws and concepts associated with transmission lines.

Objective
1.1. Explain what is meant by a transmission line and explain what parameters of a transmission line are considered with reference to frequency 1.2. Define what is meant by characteristic impedance 1.3. Calculate the impedance of a coaxial or open-wire transmission line 1.4. Describe the responses of a matched and a mismatched transmission line to a step input 1.5. Define reflection coefficient and standing-wave ratio 1.6. Explain the importance of impedance matching with respect to transmission lines 1.7. Perform calculation in order to achieve an impedance match

Name
The student will be able to apply laws and concepts associated with radio wave propagation.

Objective
2.1. Describe he nature and behavior of radio waves and compare and contrast them with other forms of electromagnetic radiation 2.2. Calculate power density, electric and magnetic field intensity for waves propagating in free space 2.3. Explain the meaning of wave polarization and differentiate between vertical, horizontal, circular and elliptical polarization 2.4. Calculate free-space attenuation 2.5. Describe reflection, refraction, and diffraction and calculate angle of reflection and refraction 2.6. Describe the differences in propagation conditions in a mobile environment and calculate the path loss

Name
The student will be able to apply laws and concepts associated with simple antennas.

Objective
3.1. Explain the basic principles of operation of antenna systems 3.2. Define radiation resistance and use it to calculate the efficiency of an antenna 3.3. Determine antenna gain, beamwidth, and front-to-back ratio from an antenna radiation pattern plot 3.4. Discuss effective isotropic radiated power and effective radiate power for an antenna-transmitter combination 3.5. Calculate the gain and beamwidth for selected antenna types

Name
The student will be able to apply laws and concepts associated with microwave devices.

Objective
4.1. Explain the factors that cause microwave equipment to differ from other equipment an lower frequencies 4.2. Calculate the cutoff frequency, phase and group velocity guide wavelength, and characteristic impedance for the dominate mode in a rectangular waveguide 4.3. Explain the operation of passive microwave components, including waveguide bends and tee, resonant cavities, attenuators and loads 4.4. Describe the theory and operation of specialized microwave antennas 4.5. Explain the operation of pulse radar systems and perform signal-strength and range calculations 4.6. Explain the operation of Doppler radar systems and perform velocity calculations

Name
The student will be able to apply laws and concepts associated with terrestrial microwave communication systems.

Objective
5.1. Describe the basic structure and uses of microwave radio links 5.2. Calculate the signal strength at the receiver for a variety of transmitter, antenna, and terrain configurations 5.3. Calculate the required clearance of a microwave path from an obstacle 5.4. Calculate the noise temperature and carrier-to-noise level of a microwave system 5.5. Explain fading and describe the diversity schemes that are used to overcome this phenomenon 5.6. Describe the transmission and receiving equipment use for FM, SSB, and digital systems

Name
The student will be able to apply laws and concepts associated with satellite communication systems.

Objective
6.1. Explain the advantages of satellites over terrestrial radio communications 6.2. Distinguish between geostationary satellites and those in lower orbits with advantages and disadvantages of each 6.3. Calculate the velocity and orbital period for a satellite at a given distance from the earth 6.4. Calculate the path length and path loss for a signal from a geostationary satellite to a given point on the earth 6.5. Describe several ways in which satellites can be used for data communications 6.6. Describe several applications for satellites in low earth orbits 6.7. Discuss the use of satellites in mobile telephony

Name
The student will be able to apply laws and concepts associated with cellular radio.

Objective
7.1. Explain the operation of relevant North American digital cellular telephone systems 7.2. Discuss the Advanced Mobile Phone System (AMPS) 7.3. Discuss fax and data communication using cellular phones

Requirements

Simple Requirements

A minimum grade of 'C' in Course ELT120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ELT120 - Solid State Electronics

A minimum grade of 'C' in Course ELT121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ELT121 - Solid State Electronics Lab (Inactive)

Enrolled in Course ELT145

Type
Prerequisite

Enroll in the following Courses:
- ELT145 - Integrated Circuits and Systems

Enrolled in Course ELT146

Type
Prerequisite

Enroll in the following Courses:
- ELT146 - Integrated Circuits and Systems Lab (Inactive)

Enrolled in Course ELT151

Type
Prerequisite

Enroll in the following Courses:
- ELT151 - Antennas and Wave Propagation Lab (Inactive)

ELT155 - Electronic Communication Circuits and Systems

Overview

Department
Aviation

Course Description
This course introduces the basic principles and operation of system components of wireless communication systems. The course begins with traditional analog systems, modern digital techniques, and continues into cellular, radio, paging systems, and wireless data networks, data communication and the internet, high-definition television, and fiber optics. The lab portion of this course includes traditional analog AM, SSB, and angle modulation systems, modern digital techniques including Pulse-Amplitude Modulation (PAM), PAM Time-Division Multiplexing, and Pulse-Time Modulation techniques.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Requirements

Simple Requirements

Enrolled in Course ELT156

Type
Prerequisite

Enroll in the following Courses:
- ELT156 - Electronic Communication Circuits and Systems Lab (Inactive)

ELT170 - Practical Electronics Technology for ETA Applications

Overview

Department
Aviation

Course Description
This course is designed to prepare through summarization, practical exercises, and standards review for the Electronics Technicians Association International (ETA-I) Student Electronics Technician (SET) Certification. These course standards are taken directly from the ETA-I SET Basic Electronics Competency Requirements (http://www.eta-i.org/comps/SET_comps.pdf).

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Requirements

Simple Requirements

A minimum grade of 'C' in Course ELT145

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ELT145 - Integrated Circuits and Systems

A minimum grade of 'C' in Course ELT146

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ELT146 - Integrated Circuits and Systems Lab (Inactive)

EMS103 - EMT 1

Overview

Department
Health Sciences

Course Description
The EMT 1 course provides students with the academic and professional knowledge and skills to provide emergency medical care and transportation for critical and emergent patients who access the emergency medical systems. The student will learn about an EMS system, medical and legal considerations, and documentation. The students will learn medical terminology, anatomy, and physiology as it relates to a medical emergency patient. Upon completion of this course, students will possess the knowledge and skills necessary to provide patient care and transportation of medical emergency patients. The student will be prepared to function as part of a comprehensive EMS response team, under medical oversight. Students in the EMT course will apply basic medical interventions with equipment typically found on an ambulance in order to act as a link from the scene of the emergency to the emergency health care facility.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2020

Credits

Credit Hours

Credit Hours Min:
6

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
6

Lecture Hours

Lecture Hours Min:
75

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Perform an initial scene size-up to ensure safety, identify hazards, request additional resources, and initiate appropriate scene and patient management.

Name
Communicate effectively with dispatch, other responders, and receiving personnel through verbal and written reports.

Name
Demonstrate infection control procedures and appropriate use of PPE.

Name
Move patients safely using approved methods, including with and without carrying devices.

Name
Perform a basic patient assessment, including level of consciousness, vital signs (BP, pulse, respirations), and skin signs.

Name
Maintain airway patency using manual maneuvers (head-tilt, jaw thrust), suctioning, and barrier ventilation methods.

Name
Provide basic oxygen therapy using devices such as nasal cannula, non-rebreather masks, and blow-by oxygen.

Name
Perform manual CPR and apply AED for patients of all ages, including use of mechanical CPR if available.

Name
Perform a full primary, secondary, and ongoing patient assessment, including detailed history, focused exam, and vital sign trending.

Name
Provide airway management using OPA/NPA adjuncts, suctioning, and assisted ventilation via BVM.

Name
Administer oxygen using devices such as nasal cannula, non-rebreather, simple face mask, partial rebreather, and Venturi mask.

Name
Monitor oxygenation and ventilation using pulse oximetry and auscultation of lung sounds.

Name
Perform CPR with AED or mechanical device, apply cardiac monitoring electrodes, and provide post-resuscitation care.

Name
Utilize airway maintenance adjuncts, including BVM with inline nebulization, manually triggered ventilation devices, and suctioning of stomas.

Name
Recognize the need for advanced-level interventions and assist AEMTs/ paramedics when indicated.

Name
Comply with legal and ethical responsibilities, including documentation, DNR/living will recognition, and patient rights.

Requirements

Simple Requirements

Enrolled in Course CPR001

Type
Prerequisite

Enroll in the following Courses:
- CPR001 - CPR For Healthcare Providers

EMS104 - EMT 2

Overview

Department
Health Sciences

Course Description
The EMT 2 course provides students with the academic and professional knowledge and skills to provide emergency medical care and transportation for critical and emergent patients who access the emergency medical systems. Upon completion of this course, students will possess the knowledge and skills necessary to provide patient care and transportation for trauma and special populations. The student will be prepared to function as part of a comprehensive EMS response team, under medical oversight. Students in the EMT course will apply basic medical interventions with trauma equipment typically found on an ambulance in order to act as a link from the scene of the emergency to the emergency health care facility. EMT 2 students will learn about EMS system operations including HazMat and Mass Casualty Incidents. EMT 1 and EMT 2 prepare students for EMT National Registry Exam and covers all EMT Education Standards for EMT – level Instruction.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2020

Credits

Credit Hours

Credit Hours
Min:
6

Contact Hours

Contact Hours
Min:
120

Billing Hours

Billing Hours
Min:
6

Lecture Hours

Lecture Hours
Min:
60

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Use Critical Thinking skills to confidently and effectively manage emergency trauma and special population situations.

Name
Identify multiple-casualty incidents (MCIs) and apply local triage and incident command systems under guidance.

Name
Control external bleeding using direct pressure, elevation, pressure dressings, tourniquets, and positioning for shock.

Name
Document and report patient care accurately, including prehospital care reports and handoff communication.

Name
Participate in public education and injury prevention, equipment decontamination, and scene cleanup

Name
Recognize and manage shock, respiratory distress, and medical or trauma-related emergencies within EMT scope.

Name
Administration of medications from the approved Kansas EMS list, including epinephrine, albuterol, aspirin, glucose, and naloxone.

Name
Apply spinal motion restriction techniques, including cervical collars, long boards, and rapid extrication, and assist with immobilization.

Name
Engage in quality improvement, debriefing, and reporting, including participation in performance review and educational outreach.

Requirements

Simple Requirements

A minimum grade of 'C' in Course EMS103

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- EMS103 - EMT 1

EMS105 - Emergency Medical Technician

Overview

Department
Health Sciences

Course Description
The EMT course provides students with the academic and professional knowledge and skills to provide emergency medical care and transportation for critical and emergent patients who access the emergency medical systems. Upon completion of this course, students will possess the knowledge and skills necessary to provide patient care and transportation. The student will be prepared to function as part of a comprehensive EMS response team, under medical oversight. Students in the EMT course will apply basic medical interventions with equipment typically found on an ambulance in order to act as a link from the scene of the emergency to the emergency health care facility. This course prepares students for EMT National Registry Exam and covers all EMT Education Standards for EMT – level Instruction.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
12

Contact Hours

Contact Hours Min:
225

Billing Hours

Billing Hours Min:
12

Lecture Hours

Lecture Hours Min:
135

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Perform an initial scene size-up to ensure safety, identify hazards, request additional resources, and initiate appropriate scene and patient management.

Name
Identify multiple-casualty incidents (MCIs) and apply local triage and incident command systems under guidance.

Name
Communicate effectively with dispatch, other responders, and receiving personnel through verbal and written reports.

Name
Demonstrate infection control procedures and appropriate use of PPE.

Name
Move patients safely using approved methods, including with and without carrying devices.

Name
Perform a basic patient assessment, including level of consciousness, vital signs (BP, pulse, respirations), and skin signs.

Name
Control external bleeding using direct pressure, elevation, pressure dressings, tourniquets, and positioning for shock.

Name
Maintain airway patency using manual maneuvers (head-tilt, jaw thrust), suctioning, and barrier ventilation methods.

Name
Provide basic oxygen therapy using devices such as nasal cannula, non-rebreather masks, and blow-by oxygen.

Name
Perform manual CPR and apply AED for patients of all ages, including use of mechanical CPR if available

Name
Document and report patient care accurately, including prehospital care reports and handoff communication.

Name
Participate in public education and injury prevention, equipment decontamination, and scene cleanup.

Name
Perform a full primary, secondary, and ongoing patient assessment, including detailed history, focused exam, and vital sign trending

Name
Recognize and manage shock, respiratory distress, and medical or trauma-related emergencies within EMT scope.

Name
Provide airway management using OPA/NPA adjuncts, suctioning, and assisted ventilation via BVM.

Name
Administer oxygen using devices such as nasal cannula, non-rebreather, simple face mask, partial rebreather, and Venturi mask.

Name
Monitor oxygenation and ventilation using pulse oximetry and auscultation of lung sounds

Name
Administration of medications from the approved Kansas EMS list, including epinephrine, albuterol, aspirin, glucose, and naloxone.

Name
Apply spinal motion restriction techniques, including cervical collars, long boards, and rapid extrication, and assist with immobilization.

Name
Perform CPR with AED or mechanical device, apply cardiac monitoring electrodes, and provide post-resuscitation care.

Name
Utilize airway maintenance adjuncts, including BVM with inline nebulization, manually triggered ventilation devices, and suctioning of stomas.

Name
Recognize the need for advanced-level interventions and assist AEMTs/ paramedics when indicated.

Name
Comply with legal and ethical responsibilities, including documentation, DNR/living will recognition, and patient rights.

Name
Engage in quality improvement, debriefing, and reporting, including participation in performance review and educational outreach.

Requirements

Simple Requirements

Enrolled in Course CPR001

Type
Prerequisite

Enroll in the following Courses:
- CPR001 - CPR For Healthcare Providers

EMS115 - Tactical Medicine

Overview

Department
Health Sciences

Course Description
This course will cover tactical emergency medicine—the practice of emergency medicine in the field during disasters, police or military conflicts, mass causality events, and community incidents. Key topics covered include hostage survival, insertion and extraction techniques, continuum of force, medical support, planning and triage, medical evaluation in the incident zone, care in custody, medical control of incident site, decontamination, community communication, and more.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will demonstrate knowledge of tactical concepts of tactical medicine

Objective
Compare and contrast the different types of professionspersonnel involved in tactical situations', Explain the Tactical Environment of Care', List Injury Mechanisms from Conventional Weapons Ballistic and Missile Weapons blasts and burns Chemical Weapons Biological Weapons and Nuclear Weapons', Demonstrate procedures of tactical evacuation and evacuation care', Explain rationale for Tactical Triage', Explain basic methods of survival', List procedures for hostage situation survival', Explain selfdefense and close quarters battle

Name
The student will demonstrate knowledge of medical concepts in a tactical medicine

Objective
Explain environmental considerations for treatment options', List equipment of the tactical medical provider', Explain and demonstrate usage of equipment of the tactical medical provider', List Medical Preplanning Considerations for Tactical Emergency Medicine Operations', Explain triage procedures', List options for Canine Aid in the Tactical EMS Setting', Describe possible Psychological Effects and Management of Law Enforcement and Medical Providers in the Tactical Environment', Explain procedures for Tactical En Route Care', Perform tactical medical assessment and management of injuries including shock bleeding organ system and extremity injuries

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

EMS120 - Work Ethic

Overview

Department
Health Sciences

Course Description
This course explores the essential components of a strong work ethic in the healthcare industry, focusing on professionalism, accountability, and ethical behavior in patient care. Students will examine case studies and real-world scenarios to understand the importance of integrity, teamwork, and effective communication. The course prepares students to navigate the unique challenges of healthcare settings, fostering a commitment to high standards of practice and patient-centered care.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate Professionalism: Students will be able to exhibit professional behavior, including punctuality, appropriate attire, and respectful interactions with patients, colleagues, and supervisors in healthcare settings.

Name
Apply Ethical Principles: Students will identify and apply ethical principles in healthcare decision-making, demonstrating an understanding of patient confidentiality, informed consent, and moral integrity in various scenarios.

Name
Foster Accountability: Students will recognize the importance of personal responsibility in their roles and demonstrate accountability for their actions and decisions, ensuring adherence to healthcare standards and protocols.

Name
Communicate Effectively: Students will use clear and concise communication strategies to collaborate with healthcare teams, ensuring patient information is shared accurately and respectfully.

Name
Collaborate in Teams: Students will demonstrate the ability to work effectively in interdisciplinary teams, recognizing the role of teamwork in providing patient-centered care.

Name
Analyze Healthcare Scenarios: Through the analysis of case studies, students will critically evaluate real-world healthcare situations, identifying potential ethical dilemmas and developing strategies to resolve them.

ENG030 - English

Overview

Department
General Education

Course Description
Designed to equip students for success in the writing required during academic endeavors. Review of grammar is individualized and self-paced, using a computerized software program. Writing assignments will include a number of paragraphs and major essay. To demonstrate readiness for and be allowed to enroll in ENG 101 Composition I, students must pass this course with a grade of C or above and pass the final exam.This course does not count toward AS, AA, AGS or AAS degrees.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2014

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will use the stages of the writing process to develop a paragraph

Objective
Select a topic and write a topic sentence', Choose appropriate details', Arrange ideas into a plan', Write and revise a paragraph', Revise a paragraph to ensure smooth transition and flow of thought

Name
The student will develop a variety of paragraphs and an essay

Objective
Construct a descriptive paragraph', Compose a definition paragraph', Write an illustration paragraph', Develop a comparisoncontrast paragraph', Explain the difference between a paragraph and an essay', Prepare a persuasive essay identifying subject audience and purpose

Name
The student will revise writing for consistency and parallelism and will edit for correct spelling

Objective
Utilize effective proofingediting techniques', Edit writing for consistent tense number and person', Examine writing and revise for parallelism', Edit for appropriate and precise word choice

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

A minimum test score of '39' on Test ASWS

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- ENG020 - Basic Writing Skills (Inactive)

OR

Any of the following requirements

A minimum test score of '045' on Test CPWR

ENG035 - PACER English

Overview

Department
General Education

Course Description
This course is designed to equip students for success in the writing, reading, and effective student skills required during academic endeavors at the college level. Review of grammar and reading skills is individualized and self-paced, using a computerized software program in addition to instructor-led lessons. Writing assignments will include a number of paragraphs and reading will include practice with college-level texts.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
75

Course Learning Outcomes

Learning Outcomes

Name
The student will utilize appropriate strategies to successfully identify the main idea of a reading passage

Objective
Differentiate between general and specific key words and phrases', Recognize the general topic of a sentence', Differentiate the topic of a reading passage from the main idea and supporting details', Question for the main idea

Name
The student will utilize appropriate strategies to identify supporting details and organizational patterns in college-level texts

Objective
Use strategies to identify details in text, including recognizing levels of importance, and distinguishing between major and minor details Identify common patterns of textbook organization, including simple listening, classification, definitions with examples, description, time-order, sequence

Name
The student will develop strategies for improving reading efficiency

Objective
Identify and apply strategies for increasing reading speed and enhancing comprehension

Name
The student will apply analytical thinking skills to college-level texts

Objective
Distinguish between the thinking processes of successful versus unsuccessful learners', Identify cognitive processes associated with analytical thinking and apply these processes to course assignments

Name
The student will become a critical reader

Objective
Recognize an authors purpose or intent', Recognize an authors point of view or bias', Recognize an authors tone', Distinguish fact from opinion', Recognize valid and invalid support for arguments

Name
The student will be familiar with basic grammar, sentence structure and parts of speech through a computerized program that assesses areas of need and designates particular assignments to the individual student

Objective
Define and identify subjects', Define and use conjunctions', Define and use correct subjectverb agreement', Identify and use nouns pronouns adjectives adverbs', Identify and use apostrophes commas quotation marks colons and semicolons correctly', Use proper capitalization within sentences

Name
The student will use the stages of the writing process to develop a paragraph

Objective
Select a topic and write a topic sentence', Choose appropriate details', Arrange ideas into a plan', Write a paragraph

Name
The student will develop a variety of paragraphs with instructor choices from the following: write a descriptive paragraph, write a definition paragraph, write an illustration paragraph, or write a comparison/contrast paragraph.

Objective
Write a descriptive paragraph', Write a definition paragraph', Write an illustration paragraph', Write a comparisoncontrast paragraph

Name
The student will revise writing for consistency and parallelism and will edit for correct spelling

Objective
Utilize effective proofingediting techniques', Edit writing for consistent tense number person and parallelism', Edit for appropriate and precise word choice

Name
The student will have an understanding of their learning styles and how to use them effectively

Objective
Distinguish between active and passive learning', Define and identify cognitive social and expressive learning styles', Adapt learning styles to instructional presentations

Name
The student will demonstrate effective note-taking skills

Objective
Demonstrate knowledge of different kinds of notetaking methods', Understand the importance of note taking and characteristics of good notes', Develop effective methods of studying notes

Name
The student will have an understanding of the benefits of reading aloud

Objective
Understand the benefits of reading aloud to revise writing', Understand the process of developing a writers ear', Demonstrate reading aloud of student samples to aid editing

ENG100 - Composition I Lab

Overview

Department
General Education

Course Description
This lab is designed for students to work in an adaptive setting based on their skills and needs in reading and writing skills. Students will take this lab in conjunction with English 101 Composition I.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
Students will strengthen reading and writing needs based on assignments required from Composition I class.

Name
Students will acquire and utilize effective study habits, note taking skills, and test-taking strategies.

Name
Students will analyze and interpret college-level texts, essays, and other written works.

Name
Students will write and revise college-level essays and assignments applying appropriate strategies.

Name
Students will develop and demonstrate interpretive and critical reading skills.

Name
Students will apply appropriate grammatical and mechanical conventions in written work.

Name
Students will drop and synthesize ideas with sufficient support and necessary attribution.

Requirements

Simple Requirements

Enrolled in Course ENG101

Type
Prerequisite

Enroll in the following Courses:
- ENG101 - Composition I

A minimum grade of 'C' in Course ENG035

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ENG035 - PACER English

ENG101 - Composition I

Overview

Department
General Education

Course Description
This course is designed to improve the reading and writing skills of students. The emphasis is on fundamental principles of written English in structurally correct sentences, paragraphs and expository themes. Critical analysis of essays will be used to aid in developing the student's thinking, support of thesis and style. Students are introduced to the basic components of research by writing a documented essay in Modern Language Association (MLA) style.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Employ conventions of format, structure, voice, tone, and level of formality to produce writing for specific purposes and audiences as required by various writing situations

Objective
Define and respond to the audience needs appropriate to the writing task', Focus on a purpose consistent with specific rhetorical situations', Formulate a thesis statement', Organize information according to a logical plan', Understand the relationship amount language knowledge and power

Name
Practice ethical means of creating their work while integrating their own ideas with those of others

Objective
Select information related to the thesis statement', Discover relevant information for a variety of sources', Evaluate credibility of sources', Paraphrase summarize and directly quote sources', Discern when to paraphrase summarize or directly quote according to the writing situation', Integrate own ideas with those of others', Employ MLA format including parentheticals and Works Cited

Name
Demonstrate an ability to fulfill standards of syntax, grammar, punctuation, and spelling for various rhetorical contexts

Objective
Construct and correctly punctuate complete sentences', Assemble grammatically correct structures', Maintain consistency in person subject voice tense and mood', Produce text that is reasonable free of incorrect spelling

Name
Apply flexible strategies for prewriting, developing, drafting, revising, editing, and proofreading

Objective
Generate ideas through a variety of prewriting techniques', Formulate a thesis statement', Organize information according to a logical plan', Develop multiple drafts', Critique students own draft as well as drafts of other students', Assess effectiveness of draft and validity of studentinstructor feedback', Modify in response to studentinstructor comments', Understand writing as an open process that permits writers to use later invention and rethinking to revise their work

Name
Critique their own and others work

Objective
Appraise taskrelated student and professional writing examples', Use writing and reading for inquiry learning thinking and communicating

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Fulfill ALL of the following requirements:

A minimum test score of '081' on Test CPRD

AND

A minimum test score of '070' on Test CPWR

OR

Fulfill ANY of the following requirements:

Earn a minimum grade (UG) of C in the following:

OR

Earn a minimum grade (UG) of C in the following:
- ENG030 - English

OR

Fulfill ALL of the following requirements:

A minimum test score of '41' on Test ASWS

AND

A minimum test score of '42' on Test ASRD

OR

Fulfill ALL of the following requirements:

A minimum test score of '18' on Test A01

AND

A minimum test score of '15' on Test A03

OR

Fulfill ANY of the following requirements:

A minimum test score of '459' on Test S01

OR

Fulfill ALL of the following requirements:

A minimum test score of '69' on Test ACSK

AND

A minimum test score of '69' on Test ACRD

OR

Fulfill ANY of the following requirements:

A minimum test score of '6' on Test ACWP

OR

Fulfill ALL of the following requirements:

A minimum test score of '19' on Test CMSK

AND

A minimum test score of '23' on Test CMRD

ENG102 - English Composition I with Corequisite

Overview

Department
General Education

Course Description
This course is designed to improve the reading and writing skills of students. The emphasis is on fundamental principles of written English in structurally correct sentences, paragraphs and expository themes. Critical analysis of essays will be used to aid in developing the student's thinking, support of thesis and style. Students are introduced to the basic components of research by writing a documented essay in Modern Language Association (MLA) style. This course is designed for students to work in an adaptive setting based on their skills and needs in reading and writing skills.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
75

Course Learning Outcomes

Learning Outcomes

Name
Students will strengthen reading and writing needs Students and acquire and utilize effective study habits, note taking skills, and test-taking strategies.

Name
Students will write, revise, analyze, and interpret college-level texts, essays, and other written works.

Name
Students will develop and demonstrate interpretive and critical reading skills.

Name
Students will apply appropriate grammatical and mechanical conventions in written work.

Name
Students will drop and synthesize ideas with sufficient support and necessary attribution.

Name
Employ conventions of format, structure, voice, tone, and level of formality to produce writing for specific purposes and audiences as required by various writing situations.

Objective
Define and respond to the audience needs appropriate to the writing task', Focus on a purpose consistent with specific rhetorical situations', Formulate a thesis statement', Organize information according to a logical plan', Understand the relationship amount language knowledge and power.

Name
Practice ethical means of creating their work while integrating their own ideas with those of others.

Objective
Select information related to the thesis statement', Discover relevant information for a variety of sources', Evaluate credibility of sources', Paraphrase summarize and directly quote sources', Discern when to paraphrase summarize or directly quote according to the writing situation', Integrate own ideas with those of others', Employ MLA format including parentheticals and Works Cited.

Name
Demonstrate an ability to fulfill standards of syntax, grammar, punctuation, and spelling for various rhetorical contexts.

Objective
Construct and correctly punctuate complete sentences', Assemble grammatically correct structures', Maintain consistency in person subject voice tense and mood', Produce text that is reasonable free of incorrect spelling.

Name
Apply flexible strategies for prewriting, developing, drafting, revising, editing, and proofreading.

Objective
Generate ideas through a variety of prewriting techniques', Formulate a thesis statement', Organize information according to a logical plan', Develop multiple drafts', Critique students own draft as well as drafts of other students', Assess effectiveness of draft and validity of student instructor feedback', Modify in response to student instructor comments', Understand writing as an open process that permits writers to use later invention and rethinking to revise their work.

Name
Critique their own and others work

Objective
Appraise task related student and professional writing examples', Use writing and reading for inquiry learning thinking and communicating.

ENG110 - Introduction to Literature

Overview

Department
General Education

Course Description
This course is an introduction to the short forms of literature, designed to develop understanding and appreciation of good literature. Study includes short stories, dramas and poems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will demonstrate a college-level ability to communicate an awareness of the range of human experience as expressed through literature

Name
The student will demonstrate a college-level ability to examine the interaction of reader and writer in the creation of meaning

Name
The student will demonstrate a college-level ability to articulate distinctive features various genes

Name
The student will demonstrate a college-level ability to analyze structures and figurative language of literary texts

Name
The student will demonstrate a college-level ability apply modes of critical inquiry specific to the discipline

Name
The student will demonstrate a college-level ability to write thoughtful literary analysis using appropriate terminology and conventions

Name
Demonstrate an awareness of the complexity and diversity of human experience as expressed through literature

Name
Examine the interactions of reader and writer in the creation of meaning

Name
Articulate the distinctive features of various genres

Name
Apply modes of critical inquiry specific to the discipline

Name
Write thoughtful literary analysis using appropriate terminology and conventions

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

ENG120 - Composition II

Overview

Department
General Education

Course Description
This course is designed to immerse students in the study and practice of persuasive and argumentative, report, and research writing emphasizing analysis and research and reading, interpreting, and evaluation of selected texts.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Compose persuasive or informative texts acknowledging the expectations of specific audiences

Objective
Generate ideas through response journals and class discussion', Define an audience appropriate to the writing task', Focus on a purpose consistent with specific pattern of writing', Formulate a thesis statement', Select information related to the thesis statement', Organize information according to a logical plan', Develop multiple drafts', Modify in response to studentinstructor comments', Construct and correctly punctuate complete sentences', Assemble grammatically correct structures', Maintain consistency in person subject voice tense and mood', Produce text that is reasonably free of incorrect spelling

Name
Apply research strategies including finding, evaluating, analyzing, and synthesizing sources

Objective
Appraise taskrelated student and professional writing examples', Select information related to the thesis statement', Discover relevant information from a variety of sources', Evaluate credibility of sources', Employ MLA format including parentheticals and Works Cited

Name
Employ an appropriate style for citing and listing sources

Objective
Paraphrase summarize and directly quote sources', Discern when to paraphrase summarize or directly quote according to the writing situation', Employ MLA format including parentheticals and Works Cited

Name
Demonstrate the ability to read and think critically about texts

Objective
Understand the relationship among language knowledge and power', Critique students own draft as well as drafts of other students', Assess effectiveness of draft and validity of studentinstructor feedback', Understand writing as an open process that permits writers to use later invention and rethinking to revise their work', Identify fundamental literary techniques and elements', Explore the writers purpose for employing various techniques', Respond to literature by relating literary themes to personal experiences', Understand the various levels of application in literatures', Compare literary works

Requirements

Simple Requirements

A minimum grade of 'C' in Course ENG101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ENG101 - Composition I

ENT110 - Introduction to Entrepreneurship

Overview

Department
Professional Studies

Course Description
The purpose of this course is to familiarize students with the world of small business. Students will be introduced to the concepts needed to seek out business opportunities as well as the tools needed to evaluate successful ventures. Considerable attention will be given to the concepts of planning, financing and marketing new businesses.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will understand the foundations of entrepreneurship and traits of successful entrepreneurs

Objective
Understand the role of entrepreneurs in the new economy', Be able to recognize the differences between an entrepreneurial venture and a small business venture', Understand the value of social responsibility to the entrepreneur', Understand how a code of ethics can help lead to business success', Be able to recognize industries or trends that are of interest to the entrepreneur', Identify what type of industry a business operates in', Be able to identify the market a business serves', Understand how the state and national economy affects the venture', Understand the various forms of business ownership

Name
The student will be able to test the feasibility of a business concept

Objective
Understand how to develop a business concept that contains the product service value proposition and distribution needed for success', Understand how to do a quick and full feasibility analysis', Define a target market for the product or service', Be able to identify direct indirect and emerging competitors', Understand the concept of competitive advantage', Understand how to acquire data used in market analysis', Understand how to estimate the demand for the product or service', Identify the need for professional advisors', Identify the key elements of management and human relations in the entrepreneurial venture

Name
The student will be able to compose a business plan

Objective
Understand how to perform a cost benefit analysis', Understand how to perform a basic financial analysis', Understand how to compile income and cash flow statements', Be able to determine how much capital is needed to start a business', Be able to determine the most effective distribution channel to get your product to the customer', Understand what is needed to compose an effective business plan', Be able to compose a basic marketing plan for a company', Be able to compose a basic financial plan for a company

ENT115 - Entrepreneurship II

Overview

Department
Professional Studies

Course Description
The marketplace has changed dramatically over the last 20 years. To compete and grow, small businesses must do more than just give lip service to putting the customer at the center of the business. In this course students will learn the different paths to business ownership, how to effectively market new products, management strategies for the 21st century, and how to plan financially for a business.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Hybrid

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to critically analyze potential new business ventures and evaluate the risks and rewards of market entry

Objective
Understand the difference between an entrepreneurial company and a small business', Describe common reasons why small businesses fail', Describe three different types of entrepreneurs', Discuss the traits common in successful entrepreneurs', Describe trends in business today', Discuss the role of technology in todays business environment', Discuss opportunities in todays business environment', Understand the role of business ethics in creating a successful venture

Name
The student will be able to evaluate the different methods of entering a new business venture and be able to select an appropriate method given real world constraints

Objective
Discuss the new venture creation process', Compare and contrast the business lifecycle and the industry lifecycle', Describe the feasibility analysis process', Explain the purpose of a business model and how it is developed', Discuss why entrepreneurs would choose to purchase an existing business', Compare and contrast franchising with buying an existing independent business', Explain how to research a potential business acquisition', Discuss the advantages and challenges of a family business', Explain the management scheme of the family business', Explain the purpose and method for licensing technology', Describe the technology adoption and diffusion cycle', Explain the criteria used to decide the best legal form for a business

Name
The student will be able to construct an effective business plan and organize a new venture in a way that creates a high probability of success

Objective
Describe the business planning process', Explain the structure of a business plan', Discuss how to prepare a persuasive business plan', Explain how to build an effective management team', Describe the benefits of using professional advisors', Explain the various management agreements that small businesses need to have in place', Discuss ways to effectively recruit and hire', Discuss how to create a compensation package for employees', Discuss how to correctly employ independent contractors

Name
The student will be able to construct an entrepreneurial marketing plan for a new business adventure

Objective
Describe the target market', Describe the entrepreneurial research process', Explain how distribution can be a competitive advantage strategy for small businesses', Discuss pricing objectives and strategies', Discuss the purpose and use of a marketing plan', Compare and contrast marketing strategies for new technologies and other products', Discuss the impact of global marketing on small businesses

Name
The student will be able to construct basic financial statements and determine venture capital requirements needed for effective management of a new venture

Objective
Describe the process of calculating how much capital is needed to start a business', Discuss major sources of capital for new start ups', Explain how to forecast sales and expenditure', List and explain the purpose of the three main financial statements', Discuss the purpose of financial ratios and how they can be used to evaluate a business', Explain how growth financing differs from start up financing

Requirements

Simple Requirements

A minimum grade of 'C' in Course ENT110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ENT110 - Introduction to Entrepreneurship

ENT1 - Introduction Of Entrepreneursh

Overview

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2009

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
0

EPD105 - Construction Industry

Overview

Department
Applied Technologies

Course Description
This course introduces students to the construction and utility industries with an emphasis on career pathways, safety, and foundational work practices. Topics include construction site safety, material handling, construction math, and blueprint reading. Students learn to interpret construction drawings, apply safe work habits, and understand basic industry terminology and procedures essential to success in skilled trades.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Identify career opportunities within the construction and utility industries

Name
Demonstrate knowledge of OSHA safety standards

Name
Apply basic math concepts to job site measurement and calculations

Name
Interpret construction drawings and symbols to identify project components

Name
Demonstrate safe handling, movement, and storage materials

EPD110 - Construction Tools, Rigging, & Employability Skills

Overview

Department
Applied Technologies

Course Description
This course provides hands-on experience with the tools, equipment, and communication practices used in the skilled trades. Students will gain proficiency in the identification, inspection, and safe use of hand and power tools, as well as the fundamentals of rigging. The course also emphasizes teamwork, communication, and professional behavior expected on the job site.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Identify and demonstrate safe use of common hand and power tools

Name
Apply basic rigging techniques using approved knots, slings, and lifting equipment.

Name
Communicate effectively with peers, supervisors, and team members on the job site.

Name
Demonstrate professionalism, reliability, and employability skills required in the construction industry.

Name
Apply problem-solving and critical thinking skills to basic job-site scenarios.

EPD119 - Lineworker Internship I

Overview

Department
Applied Technologies

Course Description
In this course students will have the opportunity to link classroom/ lab theory with an experiential learning opportunity. Through direct observation, reflection and evaluation, students gain an understanding of the internship site's work, mission, and customers. The student will identify how these relate to their program of study, as well as the organization's position in the broader industry or field. Students will produce a critical reflection of their internship experience demonstrating how they have addressed specific learning goals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
3

Other Hours

Other Hours
Min:
135

Course Learning Outcomes

Learning Outcomes

Name
Applies knowledge to the real world work experience.

Objective
Searches out and applies resources and methods to accomplish assigned tasks', Articulate the connection between classroom lab theory to industry experiences

Name
Observe skills associated with electric power distribution.

Name
Apply skills associated with electric power distribution.

Name
Demonstrate effective workplace behaviors.

EPD120 - Power Line Worker Safety

Overview

Department
Applied Technologies

Course Description
This course emphasizes the essential safety practices required for entry-level power line workers. Students will learn hazard recognition, safe work procedures, and the proper use of personal protective equipment (PPE) in compliance with OSHA and industry standards.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Identify, inspect, maintain, and use craft-specific PPE and identify it's limitation

Name
Inspect rubber insulating blankets, line hoses, covers, and guards

Name
Describe the safety practices associated with high voltage work, including: Step and touch potential, minimum approach distance, protection from arc flash and arc blast, and procedures for entering substations

Name
Explain work zone safety requirements

Name
Describe traffic control methods

Name
Identify the signs and causes of unstable trenches and describe the safety practices associated with trench work

Name
Identify hazards related to working near horizontal drilling operations.

Name
Identify hazards and safeguards associated with confined-space work.

Name
Explain the purpose of, and differences between, job safety analyses and task safety analyses.

Name
Describe how to mitigate environmental impacts

Name
Inspect and put on craft-specific PPE

Name
Inspect rubber insulating blankets, line hoses, covers, and guards, and install them on deactivated power lines.

EPD125 - Electrical Theory & Circuits

Overview

Department
Applied Technologies

Course Description
This course provides students with a foundation in electrical principles and circuit analysis as applied to electric power distribution. Topics include atomic structure, voltage, current, resistance, and power relationships, as well as Ohm’s law and Kirchhoff’s laws. Students will study series, parallel, and combination circuits, electrical measurements, and safe practices for working with energized systems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
Explain the difference between conductors and insulators

Name
Define voltage and identify the ways that it can be produced

Name
Define the units of measurement that are used to measure the properties of electricity.

Name
Explain the basic characteristics of series and parallel circuits.

Name
Identify the meters used to measure voltage, current, and resistance.

Name
Identify specialized test instruments used by power line workers.

Name
Explain the basic characteristics of series, parallel, and combination circuits.

Name
Explain the purpose of bonding and grounding.

EPD129 - Lineworker Internship II

Overview

Department
Applied Technologies

Course Description
This course is a continuation of Lineworker Internship I in which students continue their work in experiential learning. Through observation, reflection and evaluation, students gain an understanding of the internship site's work, mission, and customers. The student will identify how these relate to their program of study, as well as the organization's position in the broader industry or field. Students will produce a critical reflection of their internship experience, demonstrating how they have addressed specific learning goals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
3

Other Hours

Other Hours
Min:
135

Course Learning Outcomes

Learning Outcomes

Name
Applies knowledge to the real world work experience.

Objective
Searches out and applies resources and methods to accomplish assigned tasks', Articulate the connection between classroom lab theory to industry experiences

Name
Observe skills associated with electric power distribution.

Name
Apply skills associated with electric power distribution.

Name
Demonstrate effective workplace behaviors.

Requirements

Simple Requirements

A minimum grade of 'C' in Course EPD119

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- EPD119 - Lineworker Internship I

EPD130 - Safety & Climbing Techniques

Overview

Department
Applied Technologies

Course Description
This course introduces students to fundamental safety practices and climbing techniques used in electric power distribution. Emphasis is placed on personal protective equipment, fall protection systems, and safe work practices when climbing and working at heights. Students will develop proficiency in climbing wooden poles and non-wooden structures using industry-standard methods. Topics include pole inspection, proper use of climbing gear, body positioning, controlled descent, rescue procedures, and safe work positioning.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
120

Course Learning Outcomes

Learning Outcomes

Name
Identify all required and recommended safety equipment.

Name
Demonstrate the knowledge and proper use of required climbing equipment.

Name
Demonstrate the ability to inspect climbing equipment prior to climbing.

Name
Identify the hazards associated with climbing wooden poles.

Name
Demonstrate the ability to inspect a wooden pole for defects prior to climbing.

Name
Identify and demonstrate proper climbing ascent, descent, and lateral positioning techniques.

Name
Demonstrate the ability to withstand working at heights above 32 feet.

Name
Demonstate the ability to perform pole-top rescue with and without the presence of a cross arm.

EPD135 - Tools, Framing & Equipment

Overview

Department
Applied Technologies

Course Description
This course introduces students to the tools, materials, and equipment used in the power line industry. Students will learn the proper selection, inspection, care, and safe use of hand tools, power tools, and specialty equipment required for linework. Instruction covers aerial framing practices, utility hardware identification and installation, and the operation of utility service equipment. Hands-on training emphasizes correct application of tools and equipment to construct and maintain distribution systems in accordance with industry standards.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Identify and explain the use of common insulated hand tools.

Name
Identify and explain the use of line workers' ladders.

Name
Identify and explain the use of line workers' specialty tools.

Name
Demonstrate the ability to use line workers' tools specified by the instructor.

Name
Describe the difference between single-phase and three phase construction.

Name
Identify the hardware used in aerial framing.

Name
Using the standards manual, identify materials, assorted pole hardware, and support arms needed to perform aerial framing on: a single cross-arm, a double cross-arm, a dead triple cross-arm set, an outrig arm, and an alley arm

Name
Describe, assemble, and install guys.

Name
Perform an aerial framing procedure as defined by the instructor.

Name
Hand-pull single-phase and three-phase primary conductors, dead end, and snag.

Name
Explain how to install a transformer and connect conductors.

Name
Identify the types of bucket trucks and digger derricks used by power line workers.

Name
Identify the operator safety requirements that must be followed when operating a bucket truck or digger derrick.

Name
Explain how to perform a pre-start inspection on a service vehicle.

Name
Describe the safety considerations and basic operations procedures associated with setting up a service vehicle at a job site.

Name
Describe the safety considerations and basic operations procedures associated with using a bucket truck at a job site.

Name
Describe the safety considerations and basic operations procedures associated with using a digger derrick at a job site.

Name
Describe ways that a crew can prepare for and react to a bucket truck or digger derrick related emergency.

Name
Inspect, set up, and operate utility service equipment: bucket truck, digger derrick, crane truck, aerial lift.

EPD140 - Pole Setting, Rigging, & Excavation

Overview

Department
Applied Technologies

Course Description
This course provides students with the knowledge and hands-on skills to safely perform rigging operations and set utility poles. Instruction includes rigging principles, inspection and use of ropes, slings, and hoists, and the application of knots, splices, and hitches used in linework.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Describe and demonstrate hand signals and other communication methods used in rigging work.

Name
Describe safety hazards and safety practices associated with rigging work.

Name
Identify safety procedures associated with the use of cranes in rigging work.

Name
Describe how cranes are used to lift and move loads.

Name
Tie knots used in rigging

Name
Reeve a set of blocks

Name
Describe and demonstrate how to load and unload wood poles in preparation for installation.

Name
Explain and demonstrate the importance of using the proper hand signals when setting a pole.

Name
Describe and demonstrate how to set a wood utility pole using a digger derrick.

Name
Describe and demonstrate how to set a wood utility pole by hand.

Name
Describe and demonstrate how to pull a wood utility pole from the ground.

EPD141 - Pole Setting Lab

Overview

Department
Applied Technologies

Course Description
This hands-on lab course provides students with practical experience in the installation, setting, and removal of utility poles used in electrical distribution systems. Students will apply rigging principles, operate digging and lifting equipment, and perform pole framing, setting, and backfilling using industry-standard methods. Emphasis is placed on safety, teamwork, equipment operation, and compliance with OSHA and National Electrical Safety Code (NESC) standards.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
2

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Inspect and prepare utility poles and job sites for safe installation.

Name
Operate excavation and lifting equipment used for pole setting under instructor supervision.

Name
Apply proper rigging, signaling, and communication techniques during pole placement.

Name
Set, align, and secure wooden poles using approved methods and materials.

Name
Demonstrate safe pole removal and replacement procedures.

Name
Apply OSHA and NESC safety requirements throughout all phases of pole-setting operations.

Requirements

Simple Requirements

Pole Setting Corequisite

Type
Corequisite

Enroll in the following Courses:
- EPD140 - Pole Setting, Rigging, & Excavation

EPD145 - Overhead & Underground Installations

Overview

Department
Applied Technologies

Course Description
This course introduces students to basic methods and equipment used in overhead and underground power distribution installations. Instruction includes the safe operation of trenching, excavating, and boring equipment, as well as the fundamentals of underground utility placement. Students are also introduced to common electrical test equipment and its use in verifying system integrity and safety. Hands-on activities reinforce proper equipment operation, testing techniques, and compliance with industry standards.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
Identify the trenching, excavating, and boring safety guidelines.

Name
Identify and explain the use and operation of compact and pedestrian trenchers.

Name
Identify and explain the use and operation of a backhoe.

Name
Identify and explain the use and operation of a horizontal directional drilling machine.

Name
Describe pieces of test equipment and explain their purpose.

Name
Select the appropriate meter for a given work environment based on category ratings.

Name
Identify the safety hazards associated with various types of test equipment.

EPD150 - Distribution Systems & Maintenance

Overview

Department
Applied Technologies

Course Description
This course introduces students to the principles and operation of electric power distribution systems, focusing on alternating current (AC) fundamentals and three-phase power. Students will study the configuration and function of aerial distribution systems, including the installation and maintenance of distribution hardware and equipment. Emphasis is placed on understanding system components, maintaining line integrity, and applying industry-standard safety and maintenance procedures to ensure reliable power delivery.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Describe how single-phase and three phase alternating current is developed.

Name
Calculate peak and effective voltage or current values for an AC waveform.

Name
Describe phase relationships in AC circuits.

Name
Describe impedance and explain how it affects AC circuits.

Name
Describe the operating principles and functions of inductors.

Name
Describe the operating principles and functions of capacitors

Name
Explain the principles and functions of transformers

Name
Explain the following terms as they relate to AC circuits: True power, Apparent Power, Reactive Power, Power Factor

Name
Describe the types of transformers and how they are used in aerial distribution sytems.

Name
Explain the construction of an aerial distribution transformer.

Name
Describe the functions of aerial load management devices including: Regulators, Reclosers, Capacitors, Fault indicators, Fuses and cutouts, Switches

Name
Assemble overhead street lights.

Name
Energize or de-energize a single-phase transformer using the proper hot stick.

Name
Open a disconnect switch using a load break tool.

Name
Hook up a three-phase transformer per diagrams and instructions provided by the instructor.

EPD155 - Cable & Underground Distribution Systems

Overview

Department
Applied Technologies

Course Description
This course provides instruction and hands-on training in the installation, maintenance, and removal of electrical cables used in underground distribution systems. Students learn the methods and equipment used to install and splice conductors, set transformers, and connect underground residential distribution (URD) systems. Emphasis is placed on trenching and conduit practices, cable identification, fault location, and system restoration. Students apply safety procedures and utility standards to ensure reliability and protection of personnel and equipment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Describe the history and applications of URD systems.

Name
Describe trenching and backfill methods used for URD systems, including common-trench applications.

Name
Identify and describe common types of cable conductors and termination methods used in URD installations.

Name
Install lightning protection and fault indicating devices used in URD systems.

Name
Identify and describe pad-mounted switchgear and transformers used in URD systems.

Name
Select the proper types of conductors and termination methods for specific URD applications.

EPD160 - Overhead & URD Service Installations

Overview

Department
Applied Technologies

Course Description
This course focuses on the installation, connection, and maintenance of overhead and underground residential distribution (URD) service systems. Students learn to identify service types, install meters, connect transformers, and terminate service conductors to ensure safe and reliable customer connections. The course emphasizes proper grounding, clearances, and service configurations according to the National Electrical Safety Code (NESC) and utility company standards.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Describe the methods and equipment used in the installation of residential and commercial electrical services.

Name
Install single- and three-phase overhead loops.

Name
Install risers on poles (conduit or U-guard)

Name
Terminate single- and three-phase underground secondary services.

EPD165 - Distribution Line Maintenance

Overview

Department
Applied Technologies

Course Description
This course provides advanced training in the inspection, maintenance, and repair of overhead and underground electrical distribution systems. Students will perform detailed pole and line inspections, maintain pole-mounted equipment, and replace essential hardware such as crossarms, insulators, arresters, and switches. The course also covers re-conductoring procedures, transformer replacement, fault location in underground residential distribution (URD) systems, and load management coordination. Emphasis is placed on safety, preventive maintenance, and industry-standard practices to ensure reliable operation of distribution systems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
State the safety precautions associated with power line maintenance.

Name
Describe the requirements for pole and distribution line inspections.

Name
Describe the maintenance requirements for pole-mounted equipment and conductors.

Name
Describe methods used to achieve load management and fuse coordination.

Name
Re-conductor overhead lines.

Name
Replace cross-arms, arresters, switches, insulators, and associated hardware.

Name
Replace an aerial transformer.

Name
Describe methods used to locate and correct faults in URD cabling systems.

Name
Perform testing and inspection of aerial transformers.

EQP119 - Internship I

Overview

Department
Applied Technologies

Course Description
This course introduces students to workplace experiences in the heavy equipment/automotive industry. Students will apply foundational technical and professional skills in a supervised setting, observing industry practices, safety standards, and workplace culture. Emphasis is placed on gaining familiarity with dealership or service operations and understanding entry-level technician responsibilities.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
2

Other Hours

Other Hours
Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate professionalism, punctuality, and adherence to workplace policies.

Name
Apply basic technical skills learned in the program in a supervised environment.

Name
Observe and describe dealership or service department workflow.

Name
Communicate effectively with supervisors, mentors, and peers in the workplace.

EQP120 - Heavy Equipment Operations I

Overview

Department
Applied Technologies

Course Description
Introduces students to the heavy equipment industry, safety practices, and equipment fundamentals. Topics include equipment classifications, basic earthmoving, prestart inspections, and early operation of skid steers and utility tractors.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Identify and describe major heavy equipment types.

Name
Perform prestart inspections and basic maintenance.

Name
Apply OSHA/MSHA safety standards to operations.

Name
Operate equipment following safe procedures.

Name
Explain fundamental earthmoving concepts.

EQP121 - Diesel Engine Repair

Overview

Department
Applied Technologies

Course Description
This course includes diesel engine theory, disassembly, assembly, troubleshooting, and testing of Diesel engines.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Identify the various combustion chambers and know the advantages/ disadvantages of each type.

Name
Perform basic valve and injection timing tasks.

Name
Articulate the theory of injection pump timing.

Name
Describe the functions of various cooling system components. Understanding measurement and properties of the engine fluids.

Name
Explain the functions and components of diesel engine lubrication systems

Name
Summarize effects of lubrication system levels (over and under).

Name
Locate specifications including fluid change intervals, fluid specifications (SAE/API, etc.), fuel specifications, filter replacement intervals,proper filter replacement procedures, other maintenance guidelines, etc.

Name
Demonstrate to inspect used filters for early warning signs of potential problems.

Name
Perform maintenance tasks to industry standards; completion of an inspection task sheet.

Name
Demonstrate via practical exercises, parts reusability procedures and guidelines.

Name
Demonstrate comprehension of the removal, inspection and installation tech- niques associated with basic internal com- ponents.

Name
Perform identification and inspection of all internal components.

Name
Describe tasks associated with the removal, inspection and installation of internal engine components (i.e., cylinder packs).

Name
Describe valve and injector adjustments, as well as timing and idler gear installations.

Name
Demonstrate knowledgeof hydraulic accessories driven or operated by the engine.

Name
Demonstrate understanding of cold weather starting aids and block heaters.

EQP124 - Electrical Systems

Overview

Department
Applied Technologies

Course Description
This course provides a comprehensive study of heavy equipment electrical systems, focusing on theory, operation, and hands-on diagnostics. Students will build foundational knowledge in atomic structure, electron theory, conductors, magnetism, and storage batteries, applying this understanding through the principles of Ohm's Law in series, parallel, and series-parallel DC circuits. Instruction emphasizes the construction, operation, and troubleshooting of 12/24 volt cranking and charging systems, with attention to proper testing, evaluation, and replacement of key components such as conductors, relays, solenoids, starters, alternators, and regulators. Students will also study lighting, accessory, and control systems, learning to diagnose voltage drops, test and replace components, and ensure system compliance with manufacturer specifications. By the end of the course, students will be able to analyze, test, and repair essential electrical systems used in modern heavy equipment operations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate the principles of operation and the correct usage of the various types of meters to measure volts, amps, and ohms.

Name
Describe the basic parts and operation of the basic types of storage batteries.

Name
Describe the knowledge and laws of electromagnetic induction as it applies to generating electrical current using a magnetic field.

Name
Demonstrate the mathematical relationship of the various terms in ohms law as they pertain to series, parallel, and series-parallel circuits.

Name
Demonstrate the ability to set-up and measure voltage, amperage, and resistance values in series, parallel, and series/parallel DC circuits. Ensure these circuits are tied to specific applications on vehicles, not just as classroom bench activities.

Name
Describe the basic components that make up the various types of 12/24 volt cranking systems.

Name
Demonstrate the sequence of operation of the components contained within a cranking system. The emphasis is on how each component effects the system's overall operation.

Name
Demonstrate the ability to isolate problems emphasizing voltage drops and other diagnostic methods.

Name
Demonstrate the ability to correctly test, evaluate and replace the following components using manufacturers' service publications and specifications. 1. Conductors 2. Relays/ Solenoids 3. Starters

Name
Describe the basic components that make up the various types of 12/24 volt charging systems.

Name
Demonstrate the sequence of operation of the components contained within a charging system. The emphasis is on how each component effects the system's overall operation.

Name
Demonstrate/emphasize the ability to isolate problems using voltage drops and other diagnostic methods.

Name
Demonstrate understanding of 5V reference voltage and its effect on all sensors in the same circuit.

Name
Demonstrate the ability to properly test, evaluate and replace the following components using manufacturers' service publications and specifications. 1. Conductors 2. Alternators 3. Regulators

Name
Describe the basic components that make up the various types of lighting, accessory, and control systems.

Name
Demonstrate the sequence of operation of the components contained within various lighting, accessory, and control systems. The emphasis is on how each component effects the system's overall operation.

Name
Demonstrate the ability to isolate problems within various lighting, accessory and control systems emphasizing voltage drops and other diagnostic methods.

Name
Demonstrate the ability to correctly test, replace, or repair lighting, accessory and control system components using manufacturers' service publications and specifications. Examples of the components are as follows. 1. Wiring harness/connectors 2. Fuses/circuit breakers 3. Lights/bulbs 4. Electrical components; switches, gauges, relays, etc.

Name
Demonstrate the ability to identify basic electrical/electronic symbols. Ensure newer symbols like hall effect sensors are covered.

Name
Demonstrate the ability to trace various circuits using wiring schematics/ diagrams.

Name
Demonstrate a working knowledge of diagnosing and troubleshooting electrical systems using schematics/diagrams.

EQP125 - Machine Electronics

Overview

Department
Applied Technologies

Course Description
This course introduces students to advanced electronic systems used in modern heavy equipment, with emphasis on computer-controlled communication networks and telematics. Students will study SAE CAN-Bus standards, including communication protocols, system architecture, and diagnostic code interpretation. Instruction also covers telematics and emerging technologies that enable remote monitoring, performance tracking, and predictive diagnostics. Through hands-on training, students will learn to read and apply wiring schematics, analyze fault codes, and utilize OEM diagnostic software and service information. Upon completion, students will be able to troubleshoot electronic communication systems, interpret telematics data, and support the integration of emerging electronic technologies in heavy equipment applications.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate a working knowledge of the different systems used on computercontrolled machinery. Ex. LIN, CAN

Name
Understand the logic of wake-up and timed shut-down circuits.

Name
Understand the importance of twisted and shielded wire systems.

Name
Demonstrate a working knowledge of the codes to identify errors within the different systems. Demonstrate understanding of the logic and theory of how a processor generates a code. Inputs vs. Outputs.

Name
Define remote monitoring systems and their capabilities.

Name
Define the ability to remotely diagnose electrical/electronic issues.

Name
Understand and identify the dangers of working with high voltage and stored energy in hybrid systems.

Name
Describe the complaint prior to beginning diagnostic tests.

Name
Demonstrate the ability to perform a diagnostic procedure with emphasis on arriving at the root cause of failure.

Name
Demonstrate the ability to reason about a specific malfunction in the system.

Name
Demonstrate the use of proper tools, including flex probes and back probing.

Name
Demonstrate mastering the use of all test equipment including digital volt ohm meter (D.V.O.M.), lap top computers, and other system specific troubleshooting devices.

Name
Demonstrate the ability to do voltage drop testing to determine available vs. potential voltage

Name
Demonstrate the ability to use schematic diagrams and follow troubleshooting flow charts in selected technical manuals.

Name
Utilize an interactive equipment diagnostic program.

Name
Demonstrate technical write-up competency

Objective
Identify the root cause of failure ,Correction procedure

Name
Demonstrate logic and critical thinking in identifying, evaluating, and diagnosing customer complaint

Requirements

Simple Requirements

Pre-Requisite; A minimum grade of "C" in EQP 124

Type
Completion Requirement

Complete ALL of the following Courses:
- EQP124 - Electrical Systems

EQP128 - Mobile Air Conditioning

Overview

Department
Applied Technologies

Course Description
This course provides a comprehensive study of heating, ventilation, and air conditioning (HVAC) systems used in heavy equipment. Students will examine the principles of refrigeration and the operation of air conditioning and heating system components, including compressors, condensers, evaporators, heaters, blowers, and control assemblies. Instruction emphasizes air management, ducting, and system controls, along with safety practices for handling refrigerants and compliance with environmental regulations. Through hands-on training, students will perform system diagnostics, pressure and performance testing, and service procedures such as leak detection, component replacement, and refrigerant recovery. Upon completion, students will be able to analyze, troubleshoot, and repair HVAC systems to ensure safe operation and operator comfort in heavy equipment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
2

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate knowledge of heat sources, types of heat transfer, and how humidity affects heat transfer. Emphasis will be placed on factors that affect heat transfer and how to measure heat energy.

Name
Demonstrate knowledge of the following terms: 1. Sensible heat 2. Change of state 3. Saturation temperature 4. Latent heat (Hidden heat) 5. Latent heat of fusion 6. Latent heat of evaporation 7. Latent heat of condensation 8. Super heated 9. Sub-cooled 10. Vapor 11. Gas

Name
Measure and calculate the effects of pressures on liquids. Emphasis will be placed on understanding and using pressure and temperature (P/T) charts.

Name
Describe refrigerant characteristics in relation to environmental damage. Emphasis will be placed on identification, labeling, and handling of refrigerants in accordance with EPA 609 regulations

Name
Demonstrate knowledge of the types of oils used in AC systems.

Name
Demonstrate knowledge on handling and storing of refrigerant oils.

Name
Demonstrate knowledge on recovery, recycle, and reclaiming of refrigerants with respect to identifying the refrigerant currently in the system, the amounts of oil, water and particulates that are removed.

Name
Demonstrate knowledge of the following system components: 1. Compressor 2. Condenser 3. Metering device 4. Evaporator 5. Service valves 6. Schrader valves 7. Receiver-drier 8. Accumulator 9. Lines

Name
Demonstrate knowledge of refrigerant flow and states through an AC system.

Name
Demonstrate the knowledge of the state (super-heated vapor, saturated mixture, and sub-cooled liquid) of the refrigerant at various points in an AC system. Emphasis will be placed on the locations in the system that the refrigerant exists as a saturated mixture.

Name
Identify various types and refrigerant capacities of AC systems. Emphasis will be placed on the ability to identify types and capacities by using manufacturers' service publications along with equipment tags, labels, and specifications.

Name
Demonstrate use of a refrigerant ID tool (gas analyzer).

Name
Demonstrate the ability to properly connect and disconnect gauge manifold sets. Emphasis will be placed on using proper procedures to purge hoses to prevent cross-contamination and introduction of non-condensable.

Name
Demonstrate the ability to connect gauge sets to systems having either Schrader or quick disconnect type service valves.

Name
Demonstrate the ability to properly evacuate and dehydrate an AC system.

Name
Demonstrate knowledge of the damage caused to AC systems by non-condensable and moisture. Emphasis will be placed on having knowledge of using micron gauges and establishing minimum evacuation pressure based on altitude as well as maximum evacuation time periods to completely dehydrate AC systems.

Name
Demonstrate the ability to properly recover and charge AC systems with refrigerants.

Name
Demonstrate the knowledge and ability to describe the conditions that need to exist to charge AC systems with refrigerant existing as a liquid or vapor into the high or low side.

Name
Demonstrate the ability to add oil, dye, and refrigerants to operating AC systems.

Name
Describe the complaint prior to beginning diagnostic tests. Describe and utilize an industry-accepted diagnostic process.

Name
Demonstrate the ability to perform a visual inspection of an AC system. a. Loose or missing service caps b. Oily spots – connections – evaporator drain tube c. Belt tension d. Condenser condition e. Cab filter condition f. Determine refrigerant type

Name
Demonstrate the ability to visually identify the type of AC system and determine the amount of refrigerant charge. a. TXV (H-Block) – Receiver-drier b. Metered orifice – accumulator

EQP129 - Internship II

Overview

Department
Applied Technologies

Course Description
Building on Internship I, this course provides students with increased opportunities to perform technical tasks under supervision. Students will apply program-specific knowledge and skills in real service operations while continuing to develop workplace readiness and problem-solving abilities.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
2

Other Hours

Other Hours
Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Perform assigned service and repair tasks under supervision following industry safety practices.

Name
Demonstrate growing independence in applying technical skills to real-world situations.

Name
Document work performed using industry-standard service documentation.

Name
Reflect on professional strengths and areas for improvement in a workplace setting.

Requirements

Simple Requirements

Prerequisite: A minimum grade of "C" in EQP 119

Type
Prerequisite

Complete ALL of the following Courses:
- EQP119 - Internship I

EQP130 - Heavy Equipment Operations II

Overview

Department
Applied Technologies

Course Description
Focuses on operational readiness, site planning, basic GPS/GNSS technology, and earthmoving execution. Students advance skills on skid steers, tractors, and small loaders with emphasis on stability, soil handling, and jobsite communication.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Perform operational startup, shutdown, and readiness checks.

Name
Plan simple site layouts utilizing GPS/GNSS basics.

Name
Operate equipment for excavation and grading.

Name
Analyze soil stabilization strategies for heavy equipment use.

Name
Communicate effectively using worksite signaling systems.

Requirements

Simple Requirements

A minimum grade of 'C' in Course EQP120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- EQP120 - Heavy Equipment Operations I

EQP131 - Diesel Engine Performance

Overview

Department
Applied Technologies

Course Description
This course focuses on the diagnosis of diesel engine performance concerns using industry-standard testing procedures and manufacturer specifications. Students will develop advanced skills in identifying engine-related issues through the use of diagnostic tools, electronic control systems, and performance data analysis. Instruction emphasizes systematic troubleshooting of fuel delivery, air induction, exhaust, and electronic management systems to determine root causes of performance problems. Hands-on training includes interpreting fault codes, analyzing sensor and actuator signals, and applying step-by-step diagnostic strategies to ensure accurate and efficient repairs. Upon completion, students will be able to perform comprehensive diagnostics that support optimal engine operation, reliability, and compliance with emissions standards.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Determine root causes of failure, establish reusability, and know the recommended repair options available.

Name
Demonstrate proper use of special tools and equipment utilized in engine repair.

Name
Use technical service manuals, service information, bulletins and special instructions. Proficient use of service manuals, desktop PCs, and laptops for retrieval of specifications and service procedures.

Name
Troubleshoot common problems caused by a malfunctioning engine subsystem.

Name
Test the engine cooling system, including overheating issues and testing procedures; especially the flow through the radiator; correct temperature drops.

Name
Use proper oils and fluids as per manufacturer specifications.

Name
Demonstrate technical write-up competency

Name
Demonstrate logic and critical thinking in identifying, evaluating, and diagnosing customer complaint.

Objective
Identify the root cause of failure, Correction procedure, perform Machine inspection

Requirements

Simple Requirements

Pre-Requisite: A minimum grade of "C" in EQP 121

Type
Completion Requirement

Pre-requisite

Complete ALL of the following Courses:

- EQP121 - Diesel Engine Repair

EQP132 - Engine Fuel Systems

Overview

Department
Applied Technologies

Course Description
This course is designed to equip students with the essential skills and knowledge required to effectively maintain, diagnose, and repair modern fuel delivery and exhaust after treatment systems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Perform basic maintenance and diagnosis of the different fuel delivery systems available today.

Objective
Perform basic maintenance and diagnosis of the different fuel delivery systems available today

Name
Demonstrate a basic understanding of the adjustment and repair of various governing systems used by the major manufacturers.

Objective
Demonstrate a basic understanding of the adjustment and repair of various governing systems used by the major manufacturers

Name
Measure specific gravity of fuel and determine proper grade and/or contamination. Understand the use of fuel conditioners, fuel coolers and heaters.

Objective
Measure specific gravity of fuel and determine proper grade andor contamination Understand the use of fuel conditioners fuel coolers and heaters

Name
Measure fuel pressure/volume with correct diagnostic tools and compare to specifications.

Objective
Measure fuel pressurevolume with correct diagnostic tools and compare to specifications

Name
Explain how contamination, such as air, water and dirt, can enter a fuel system and the effect it can have.

Objective
Explain how contamination such as air water and dirt can enter a fuel system and the effect it can have

Name
Perform replacement of fuel transfer pumps, filters, lines, and hoses including proper bleeding/priming procedures.

Objective
Perform replacement of fuel transfer pumps filters lines and hoses including proper bleedingpriming procedures

Name
Identify misfiring cylinders with appropriate tooling. Emphasis on cleanliness and safety.

Objective
Identify misfiring cylinders with appropriate tooling Emphasis on cleanliness and safety

Name
Replace and time various injection pumps including inline, distributor and unit injector pumps, high pressure common rail pumps (including correct OEM bleed- down procedures).

Objective
Replace and time various injection pumps including inline distributor and unit injector pumps high pressure common rail pumps including correct OEM bleed down procedures

Name
Perform tasks associated with troubleshooting, adjusting and replacing governor components.

Objective
Perform tasks associated with troubleshooting adjusting and replacing governor components

Name
Demonstrate understanding of operation of mechanical governors and hydraulic/servo systems.

Objective
Demonstrate understanding of operation of mechanical governors and hydraulicservo systems

Name
Determine and understand the problems with the basic supply systems.

Objective
Determine and understand the problems with the basic supply systems

EQP134 - Machine Specific Systems

Overview

Department
Applied Technologies

Course Description
This course is designed to provide students with a comprehensive understanding of specialized equipment utilized across diverse industries. This course offers hands-on experience with machinery tailored to the unique needs of each student's intended field. Students will perform routine maintenance and service to their chosen equipment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Identify and classify the major components and subsystems within a specific type of mobile or heavy equipment.

Name
Analyze the functionality and interdependencies of different systems within the machinery.

Name
Demonstrate proficiency in interpreting technical manuals, schematics, and diagrams related to machine-specific systems.

Name
Apply critical thinking and problem-solving skills to diagnose and troubleshoot issues within machine-specific systems.

Name
Evaluate the performance and efficiency of machine-specific systems and propose optimization strategies.

Name
Demonstrate proficiency in the use of specialized tools and equipment required for servicing machine-specific systems.

Name
Perform routine maintenance tasks, such as lubrication, fluid checks, and filter replacements, on machine-specific systems efficiently.

Name
Execute proper procedures for dismantling, repairing, and reassembling components within machine-specific systems.

Name
Apply correct techniques for calibrating and adjusting settings to ensure the precise functioning of systems specific to particular machine or type of machine.

Name
Demonstrate a commitment to safety protocols and best practices while working with machine-specific systems.

Name
Exhibit professionalism and effective communication skills when collaborating with peers and supervisors in a team environment.

Name
Demonstrates the operation, inspection, proper care and maintenance of the various equipment required for conforming with federal and state OSHA and MSHA regulations.

EQP135 - Mobile Equipment Diagnostics Test

Overview

Department
Applied Technologies

Course Description
This course covers the fundamentals of performing diagnostic tests utilizing computer systems on mobile equipment. Students will utilize CAN Bus information to make diagnostic decisions and perform any additional necessary diagnostic tests to determine origin of a failure.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate a working knowledge of the different systems used on computer- controlled machinery. Ex. LIN, CAN

Name
Articulate the logic of wake-up and timed shut-down circuits.

Objective
Articulate the logic of wakeup and timed shutdown circuits

Name
Explain importance of twisted and shielded wire systems.

Objective
Explain importance of twisted and shielded wire systems

Name
Demonstrate a working knowledge ofthe codes to identify errors within the different systems.Demonstrate understanding of the logic and theory of how a processor generates a code. Inputs vs. Outputs.

Objective
Demonstrate a working knowledge ofthe codes to identify errors within the different systemsDemonstrate understanding of the logic and theory of how a processor generates a code Inputs vs Outputs

Name
Define remote monitoring systems and their capabilities.

Objective
Define remote monitoring systems and their capabilities

Name
Define the ability to remotely diagnose electrical/electronic issues.

Objective
Define the ability to remotely diagnose electricalelectronic issues

Name
Identify the dangers of working with high voltage and stored energy in hybrid systems.

Objective
Identify the dangers of working with high voltage and stored energy in hybrid systems

Name
Describe complaint prior to beginning diagnostic tests.

Objective
Describe complaint prior to beginning diagnostic tests

Name
Demonstrate the ability to perform a diagnostic procedurewith emphasis on arriving at the root cause of failure.

Objective
Demonstrate the ability to perform a diagnostic procedurewith emphasis on arriving at the root cause of failure

Name
Demonstrate ability to reason about a specific malfunction in the system.

Objective
Demonstrate ability to reason about a specific malfunction in the system

Name
Demonstrate the use of proper tools, including flex probes and back probing.

Objective
Demonstrate the use of proper tools including flex probes and back probing

Name
Demonstrate the use of all test equipment including digital volt ohm meter (D.V.O.M.), lap top computers, and other system specific troubleshooting devices.

Objective
Demonstrate the use of all test equipment including digital volt ohm meter DVOM lap top computers and other system specific troubleshooting devices

Name
Demonstrate the ability to use schematic diagrams and follow troubleshooting flow charts in selected technical manuals.

Objective
Demonstrate the ability to use schematic diagrams and follow troubleshooting flow charts in selected technical manuals

Name
Utilize an interactive equipment diagnostic program.

Objective
Utilize an interactive equipment diagnostic program

Name
Demonstrate technical write-up competency

Objective
Demonstrate technical writeup competency

Name
Perform logic and critical thinking in identifying, evaluating, and diagnosing customer complaint.

Objective
Perform logic and critical thinking in identifying evaluating and diagnosing customer complaint

Name
Solve the root cause of failure Correction procedure

Objective
Solve the root cause of failure Correction procedure

EQP139 - Internship III

Overview

Department
Applied Technologies

Course Description
This course emphasizes the student's ability to contribute independently to dealership or service operations. Students will assume more responsibility in performing service and repair tasks, diagnosing problems, and supporting workflow efficiency.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
2

Other Hours

Other Hours
Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Perform intermediate-level technical tasks with minimal supervision.

Name
Apply diagnostic and troubleshooting skills to identify system problems.

Name
Demonstrate effective time management in balancing multiple work assignments.

Name
Exhibit professionalism in customer and team interactions.

Requirements

Simple Requirements

Prerequisite: A minimum grade of "C" in EQP 129

Type
Prerequisite

Complete ALL of the following Courses:
- EQP129 - Internship II

EQP140 - Heavy Equipment Operations III

Overview

Department
Applied Technologies

Course Description
This course expands into excavation math, civil drawing interpretation, soils, and sitework management. Emphasis is on proper cut and fill calculation, drainage management, and practical applications using backhoes and loaders.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Apply basic excavation math to field scenarios.

Name
Interpret civil and construction drawings for excavation work.

Name
Evaluate soil conditions and adjust operations appropriately.

Name
Execute grading, foundation layout, and basic trenching.

Name
Operate equipment according to standard practices.

Requirements

Simple Requirements

A minimum grade of 'C' in Course EQP130

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- EQP130 - Heavy Equipment Operations II

EQP149 - Internship IV

Overview

Department
Applied Technologies

Course Description
The capstone internship experience allows students to demonstrate full integration of technical knowledge, diagnostic ability, and workplace professionalism. Students are expected to perform at a near-entry-level technician capacity, applying advanced skills with limited supervision.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
2

Other Hours

Other Hours
Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Perform advanced service and repair tasks with accuracy and efficiency.

Name
Apply critical thinking and diagnostic strategies to resolve complex issues.

Name
Demonstrate readiness for entry-level employment in the heavy equipment/ automotive industry.

Name
Exhibit professional behaviors that align with employer expectations, including safety, communication, and teamwork.

Requirements

Simple Requirements

Prerequisite: A minimum grade of "C" in EQP 139

Type
Prerequisite

Complete ALL of the following Courses:
- EQP139 - Internship III

EQP150 - Heavy Equipment Operations IV

Overview

Department
Applied Technologies

Course Description
Focuses on fine grading and heavy machinery operation using dozers and excavators. Students complete advanced site preparation tasks involving slope grading, foundation layout, pipe laying preparation, and surface water control.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
120

Course Learning Outcomes

Learning Outcomes

Name
Perform slope grading and fine grading operations.

Name
Operate equipment safely and efficiently.

Name
Lay out foundations and trenching based on site drawings.

Name
Control groundwater and manage drainage on active sites.

Name
Maintain machine performance through preventive maintenance.

Requirements

Simple Requirements

A minimum grade of 'C' in Course EQP140

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- EQP140 - Heavy Equipment Operations III

EQP160 - Heavy Equipment Operations V

Overview

Department
Applied Technologies

Course Description
Introduces specialized equipment operation, including rough terrain forklifts, conventional forklifts, and compaction equipment. Students develop material handling, compaction, and logistics skills essential for large-scale site operations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
120

Course Learning Outcomes

Learning Outcomes

Name
Operate equipment for material movement.

Name
Use compaction equipment to achieve project specifications.

Name
Perform load lifting, transport, and placement activities.

Name
Conduct safety inspections and field maintenance of specialty equipment.

Name
Apply efficiency principles to site material handling operations.

Requirements

Simple Requirements

A minimum grade of 'C' in Course EQP150

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- EQP150 - Heavy Equipment Operations IV

EQP170 - Heavy Equipment Operations VI

Overview

Department
Applied Technologies

Course Description
This course in advanced equipment operations focuses on scrapers, dump trucks, and motor graders. Students complete complex site development simulations, emphasizing final grading, material hauling, and project management skills.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
135

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
120

Course Learning Outcomes

Learning Outcomes

Name
Operate equipment for mass material movement.

Name
Execute fine grading tasks using motor graders.

Name
Manage onsite logistics for earthmoving and haul operations.

Name
•Troubleshoot advanced equipment performance issues in the field.

Name
Lead and collaborate on full site development projects under industry standards.

Requirements

Simple Requirements

A minimum grade of 'C' in Course EQP160

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- EQP160 - Heavy Equipment Operations V

EQP180 - Fluid Power

Overview

Department
Applied Technologies

Course Description
This course covers hydraulic and hydrostatic systems, to include theory, identification, and operation of the following subcomponents: Pumps, Motors, Control Valves, Cylinders, and Accumulators. Students will perform basic hydraulic system maintenance and repair.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Describe the function of a reservoir, pump, filters, relief valve, control valve, and cylinder in relation to each other

Objective
Identify 33 control valve function', Identify Cylinder function', Identify Dump truck function', Identify Hydraulic applications', Identify Hydraulic pump function', Identify Hydraulic pump names', Identify Location of components', Identify Pressure relief valve function', Identify PTO abbreviation', Identify PTO function', Identify Reservoir function', Identify Return filter function', Describe Required power for the bed

Name
Identify Basic Terms in Hydraulics

Objective
Calculate formula for volume flow', Calculate Pressure formula', Identify formula for volume flow', Identify hydraulic measurable characteristics with associated units', Identify Pressure formula', Identify structure of a hydraulic diagram', Identify what pressure is', Identify what the basics of hydraulics are', Identify what volume is

Name
Demonstrate the ability to identify applications and the benefits of those applications on equipment

Objective
Identify Application of hydraulics', Identify Operating principles of hydraulics', Describe Relationship between the stroke the area and the force', Describe The need for the hydraulic system', Describe Transfer of force and movement

Name
Exhibit knowledge of hydraulic symbol identification through demonstration

Objective
Identify use of symbols in hydraulics', Identify which symbols are used for conditioning', Identify which symbols for actuators', Identify which symbols for controls', Identify which symbols for sources', Describe symbols in a hydraulic diagram

Name
Apply Pascal's Law

Objective
Apply Pascals Law', Identify Principle of hydraulics', Describe Double cylinder interaction', Describe Relationship between force and pressure', Describe Relationship between force pressure and surface area', Describe Relationship between parameters in double cylinder formula', Describe Relationship between parameters in single cylinder formula', Describe Relationship between surface area and pressure

Name
Explain the different characteristics between various types of pumps and their components

Objective
Identify what a gear pump is', Identify what a piston or plunger pump is', Identify what a vane pump is', Identify what the displacement principle is', Identify what types of pumps there are

Name
Compare and contrast types and uses of different hydraulic lines, hoses, and couplings

Objective
Identify about assembly and sealing', Identify about hydraulic couplings', Identify hydraulic hoses', Identify hydraulic lines', Identify preventing leaks in hoses and pipes', Identify types of hydraulic lines', Identify when to use a pipe or a hose

Name
Explain the different characteristics between the various motors; exhibit the ability to follow the oil flow through each motor while using a hydraulic function

Objective
Identify applications of a hydro motor', Identify characteristics of a gear motor', Identify characteristics of a plunger motor', Identify characteristics of a vane motor', Identify construction of a plunger motor', Identify operation of a gear motor', Identify operation of a hydro motor', Identify operation of a vane motor

Name
Differentiate single acting and dual acting cylinders

Objective
Identify application of a hydraulic cylinder', Identify construction of a hydraulic cylinder', Identify hydraulic cylinder characteristics', Identify operation of a hydraulic cylinder', Identify types of hydraulic cylinders

Name
Exhibit knowledge of the uses and functions of an arrangement of control valves

Objective
Identify application of hydraulic control valves', Identify construction of check valve', Identify construction of spool valve', Identify meaning of port labeling on control valve', Identify operation of bistable valves', Identify operation of hydraulic control valves', Identify operation of monostable valves

Name
Demonstrate application of hydraulic proportional control valves

Objective
Identify application of hydraulic proportional control valve', Identify construction of a hydraulic proportional control valve', Identify function of a hydraulic proportional control valve', Identify operation of a hydraulic proportional control valve

Name
Demonstrate application of hydraulic pressure regulator valve

Objective
Identify application of a hydraulic pressure regulator valve', Identify construction of a hydraulic pressure regulator valve', Identify construction of an adjustable hydraulic pressure regulator valve', Identify operation of a hydraulic pressure regulator valve', Identify what a nonadjustable hydraulic regulator valve is

EQP206 - Powertrain Systems

Overview

Department
Applied Technologies

Course Description
This course contains competencies that can be used in their entirety within a single course or as needed for courses designed by a Kansas institution as Institutional Flexible Credit. Through a variety of learning and assessment activities students can: determine the general drive train diagnosis procedures; explore the fundamentals of clutch operation; explore the fundamentals of clutch removal, inspection and repair; determine the powerflow of the manual transmission and transaxle; perform fundamental manual transmission and transaxle inspection and repair according to service specifications; perform fundamental differential inspection and repair according to service specifications; perform fundamental diagnosis, inspection and replacement of drive axle shafts and supporting components; perform fundamental diagnosis, inspection, adjustment and repair of four- and all-wheel drive components; diagnose drive train issues; diagnose clutch concerns; perform the removal, inspection and/or repair of the clutch and its components; conduct a transmission and transaxle inspection and repair according to service specifications; conduct a differential inspection and repair according to service specifications; conduct the diagnosis, inspection and replacement of drive axle shafts and supporting components; conduct the diagnosis, inspection, adjustment and repair of four- and all-wheel drive components.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate knowledge of basic power train components and how those components, as a whole, relate to one another. Demonstrate by following a power flow chart from flywheel to ground.

Name
Recognize hybrid and electric drive systems and/or machines as they relate to safety concerns.

Name
Demonstrate understanding of theory of hybrid and electric drive component technology.

Name
Demonstrate knowledge by identifying the various types of gears using a matching test.

Name
Explain the benefit of one type of gear versus other types of gears using factors such as cost, strength, quietness, bulkiness, and capability of ratios.

Name
Identify types of bearings through matching tests.

Name
Demonstrate understanding of various types of bearings and proper adjustment procedures.

Name
Identify components of a torque converter and describe the relationship of those components to one another.

Name
Describe the operation of a given torque converter and various stages of operation.

Name
Use OEM manuals/service information to test a torque converter unit and determine if operation is within specifications.

Name
Exhibit your understanding of sliding gear, collar shift, and syncromesh transmissions by identifying components, explaining operation, and demonstrating power flow through all gear sets.

Name
Identify shifting control components and explain their operation.

Name
Demonstrate ability to perform adjustments to transmissions as instructed in the OEM service manual/information.

Name
Demonstrate your understanding of the operation of powershift transmissions by explaining which clutches and/or brakes are engaged, and which planetary gear sets are being used during a specific gear selection.

Name
Explain the differences, advantages and disadvantages of planetary and countershaft transmissions.

Name
Use service information to test and/or troubleshoot a powershift transmission and verify it is or is not within OEM specifications.

Name
Demonstrate ability to set and measure preload, endplay and backlash for a specific component using OEM manuals/service information.

Name
Identify all components in a single and multiple disc and plate-type clutch, including flywheel, pilot and release bearings, disc and pressure plate parts, and power train input shaft. Also, explain differences and benefits of solid and button-type clutches.

Name
Demonstrate knowledge and operation of single and multiple-disc clutches by explaining the relationship of the clutch components to each other and their roles in the transfer of power.

Name
Describe the relationship of the number of discs, types of discs (wet or dry), and type of clutch material to the transfer of torque and horsepower to the ground.

Name
Demonstrate understanding of overrunning clutches by identifying the different types of clutches, their operation and various applications.

Name
Explain the operation of magnetic clutches and name various applications.

Name
Exhibit knowledge of electronic control systems by identifying components used on a specific unit.

Name
Demonstrate understanding of a specific unit's operation by explaining the functions of all components and their relationships to one another.

Name
Demonstrate ability to follow flow and troubleshooting charts to correctly identify the operation of a specific unit's system and troubleshooting methods used by the OEM.

EQP207 - Powertrain Systems II

Overview

Department
Applied Technologies

Course Description
This course provides an in-depth study of heavy equipment power train systems with emphasis on driveshaft construction, braking theory, maintenance, and troubleshooting. Students will examine the design, function, and operation of driveshafts, universal joints, and related components, along with the fundamental principles of hydraulic and pneumatic braking systems. Instruction highlights industry-standard maintenance practices that extend component life and ensure safe equipment operation. Students will also learn to interpret power train schematics and flow diagrams, applying these skills to diagnose system malfunctions and conduct failure analysis. Through hands-on training, students will develop the ability to perform operational checks, identify root causes of failures, and recommend corrective procedures using manufacturer service information and technical manuals .

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate understanding of theory and principals of hydrostatic systems by explaining, in writing, how a basic hydrostatic system function.

Name
Exhibit knowledge of hydrostatic transmission operation by explaining the flow of fluids through the charge circuit, pump, motor, control, and loop circuits.

Name
Explain the differences between fixed and variable pumps and motors, and the effects of their various combinations.

Name
Explain various adjustment procedures for straight travel.

Name
Demonstrate knowledge of driveshafts by recognizing components, realizing the effects of driveline angle, and studying why driveline failures occur.

Name
Exhibit understanding of basic differential operation by identifying the components and explaining how pinion, ring and bevel gears operate in relationship to each other.

Name
Given a specific component and proper manuals/information, perform all adjustments on a differential with a new ring and pinion, and also perform all adjustments with original ring and pinion but with new bearings.

Name
Identify the most common root causes of failure with differentials.

Name
Exhibit knowledge of final drives by identifying the different types, and the components that make up final drives.

Name
Perform adjustments according to OEM standards.

Name
Describe fundamental theory, adjustments and repair of hydraulic and pneumatic braking systems used primarily in mobile construction equipment.

Name
Demonstrate knowledge of basic brake components, both wet internal and dry external.

Name
Explain and sketch hydraulic and pneumatic brake systems, internal and external.

Name
Demonstrate procedures to follow in keeping a work area, and the parts worked with, clean.

Name
Describe proper flushing procedures, including when components are replaced.

Name
Describe scheduled oil sampling and cite several reasons why it is necessary.

Name
Demonstrate ability to use schematics and flow diagrams to follow both control circuits and power flow of a given piece of equipment using the corresponding OEM manual/service information.

Name
Describe steps in solving a problem related to a power train system, decisions required to perform work and analysis as to why problem occurred and how it could have been prevented.

Name
Describe common reasons for parts failure and be able to discuss symptoms of wear, corrosion, etc., of actual parts.

Name
Demonstrate ability to follow reference information, test, and determine if unit is within specifications for a hydraulic/hydrostatic trainer or equipment with a hydrostatic drive using service manuals/information/software; demonstrate ability to follow a diagnostic troubleshooting chart for a specific system.

Name
Demonstrate technical write-up competency

Name
Demonstrate logic and critical thinking in identifying, evaluating and diagnosing customer complaint.

Justification
Identify the root cause of failure ,Correction procedure ,Machine inspection

Requirements

Simple Requirements

Pre-Requisite: A minimum grade of C in EQP206

Type
Prerequisite

Complete ALL of the following Courses:
- EQP206 - Powertrain Systems

EQP210 - Dealership Service Operations

Overview

Department
Applied Technologies

Course Description
In this course, students will learn the operations at dealership and service centers. Students will understand the importance of different departments and how the interrelate to performing quality repairs in a timely fashion. Students employed in the industry will learn about the history and core values of their employer. This course will also cover work ethics.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Analyze the operations at dealership and service centers to identify key processes and procedures

Name
Evaluate the significance of different departments within dealership and service centers and their roles in delivering timely and quality repairs.

Name
Explain the historical development and core values of various employers within the industry.

Name
Value the importance of teamwork and cooperation in achieving operational efficiency and customer satisfaction within dealership and service centers

Name
Demonstrate a commitment to ethical conduct and professionalism in all aspects of work.

Name
Appreciate the significance of continuous learning and staying updated with technological advancements.

Name
Desire to develop a sense of responsibility towards delivering quality service and maintaining customer trust and loyalty.

Name
Display personal growth and development in relation to work ethics and professional integrity.

Name
Demonstrate strategies for resolving service operation challenges, including scheduling conflicts, parts shortages, and customer disputes.

EQP220 - Advanced Fluid Power

Overview

Department
Applied Technologies

Course Description
This course provides an advanced level of understanding of hydraulic systems and their applications, components, and service. Students will perform necessary advanced level repairs in this course.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate a comprehensive understanding of hydraulic systems by accurately identifying various applications, classifications, and components, including closed and open systems, power packs, and the fundamental basis of hydraulic systems

Objective
Identify applications of hydraulic systems', Identify classification of hydraulic systems', Identify what a closed system is', Identify what an open system is', Identify what a power pack is', Identify what the basis of a hydraulic system is

Name
Recognize and differentiate between various types of hydraulic diagrams, including Process Flow Diagrams (PFDs) and Piping and Instrumentation Diagrams (P&IDs), as well as understanding the purpose and appropriate application of each type of diagram within hydraulic systems.

Objective
Identify what a hydraulic diagram is', Identify what a PFD diagram is', Identify what a PID diagram is', Identify what types of diagrams there are', Identify when to use which type of diagram

Name
Demonstrate a proficient understanding of hydraulic fluids by accurately identifying their functions, various types, additives, viscosity properties, applications, and essential characteristics within hydraulic systems.

Objective
Identify function of a hydraulic fluid', Identify the different types of hydraulic fluid', Identify what additives are', Identify what the viscosity of a hydraulic fluid is', Identify which applications a hydraulic fluid has', Identify which characteristics a hydraulic fluid has

Name
Articulate a thorough understanding of hydraulic control of fluid flow by proficiently identifying the function of specific control valves, elucidating the general function of control valves, and accurately describing control valve symbols used in hydraulic systems.

Activity
.

Objective
Identify 33 control valve function', Identify Function of control valves in general', Describe Control valves symbols

Name
Desire to develop an appreciation for the diverse applications and classifications of hydraulic systems, recognizing the significance of closed and open systems, power packs, and the foundational principles underlying hydraulic systems.

Objective
Identify how an accumulator works', Identify the components of an accumulator reservoir', Identify the function of an accumulator', Identify the function of a reservoir

Name
Demonstrate proficiency in recognizing and comprehending various aspects of hydraulic fluid conditioning

Objective
Identify construction of the oil filter for a hydraulic liquid', Identify cooling and heating a hydraulic liquid', Identify how to remove dirt particles from hydraulic liquid', Identify how to remove water from a hydraulic liquid', Identify which contamination indicator of a hydraulic liquid', Identify why hydraulic liquid is conditioned

Name
Communicate the importance and application of measuring equipment within hydraulic systems, recognizing the operational significance of flow meters and pressure gauges, and understanding the critical role of measuring equipment in maintaining the functionality and efficiency of hydraulic systems

Objective
Identify application of measuring equipment for hydraulic systems', Identify operation of flow meter in hydraulic systems', Identify operation of pressure gauge in hydraulic systems', Identify use of measuring equipment for hydraulic systems

Name
Demonstrate a comprehensive understanding of cavitation by accurately identifying its causes, the resulting damages, occurrences, and effective preventive measures, including strategies to prevent both cavitation and flashing in hydraulic systems

Objective
Identify cause of cavitation', Identify damage resulting from cavitation', Identify occurrence of cavitation', Identify preventing cavitation', Identify preventing flashing

Requirements

Simple Requirements

A minimum grade of 'C' in Course EQP180

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- EQP180 - Fluid Power

EQP225 - Control Panels and Data Links

Overview

Department
Applied Technologies

Course Description
This course provides a comprehensive overview of generator control panels and data link systems, focusing on both current and legacy models. Practical skills include I/O wiring, engine protective verification, and advanced programming techniques for multiple EMCP systems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Identify control panel literature sources for current and legacy generator control panels

Name
State the major differentiating features of current EMCP products

Name
Define the features of the ETR and ETS Systems

Name
Explain I/O wiring and active states

Name
Perform engine protective verification with EMPC II+

Name
Perform programming and file transfers with mulitple EMCPs

Name
Perform I/O programming

EQP230 - Automatic Transfer Switches

Overview

Department
Applied Technologies

Course Description
In this course, students will explore the function and operation of automatic transfer switches (ATS) within generator systems. Topics include the various types of ATS, control circuitry, and programming options, as well as open and closed transition modes. Hands-on exercises cover functional testing, troubleshooting, and maintenance, equipping students to ensure reliable power transfer in emergency situations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Identify the purpose and types of automatic transfer switches (ATS) in generator systems

Name
Explain the operational principles of ATS under normal and emergency power conditions

Name
Describe the sequence of operation for open and closed transition ATS

Name
Interpret wiring diagrams and technical documentation for ATS configurations

Name
Perform functional tests and troubleshooting procedures for ATS to verify proper operation

Name
Explain ATS control circuitry and programming options for different load scenarios

Name
Execute safety protocols and lockout/tagout procedures when servicing ATS

Name
Conduct maintenance checks on key ATS components, including contractors, relays, and control modules

EQP235 - Voltage Regulation

Overview

Department
Applied Technologies

Course Description
This course covers the principles and mechanisms of voltage regulation in commercial generators. Students will examine analog and digital voltage regulators, learn to perform voltage adjustments, and troubleshoot common regulation issues. Emphasis is placed on understanding AVR systems, conducting routine maintenance, and applying safety measures for high-voltage work environments.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Explain the principles of voltage regulation in generator systems and its importance for load stability

Name
Identify the components and circuitry involved in voltage regulation, including AVR (Automatic Voltage Regulator) and sensing systems

Name
Describe the operation of both analog and digital voltage regulators in commercial generators

Name
Interpret voltage regulation schematics and documentation for troubleshooting and setup

Name
Perform voltage adjustment and calibration to maintain generator output within specified parameters

Name
Diagnose and troubleshoot common voltage regulation issues, such as instability and over/under -voltage conditions

Name
Conduct maintenance procedures on voltage regulation systems, including component testing and replacement

Name
Apply safety measures specific to high -voltage systems when working on voltage regulation components

EQP240 - Generators & EPG Calculations

Overview

Department
Applied Technologies

Course Description
Students in this course will learn the fundamentals of electrical power generation (EPG) and the components of large commercial generators. Core topics include power calculations for sizing, efficiency assessment, and load management. Students will also gain practical skills in interpreting generator specifications, performing maintenance, and troubleshooting to ensure optimal power generation and fuel efficiency.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Understand Generator Components: Students will be able to identify and describe the major components of generator systems and their functions.

Name
Perform Routine Maintenance: Students will be proficient in conducting routine maintenance tasks on generators, including oil changes, filter replacements, and inspections.

Name
Diagnose Common Issues: Students will develop the skills to diagnose and troubleshoot common generator problems, such as electrical faults and mechanical failures.

Name
Execute Repairs: Students will be able to perform repairs on generator systems, including parts replacement and adjustments, to restore proper functionality.

Name
Utilize Diagnostic Tools: Students will gain hands-on experience using diagnostic tools and equipment to assess the performance and health of generators.

Name
Understand EPG Calculations: Students will be able to apply principles of energy production grid (EPG) calculations to optimize energy distribution and efficiency.

Name
Read and Interpret Technical Manuals: Students will be skilled in reading and interpreting technical manuals and schematics related to generator systems.

Name
Implement Safety Protocols: Students will be familiar with and able to implement safety protocols and best practices for working with generators and electrical systems.

Name
Develop Maintenance Schedules: Students will be capable of creating and managing effective maintenance schedules to ensure long-term reliability of generator systems.

Name
Analyze Performance Data: Students will be able to analyze performance data and make data-driven decisions to improve generator operation and efficiency

Requirements

Simple Requirements

A minimum grade of 'C' in Course TAS124

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- TAS124 - Electrical I

A minimum grade of 'C' in Course EQP121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- EQP121 - Diesel Engine Repair

ESP150 - Esports Event Management and Production

Overview

Department
Professional Studies

Course Description
Esports, the competitive video gaming industry, has evolved into a global phenomenon with a booming economy, offering unparalleled opportunities for entrepreneurs, marketers, and business enthusiasts. In this course, we will delve into the fundamental aspects of the Esports ecosystem, equipping you with the knowledge and skills to navigate this dynamic and rapidly evolving field. By the end of this course, you will have a solid foundation in Esports business, enabling you to make informed decisions and explore exciting career opportunities in this rapidly growing industry. Whether you aspire to manage an Esports team, work in marketing and sponsorship, or simply want to understand the business side of gaming, this course is your gateway to the dynamic world of Esports Business.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Understanding Esports: Gain a comprehensive understanding of what Esports is its history, growth, and its place in the broader gaming and entertainment industry.

Name
Esports Ecosystem: Explore the multifaceted Esports ecosystem, including professional teams, players, tournaments, and the key stakeholders driving its growth.

Name
Business Models: Analyze the various business models prevalent in Esports, including sponsorship, media rights, merchandise, and event management.

Name
Monetization Strategies: Investigate how Esports organizations and content creators monetize their efforts through streaming, content creation, and partnerships.

Name
Marketing and Branding: Learn about the unique marketing and branding strategies employed in Esports, and how they differ from traditional sports and entertainment.

Name
Esports Management: Examine the intricacies of managing an Esports organization, including player contracts, talent acquisition, and team dynamics.

Name
Esports Events and Tournaments: Dive into the world of Esports events and tournaments, understanding their planning, execution, and their role in building fan engagement.

Name
Esports Technology: Explore the technology behind Esports, including game development, shoutcasting, and virtual reality, and its impact on the industry.

Name
Esports Analytics: Discover the significance of data and analytics in Esports, and how they are used to enhance performance and fan engagement.

Name
Emerging Trends: Stay updated on the latest trends and developments in the Esports industry, including the influence of mobile gaming, blockchain technology, and emerging markets.

Name
Ethical and Legal Considerations: Examine the ethical and legal challenges unique to Esports, such as player well-being, match-fixing, and intellectual property rights.

Name
Career Opportunities: Explore potential career paths in the Esports industry, including roles in management, marketing, event production, and content creation.

FOL101 - Spanish I

Overview

Department
General Education

Course Description
This course is designed to help the student increase their knowledge of Spanish vocabulary, grammar, elementary syntax and composition, basic reading, and pronunciation with practice in everyday conversation.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
75

FOL110 - Spanish II

Overview

Department
General Education

Course Description
This course is designed to help the student increase their knowledge of Spanish vocabulary, grammar, elementary and intermediate syntax and composition, basic reading, and pronunciation with practice in everyday conversation.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
75

Requirements

Simple Requirements

A minimum grade of 'C' in Course FOL101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- FOL101 - Spanish I

FOL120 - Essential Spanish for the Workplace

Overview

Department
General Education

Course Description
This course provides immediate access to functional Spanish language skills and cultural competence for non-Spanish speaking students enrolled in a career-specific degree, diploma, or certificate program. It is a practical step toward communication in settings where comprehension is crucial. Cultural awareness will be addressed, as well. The vocabulary presented will be tailored to the specific needs of the target occupation. No prior knowledge of Spanish is necessary.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate comprehension of language consisting of simple vocabulary and structures in conversation with peers and familiar adults

Name
Initiate and respond to simple Spanish statements and manage simple conversation primarily through learned utterances, within the vocabulary, structure, and phonology appropriate to the situations and functions of this level

Name
Use appropriate strategies to initiate and engage in simple conversations with more fluent or native speakers of the same age group, familiar adults, and providers of common public services

Name
Interpret simple connected material for informative or job-related purposes

Name
Demonstrate acceptable oral and written control of basic constructions and will express present and future ideas using content words and expressions of time

Name
Compare and contrast cultures different from their own, and will learn how to effectively utilize different critical lenses to examine the ethics and values of non-U.S. cultures

Name
Demonstrate how to greet and compliment employees

Name
Demonstrate how to express numbers, measurements, and fractions

Name
Demonstrate how to assist with employment and scheduling issues

Name
Demonstrate how to control safety and medical situations

Name
Demonstrate how to issue commands for general and specific construction tasks.

FSI101 - King Air Maintenance Practical

Overview

Department
Aviation

Course Description
This course is designed to provide Maintenance Technicians hands on training with the King Air 90 Series aircraft as defined by the applicable Practical Task Assessment Log (PTAL).

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2015

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

GEO101 - Principles of Geography

Overview

Department
General Education

Course Description
This course is designed to provide the student with an introduction of how geography influences social, cultural, economic, political, and environmental systems. Students will gain an understanding of how modern technology and global human ecology shape our knowledge of land, environment, and culture.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Define basic geographic concepts

Objective
List three analytical methods used by geographers to analyze geographic information', Define Geography as a discipline', Gain a basic understanding of geographical concepts and fields', Describe the concepts of distance decay and diffusion and how they apply to the study of geography

Name
Interpret geographic phenomena with maps and spatial data

Objective
Understand and utilize various types of maps', Understand the concept of geological time', Define and describe earth materials tectonic forces continental drifts', Define and describe weather and climate variations', Understand the human impact on the environment

Name
Understand the process of regionalization

Objective
Demonstrate a basic understanding of economic geography and its influence', Describe the geography of natural resources', Recognize and discuss concepts of urban geography', Apply regional concepts to gain a broader understanding of local physical geography', Develop an awareness of the regional culturalenvironmental geography', Gain an understanding of the regional economic and natural resource influeces

Name
Analyze human-environment interaction

Objective
Gain a basic understanding of demographic principles and theories', Demonstrate an understanding of culture and subcultures', Evaluate the influences of language religion ethnicity and diversity', Develop an awareness of the concepts of spatial behavior and political geography

Name
Evaluate global interconnectedness

Objective
List economic activities that form part of the global economy', Demonstrate a basic understanding of Earths major population clusters', Summarize the relationship between birth rate death rate and population growth for each stage of demographic transition', Compare the effects of migration on population and describe typical origins and destinations of migrants', Explain why national languages are important in modern societies', Describe some of the factors that help to unify a country and those factors that can break countries apart', Summarize the location and types of conflict in the world today', Identify factors used to measure human development

GEO11 - Geology

Overview

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2009

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
0

HEM105 - Sanitation and Safety

Overview

Department
Hospitality & Culinary Arts

Course Description
In this course, students will study the basic principles of bacteriology, foodborne illness, sanitation, workplace safety, personal hygiene, food security, health regulations, and inspections. The course emphasizes the importance of sanitary equipment and facilities, and pest control. Students must complete the National Restaurant Association Educational Foundation certification exam to pass this course.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
Understand and identify the principles related to major food-borne pathogens, their sources, resulting illnesses, and related symptoms.

Name
Recognize the spoilage factors related to perishable foodservice products.

Name
Explain the principles relating to the flow of food within food service operations that ensure safe receiving, storage, preparation, cooking, cooling, reheating and service of food and beverages.

Name
Apply principles of workplace safety and food security to assure the safety of customers and employees in the food service workplace.

Name
Recognize the importance of sanitation in relation to food service facilities and equipment and identify related cleaning and sanitizing processes that ensure safe service of food.

Name
Identify laws, rules, and systematic processes that are designed to ensure food safety within food service environments.

Name
Successfully complete the National Restaurant Association Educational Foundation Certification (Manager) Exam

HEM110 - Hospitality Math

Overview

Department
Hospitality & Culinary Arts

Course Description
Reviews the fundamentals of mathematics, including calculating percent, ratios, decimals, fractions, weights and measures, and introductory algebra concepts. Emphasizes the application of mathematical fundamentals to a variety of culinary and hospitality uses. Provides instruction in equivalencies, recipe costing and conversion, calculating food and labor cost percentages, baker's percentages, yield conversions, and selling prices.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate the ability to understand and perform fundamental mathematical operations.

Name
Calculate product yield and true cost of hospitality service items related to purchased amounts (AP) and edible portion (EP), and recognize the relationship of yield when expressed as a percentage.

Name
Understand the importance of cost control in the operation of a hospitality-oriented business and accurately perform key cost control calculations.

Name
Understand how labor costs, cost of sales, inventory control and recipe / unit costs impact business financial statements.

HEM115 - Introduction to the Hospitality Industry

Overview

Department
Hospitality & Culinary Arts

Course Description
In this course, students will gain knowledge and develop an appreciation of the multifaceted elements of hospitality management by exploring all aspects of the hospitality, tourism, and event management industries including hotels and lodging; food-service and restaurants; travel and tourism; transportation; meetings, conventions and expositions; leisure and recreation; and, special events. While the focus is on basic hospitality and management principles, this course also reflects the impact of current social, economic, technological, and political factors on operations in the field. Further, students are offered information on the array of careers available in the various segments of the hospitality industry.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Describe the relationship of human/social need for hospitality services.

Name
Define the goals of various hospitality elements and related products and services.

Name
Describe the service relationship in terms of psychological needs and social-psychological experiences.

Name
Define the basic role of business in the field of hospitality.

Name
Identify major challenges to the hospitality industry.

Name
Identify the state of the hospitality industry in the local area

Name
Describe opportunities for entry and advancement in the hospitality field.

Name
Identify key qualities, philosophies, or experiences associated with success in the field.

Name
Register with Career Services

Name
Utilize e-portfolio software to begin their portfolio development

Name
Participate in job shadowing experience

HEM120 - Hospitality Service Techniques

Overview

Department
Hospitality & Culinary Arts

Course Description
Defines and describes points of service in restaurant and banquet functions. Discusses sales techniques, cash handling standards, methods of customer satisfaction, and other topics related to the smooth operation of any restaurant or catered event. The course includes hands-on experience at breakfast, lunch, and dinner in a full-service restaurant. Emphasizes proper service procedures, cost control, and efficient work methods.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Summer 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Apply service skills in banquet operations.

Name
Demonstrate proficiencies related to restaurant set up.

Name
Demonstrate proficiencies related to restaurant service.

Name
Prepare and present various alcoholic and non-alcoholic beverages to HEM program/course service standards.

Name
Use the Point of Sale system to effectively process guest transactions.

Name
Operate, enter, and modify new or existing reservations within the reservation system to accommodate guest reservations.

Name
Apply the principles of cash management in a restaurant environment.

Name
Integrate food and beverage product knowledge to enhance guest experiences.

HEM125 - Food & Beverage Management Fundamentals

Overview

Department
Hospitality & Culinary Arts

Course Description
Principal analysis of directing a food and beverage operation, with the examination of food and beverage in restaurant operations. Students will engage in theory and practices of service fundamentals pertaining to food and beverage management.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Summer 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate the management skills required for the successful operation of a restaurant.

Name
Practice food service sanitation and nutrition standards and successfully pass the National Restaurant Association examinations.

Name
Explain the functions of a professional kitchen.

Name
Design and organize detailed and profitable restaurant menus.

Name
Integrate food service math skills into restaurant financial accounting and internal controls.

Name
Evaluate a food and beverage operation for compliance with specific hotel, restaurant, and gaming laws.

HEM130 - Introduction to Lodging Operations

Overview

Department
Hospitality & Culinary Arts

Course Description
The course provides students with an overview of the lodging industry and how its functions are organized and operated. Introduces each of the seven traditional disciplines: general management, hotel sales, financial control, room operations, food, and beverage operations, human resources, and physical plant maintenance. Emphasizes business ethics and effective communication.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Summer 2026

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
30

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Describe and compare the differences of service enterprises that deal with intangible vs. tangible products and how they must be managed and marketed.

Name
Define the roles for each of the seven traditional disciplines of the lodging industry including general management, hotel sales, financial control, room operations, food, and beverage operations, human resources, and physical plant maintenance

Name
Name and explain the different market segments that feed the lodging industry, and give examples of the different ways hotels can be owned and operated

Name
Assess options for organizing the relationships among the seven disciplines while successfully and efficiently fulfilling their functions.

Name
Demonstrate an understanding of the hospitality related industries of cruise lines, casinos, clubs, and conference centers and the challenges and opportunities comprised of each.

Name
Distinguish marketing from selling and compare the differences between advertising, public relations, and sales in the hotel industry.

HEM135 - Hospitality Human Resource Management

Overview

Department
Hospitality & Culinary Arts

Course Description
Introduces the functions of human resource management including, planning, communicating, recruiting, hiring, training, coaching, counseling, discipline, performance evaluation, termination, and labor relations. Emphasizes the legal issues related to managerial decisions, motivation and managing diversity.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Summer 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Explain the importance of managing diversity effectively in the workplace.

Name
State the importance of developing successful employees through appropriate job expectations, proper training, motivation, disciplining, effective coaching, and performance feedback.

Name
Apply tools for proper time management and why this skill is beneficial for personal and professional success.

Name
Describe the basic functions of personnel management (planning, organizing, directing and controlling/evaluating).

Name
Explain theories of management, motivation theories and leadership styles.

Name
Elaborate on the importance of effective communication and creating a positive work environment.

Name
Describe the need for technical, conceptual and human relations skills to be an effective supervisor/manager.

Name
Summarize legal aspects of management related to recruiting, hiring, discipline/termination, benefit administration and workplace safety.

HEM140 - Hospitality Financial Management

Overview

Department
Hospitality & Culinary Arts

Course Description
Provides an understanding of basic accounting concepts and procedures relevant to hotel and food service operations. Instructs students in recording transactions, understanding financial statements, managing inventory, payroll problems, occupancy issues and other special topics.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Understand essential accounting principals.

Name
Calculate and interpret fundamental cost elements associated with hospitality operations.

Name
Comprehend dynamics related to successful business operations.

HEM143 - Introduction to Food Business Management

Overview

Department
Hospitality & Culinary Arts

Course Description
This course explores and develops techniques and procedures of management as they relate to commercial and institutional food and beverage facilities. Students will study functions of management, marketing, menu development, effective cost controls in purchasing, labor and service techniques. Students will create a business plan for a unique restaurant concept including menu development.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
45

Lab Hours

Lab Hours Min:
60

HEM145 - Fundamentals of Excellent Customer Service

Overview

Department
Hospitality & Culinary Arts

Course Description
This course is designed to prepare students for the professional world of customer service. Students in this course receive a solid knowledge base in the areas of exemplary customer service practices, customer service in the internet age and, business communications.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2020

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Describe how to create favorable impressions with customers.

Name
Illustrate how to maintain a professional attitude even when handling difficult customers.

Name
Describe components of proper telephone etiquette.

Name
Detail the verbal and non-verbal processes of communication.

Name
Formulate steps to work effectively on a team.

Name
Explain the concepts of time management and healthy work habits.

Name
Strategize how to conduct customer service through electronic media such as email and the internet.

Name
Describe methods to anticipate, prevent, and solve problems and complaints posed by customers.

Name
Demonstrate an understanding of customers' needs and wants.

Name
Describe how a positive attitude can improve interactions with customers.

Name
Outline methods of service to diverse customers, including those with different cultural backgrounds.

Name
Describe customer service employment and career development opportunities.

HEM150 - Food and Beverage Operations

Overview

Department
Hospitality & Culinary Arts

Course Description
Focuses on the management of food and beverage operations in hospitality establishments. Includes restaurant, banquets, room service, beverage operations, menu planning, and stewarding. This course prepares students to take the ServSafe Food Handlers Certification.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Summer 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Compose a plan that illustrates the concept of field and farm to food and beverage through the variety of Kirkwood programs and offerings in the community including cause marketing and sustainability.

Name
Define food and beverage outlets within hospitality operations such as a la carte, banquets and room service.

Name
Describe casual/theme restaurants and how they are operated.

Name
Describe design, dcor, safety, and legal issues within the food and beverage environment.

Name
Describe the importance of the menu in a food and beverage operation.

Name
List and describe typical dining service staff positions and distinguish among the most common styles of dining room service.

Name
Summarize techniques and procedures for responsibly selling and serving alcoholic beverages.

Requirements

Simple Requirements

A minimum grade of 'C' in Course HEM105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM105 - Sanitation and Safety

A minimum grade of 'C' in Course HEM110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM110 - Hospitality Math

A minimum grade of 'C' in Course HEM115

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM115 - Introduction to the Hospitality Industry

A minimum grade of 'C' in Course HEM120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- HEM120 - Hospitality Service Techniques

A minimum grade of 'C' in Course HEM125

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM125 - Food & Beverage Management Fundamentals

A minimum grade of 'C' in Course HEM130

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM130 - Introduction to Lodging Operations

A minimum grade of 'C' in Course HEM135

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM135 - Hospitality Human Resource Management

A minimum grade of 'C' in Course HEM140

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM140 - Hospitality Financial Management

A minimum grade of 'C' in Course HEM145

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM145 - Fundamentals of Excellent Customer Service

HEM175 - Event Catering Strategies

Overview

Department
Hospitality & Culinary Arts

Course Description
This course serves as an introduction to planning catering events, responsibilities of the caterer and the event planner as well as techniques for identifying equipment and space needs to facilitate the event.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Summer 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Identify duties of a caterer.

Name
Explain the difference between on-site and off-site catering.

Name
Understand how to work with clients and meet their needs.

Name
Participate in an event walk-through and identify the components that are need for that event.

Name
Plan a menu for a catered event that meets the needs of the client.

Name
Explain the production of a catered event including but not limited to assembly, sanitation, holding, serving, transportation, storage, and clean up.

Name
Identify the different styles of service for catered events.

Name
Utilize and maintain commonly used catering equipment.

Name
Understand basic contracts, banquet event orders and forms used in a catered event and their legal implications.

Name
Identify and explain the basic service styles and laws regarding beverage service, alcoholic and non-alcoholic drinks.

Name
Identify the industry resources and their functions for a catered event including but not limited to rentals, venue management, floral design, and event production.

Requirements

Simple Requirements

A minimum grade of 'C' in Course HEM105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM105 - Sanitation and Safety

A minimum grade of 'C' in Course HEM110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM110 - Hospitality Math

A minimum grade of 'C' in Course HEM115

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM115 - Introduction to the Hospitality Industry

A minimum grade of 'C' in Course HEM120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM120 - Hospitality Service Techniques

A minimum grade of 'C' in Course HEM125

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM125 - Food & Beverage Management Fundamentals

A minimum grade of 'C' in Course HEM130

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM130 - Introduction to Lodging Operations

A minimum grade of 'C' in Course HEM135

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM135 - Hospitality Human Resource Management

A minimum grade of 'C' in Course HEM140

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM140 - Hospitality Financial Management

A minimum grade of 'C' in Course HEM145

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM145 - Fundamentals of Excellent Customer Service

HEM205 - Alcohol Beverage Law

Overview

Department
Hospitality & Culinary Arts

Course Description
This course will prepare students for bartending through the emphasis on ABC Laws, alcohol responsibilities, alcohol awareness, and bar setup. This course will prepare students to complete the ServSafe Alcohol certification.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Summer 2026

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
Relate local, state, and federal laws pertaining to the service and purchase of alcoholic beverages to include the Dram Shop Act and liquor law liability.

Name
Discuss the opening and closing procedures of a beverage operation.

Name
Identify levels of intoxication and methods to control consumption by guests.

Name
Demonstrate the ability to complete the ServSafe Alcohol certification

Requirements

Simple Requirements

A minimum grade of 'C' in Course HEM105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM105 - Sanitation and Safety

A minimum grade of 'C' in Course HEM115

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM115 - Introduction to the Hospitality Industry

HEM210 - Beer

Overview

Department
Hospitality & Culinary Arts

Course Description
This course offers an in-depth exploration of beer, focusing on its rich history, diverse styles, brewing methods, and service techniques. Students will gain a foundational understanding of beer production, from ingredients and brewing processes to the complexities of flavor profiles and pairings. The course covers major beer styles, including lagers, ales, stouts, and wheat beers, with an emphasis on understanding the nuances of each. Students will also learn best practices for beer service, handling, and storage, along with techniques for properly tasting and evaluating different beers. The course will introduce methods for home brewing, providing enthusiasts with the basic knowledge needed to begin crafting their own beer. As part of the curriculum, students will participate in beer tastings and analysis, gaining hands-on experience in distinguishing between flavors, aromas, and styles. Students must be at least 21 years of age to enroll in this course.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Identify and explain how the history of brewed beverages has impacted today's beverage and hospitality industry.

Name
Explain, compare, and differentiate the methods used in the production of different styles of beer.

Name
Identify, interpret, and implement ethical and safe alcohol handling, storage, sales, service, and control methods used in the hospitality and beverage industry.

Name
Define, utilize, and apply terms common to the beverage industry.

Name
Acquire through sensory analysis broad product knowledge which includes the physical attributes of sight, smell, taste, and mouth feel in order to be able to identify, compare, contrast, and evaluate product attributes and flaws

Name
Recognize, identity, and explain the attributes that contribute to consumer appreciation of brewed beverages served in the hospitality and beverage industry.

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

HEM215 - Food and Alcohol

Overview

Department
Hospitality & Culinary Arts

Course Description
In this course, students will explore the complexity of pairing food and different types of alcohol in today's culinary world. This course will explore the significance of food and drink by examining the fundamental concepts of history, tradition, and culture. Whether planning a large catered event, developing food and wine menus for restaurants or special events, understanding how to pair food with alcohol is an invaluable skill for hospitality professionals.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Summer 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Identify the origins of food and pairings with different types of alcohol

Name
Explain the principles of food with syles of alcohol

Name
List important concepts to consider when pairing food with different types of alcohol (wine, beer, spirits)

Name
Determine the critical elements to consider when pairing a alcohol and specific types of foods

Name
Discuss classic cultural food and alcohol combinations

Name
Identify the main scents/aromas found in wine, beer and spirits

Name
Discuss different cooking techniques and the impact on food and alcohol pairing

Name
Explain the principle of cooking with wine

Name
Break down a dish/menu and determine the dominant components and the effect on alcohol pairing

Requirements

Simple Requirements

A minimum grade of 'C' in Course HEM205

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM205 - Alcohol Beverage Law

HEM220 - Beverage Promotion

Overview

Department
Hospitality & Culinary Arts

Course Description
This course is designed to provide the practical knowledge needed to manage a restaurant bar or beverage operation.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Summer 2026

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
Describe the role of beverage promotion within restaurant and bar operations.

Name
Identify target markets and customer preferences relevant to beverage-focused concepts.

Name
Apply basic promotional strategies to support beer, wine, spirits, and food-and-beverage pairings.

Name
Analyze beverage promotions for alignment with brand identity, operational goals, and legal considerations.

Name
Evaluate the effectiveness of beverage promotion efforts using sales indicators and customer response

Requirements

Simple Requirements

A minimum grade of 'C' in Course HEM205

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM205 - Alcohol Beverage Law

HEM225 - Wine Fundamentals

Overview

Department
Hospitality & Culinary Arts

Course Description
Through tasting, the student will develop an appreciation of different types of wine, including varietal characteristics and other components, in order to understand the role of wine in professional food and beverage operations. Students must be 21 years of age.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Develop an appreciation of wines from around the world.

Name
Identify common wine varietal characteristics.

HEM230 - Mixology

Overview

Department
Hospitality & Culinary Arts

Course Description
Create a wide variety of classic and everyday mixed drinks in a standard bar setting. Learn about bar glassware and equipment identification, pouring techniques, common cocktail mixing methods, history of distilled spirits, origin and characteristics of various distilled spirit brands, distillation process, bartenders job description, and responsibilities, cost control, beverage pricing and responsible alcohol service. This course will prepare students to complete the ServSafe Alcohol certification. Students must be 21 years of age to enroll in this course.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate and explain the four components of a cocktail order.

Name
Compare and contrast the most commonly used bar glassware, including their application.

Name
Explain and demonstrate various methods of measuring, pouring, and mixing liquor accurately

Name
Demonstrate how to properly set-up and operate a bar.

Name
Identify and explain each type of spirit including their origin, attributes, and how they are distilled.

Name
Design and illustrate an alcohol menu, including pricing, brand, and marketing strategies

Name
Relate local, state, and federal laws pertaining to the service and purchase of alcoholic beverages to include the Dram Shop Act and liquor law liability.

Name
Discuss the opening and closing procedures of a beverage operation.

Name
Identify levels of intoxication and methods to control consumption by guests.

Name
Demonstrate the ability to complete the ServSafe Alcohol certification

HEM233 - Restaurant Incubator

Overview

Department
Hospitality & Culinary Arts

Course Description
Students will implement business plans for their restaurant concept in the student incubation space including menu design, marketing, purchasing, prep, clean up, etc.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Implement an approved restaurant business plan through operation of a student-run foodservice concept.

Name
Develop and execute a menu that reflects cost controls, production planning, and quality standards.

Name
Apply purchasing and inventory control processes to manage food, supplies, and operating costs.

Name
Operate front- and back-of-house functions in compliance with food safety, sanitation, and workplace standards.

Name
Evaluate operational and marketing outcomes using sales data and customer feedback to recommend improvements.

Requirements

Simple Requirements

A minimum grade of 'C' in Course HEM143

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM143 - Introduction to Food Business Management

HEM235 - Hospitality Management Internship

Overview

Department
Hospitality & Culinary Arts

Course Description
This is a work-based learning course which enables students to develop practical skills, relate theory to practice, and to gain a sound base of industrial experience by working – on a paid or voluntary basis – from a range of organizations within the hospitality industry. In addition, this course seeks to develop 'employability skills' to assist students in progressing towards a career in hospitality.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Summer 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
3

Other Hours

Other Hours
Min:
135

Course Learning Outcomes

Learning Outcomes

Name
Develop and apply knowledge gained throughout academic studies to a position with managerial responsibilities.

Name
Demonstrate the ability to review and discuss the various methods of reporting required within the hospitality specializations.

Name
Compare and contrast industry working environments to develop engagement strategies within an ever increasing diverse workforce.

Name
Conduct a self evaluation of personal learning and practicum experience and develop an individual learning plan.

Name
Critically analyze the roles and responsibilities of all personnel within the work-based learning environment.

Name
Develop a presentation to give a holistic analysis of the students progression and achievement.

Name
Engage in discussions to develop and share understanding of management and leadership skills and strategies.

Requirements

Simple Requirements

A minimum grade of 'C' in Course HEM105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM105 - Sanitation and Safety

A minimum grade of 'C' in Course HEM115

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM115 - Introduction to the Hospitality Industry

A minimum grade of 'C' in Course HEM140

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- HEM140 - Hospitality Financial Management

HEM240 - Plant Science

Overview

Department
Hospitality & Culinary Arts

Course Description
The course is an introduction to plant science with an emphasis on the principles that lead to a greater understanding of plants and horticultural science. A variety of laboratory experiences will be included in this course.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Summer 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
60

HEO105 - Construction Industry

Overview

Department
Applied Technologies

Course Description
This course introduces students to the construction and utility industries with an emphasis on career pathways, safety, and foundational work practices. Topics include construction site safety, material handling, construction math, and blueprint reading. Students learn to interpret construction drawings, apply safe work habits, and understand basic industry terminology and procedures essential to success in skilled trades.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Identify career opportunities within the construction and utility industries

Name
Demonstrate knowledge of OSHA safety standards

Name
Apply basic math concepts to job site measurement and calculations

Name
Interpret construction drawings and symbols to identify project components

Name
Demonstrate safe handling, movement, and storage materials

HEO110 - Construction Tools, Rigging, & Employability Skills

Overview

Department
Applied Technologies

Course Description
This course provides hands-on experience with the tools, equipment, and communication practices used in the skilled trades. Students will gain proficiency in the identification, inspection, and safe use of hand and power tools, as well as the fundamentals of rigging. The course also emphasizes teamwork, communication, and professional behavior expected on the job site.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Identify and demonstrate safe use of common hand and power tools

Name
Apply basic rigging techniques using approved knots, slings, and lifting equipment.

Name
Communicate effectively with peers, supervisors, and team members on the job site.

Name
Demonstrate professionalism, reliability, and employability skills required in the construction industry.

Name
Apply problem-solving and critical thinking skills to basic job-site scenarios.

HEO119 - HEO Internship I

Overview

Department
Applied Technologies

Course Description
In this course students will have the opportunity to link classroom/ lab theory with an experimental learning opportunity. Through direct observation, reflection and evaluation, students gain an understanding of the internship site's work, mission, and customers. The student will identify how these relate to their program of study, as well as the organization's position in the broader industry or field. Students will produce a critical reflection of their internship experience demonstrating how they have addressed specific learning goals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
225

Billing Hours

Billing Hours
Min:
5

Other Hours

Other Hours
Min:
225

Course Learning Outcomes

Learning Outcomes

Name
Applies knowledge to the real world work experience.

Objective
Searches out and applies resources and methods to accomplish assigned tasks', Articulate the connection between classroom lab theory to industry experiences

Name
Observe skills associated with Heavy Equipment Operations

Name
Apply skills associated with Heavy Equipment Operations.

Name
Demonstrate effective workplace behaviors.

HEO120 - Heavy Equipment Operations and Safety

Overview

Department
Applied Technologies

Course Description
This course provides foundational knowledge of heavy equipment operation within the construction and mining industries. Students will explore classifications, components, and attachments of various types of equipment, while learning the safety procedures and professional expectations required for operating in and around active worksites. Emphasis is placed on applying safe operating practices, understanding equipment capabilities, and demonstrating awareness of industry standards for heavy equipment operations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
45

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Classify types of heavy equipment and analyze their specific functions and applications in construction and mining operations.

Name
Apply work zone safety procedures, including the setup of traffic control devices, barricades, and signage.

Name
Demonstrate correct use of personal protective equipment (PPE) in simulated jobsite conditions.

Name
Evaluate the roles, responsibilities, and professional expectations of heavy equipment operators in the industry.

Name
Differentiate among equipment models, components, and attachments, and explain how each contributes to efficient and safe operation.

Name
Interpret safety data sheets (SDS) and hazard communication standards to apply appropriate hazard control measures.

Name
Assess potential hazards and develop strategies to maintain a safe and productive work environment when operating heavy equipment.

HEO125 - Earthmoving and Grading Operations

Overview

Department
Applied Technologies

Course Description
This course develops the knowledge and skills required to plan, perform, and evaluate earthmoving and grading operations using heavy equipment and GPS/GNSS technology. Students will apply principles of excavation, grading, soil stabilization, and site preparation while safely operating skid steer equipment. Emphasis is placed on applying GPS-based grading systems, reading site plans, and coordinating equipment use to achieve project specifications efficiently and safely.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Interpret site plans and apply earthmoving and grading principles to construction operations.

Name
Select and operate appropriate equipment for excavation, hauling, filling, and compaction activities.

Name
Analyze soil characteristics and apply methods of stabilization and compaction to meet jobsite requirements.

Name
Perform safe start-up, operation, and shut-down procedures for skid steer or related equipment equipment and attachments.

Name
Demonstrate proficiency in performing grading, trenching, and material handling tasks using a skid steer or related equipment.

Name
Apply GPS/GNSS and laser-guided systems to establish accurate site grades and contours.

Name
Evaluate worksite safety conditions and implement measures to prevent hazards related to terrain, load handling, and visibility.

Name
Coordinate multiple pieces of equipment in simulated site operations to optimize productivity and accuracy.

HEO130 - Equipment Inspection and Operational Readiness

Overview

Department
Applied Technologies

Course Description
This course provides hands-on experience in preparing, inspecting, and operating heavy equipment and utility tractors safely and effectively. Students will perform prestart inspections, identify mechanical and hydraulic system issues, and demonstrate proper start-up, operation, and shutdown procedures. Emphasis is placed on applying preventive maintenance practices, evaluating equipment condition, and developing the operational discipline required for efficient and safe jobsite performance.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Perform comprehensive prestart inspections on various types of heavy equipment and utility tractors.

Name
Apply proper mounting, startup, operational movement, and shutdown procedures for multiple equipment types.

Name
Diagnose and evaluate common operational issues related to mechanical, hydraulic, electrical, and auxiliary systems.

Name
Demonstrate correct use of vehicle controls, attachments, and power takeoff (PTO) systems for utility tractors.

Name
Implement equipment maintenance practices that promote longevity and operational reliability.

Name
Assess readiness and safety conditions of heavy equipment prior to operation in simulated jobsite scenarios.

Name
Operate utility tractors and related attachments to complete assigned construction or material-handling tasks with accuracy and safety.

Name
Apply industry-standard procedures to document inspection findings and maintenance requirements.

HEO135 - Sitework Layout and Soil Analysis

Overview

Department
Applied Technologies

Course Description
This course develops the applied skills needed to interpret civil construction drawings, calculate material quantities, and evaluate soil conditions for excavation and grading operations. Students will apply mathematical concepts to determine grades, slopes, volumes, and elevations while interpreting plans, profiles, and specifications. Emphasis is placed on analyzing soil characteristics, performing layout calculations, and applying critical thinking to ensure accuracy and safety in earthwork planning and execution.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Interpret civil and construction drawings, including plans, profiles, and cross sections, to extract relevant sitework information.

Name
Apply mathematical principles to calculate grades, slopes, cut-and-fill volumes, and material quantities.

Name
Analyze soil classifications, moisture content, and compaction characteristics to evaluate suitability for construction activities.

Name
Demonstrate proficiency in using measuring instruments and reference points for elevation and layout.

Name
Assess how soil type and site conditions influence excavation techniques and equipment selection.

Name
Construct accurate layout data and verify elevation benchmarks using construction drawings and site specifications.

Name
Develop a sitework plan that integrates grading data, soil conditions, and safety considerations.

HEO140 - Earthmoving Equipment Operations

Overview

Department
Applied Technologies

Course Description
This course provides applied training in the setup, operation, and coordination of heavy equipment used in earthmoving and site preparation. Students will develop proficiency in operating loaders and backhoes to perform excavation, trenching, grading, and material-handling tasks. Emphasis is placed on interpreting site plans, establishing grades, and applying safe work practices while optimizing efficiency across multiple types of equipment. Students will demonstrate equipment readiness, operational technique, and production accuracy through field-based performance evaluations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Perform prestart inspections, startup, and shutdown procedures for loaders and backhoes in compliance with safety and maintenance standards.

Name
Operate loaders and backhoes to perform excavation, trenching, loading, backfilling, and grading operations efficiently and safely.

Name
Apply sitework principles to plan and execute earthmoving operations based on grades, slopes, and soil conditions.

Name
Interpret construction drawings and layout markings to establish grade elevations and excavation requirements.

Name
Evaluate cycle times, equipment selection, and material movement to optimize jobsite productivity.

Name
Implement safety protocols for working around trenches, traffic control areas, and multiple operating machines.

Name
Demonstrate coordinated sitework operations by sequencing heavy equipment activities to achieve specified design outcomes.

Name
Document and assess equipment performance, safety compliance, and sitework accuracy through applied field exercises.

HEO145 - Advanced Grading and Excavation Operations

Overview

Department
Applied Technologies

Course Description
This course provides advanced instruction and field application in grading, dozer, and excavator operations. Students will develop the ability to establish and verify grades, control earthmoving operations to design specifications, and perform efficient excavation using dozers and hydraulic excavators. Emphasis is placed on grade staking, precision excavation, soil balance, and field coordination to meet project tolerances. Students will demonstrate mastery through applied performance tasks replicating industry-level grading and excavation scenarios.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Interpret grade stakes, slope data, and layout markings to establish and verify construction grades and elevations.

Name
Operate dozers to cut, fill, and finish-grade to specified tolerances under varying site conditions.

Name
Operate excavators to perform trenching, sloping, and mass excavation to required dimensions and grades.

Name
Evaluate soil characteristics and adjust machine operation for optimal production and stability.

Name
Apply grade-control and leveling instruments to set and check elevations across a site.

Name
Assess cycle times, production rates, and material movement to optimize earthmoving efficiency.

Name
Implement safe operating procedures for grading and excavation tasks, including trench safety and equipment communication protocols.

Name
Demonstrate coordinated multi-machine sitework operations that integrate grading, excavation, and compaction to achieve design intent.

HEO150 - Soil Compaction and Material Movement

Overview

Department
Applied Technologies

Course Description
This course provides applied training in soil compaction and earthmoving operations using scrapers and compaction equipment. Students will learn how to prepare and stabilize soils, balance cut-and-fill operations, and manage material movement to achieve engineered grade and density requirements. Emphasis is placed on safe operation, production efficiency, and quality control techniques used in large-scale site development. Students will demonstrate proficiency through hands-on performance evaluations in compaction, load balance, and scraper operation.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Operate compaction and scraper equipment safely and efficiently to achieve target grades and soil densities.

Name
Apply soil compaction principles, including lift thickness, moisture content, and compactive effort, to meet specified tolerances.

Name
Perform prestart inspections, maintenance, and shutdown procedures for scrapers and compaction equipment according to manufacturer standards.

Name
Evaluate soil types and field density test results to adjust compaction methods and equipment selection.

Name
Demonstrate balanced scraper operation, including proper loading, hauling, and dumping cycles to maximize productivity.

Name
Coordinate scraper and compaction operations to optimize material flow and minimize rework.

Name
Implement safety measures for working around moving equipment, inclines, and confined site conditions.

Name
Assess production efficiency and document compaction and material-handling results for quality assurance.

HEO155 - Horizontal Directional Drilling Operations

Overview

Department
Applied Technologies

Course Description
This course provides hands-on instruction in the principles and operation of horizontal directional drilling (HDD) equipment used in underground utility installation. Students will learn to set up and operate drilling systems safely, interpret bore path plans, and complete pilot bores and pullback operations according to specifications. Emphasis is placed on soil evaluation, bore path planning, fluid management, and safety protocols for avoiding underground utilities. Students will demonstrate proficiency through field-based performance evaluations using HDD simulators and equipment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Perform prestart inspection, setup, and shutdown procedures for horizontal directional drilling equipment.

Name
Interpret bore plans, profiles, and jobsite layouts to plan and execute horizontal drilling operations safely.

Name
Apply soil classification knowledge and evaluate drilling fluid requirements for various ground conditions.

Name
Operate HDD equipment to complete pilot bores and pullbacks within designed tolerances.

Name
Monitor and adjust drilling parameters such as pressure, torque, and alignment to maintain proper bore path control.

Name
Demonstrate safe locating and exposure practices for existing underground utilities following industry regulations.

HHA100 - Home Health Aide

Overview

Department
Health Sciences

Course Description
Prepares the certified nurse aide (CNA) to care for clients in community and home settings. Graduates may take the Kansas certification examination to become a home health aide (HHA).

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Basic Patient Care: Indicates an understanding of assisting patients with activities of daily living (ADLs), how to safely assist patients with mobility, including transfers, range of motion exercises and the proper use of mobility aids, while prevention falls or injuries. All while maintaining dignity and comfort.

Name
Monitoring, Documentation and Reporting : Understands how to accurately measure and document vital signs, such as temperature, pulse, respiration, and blood pressure, as well as know when to report changes in a patient's physical or emotional condition.

Name
Effective Communication: Recognition of how to communicate with clients and their families clearly and compassionately regardless of age, race, cultural or religious differences. Foster a trusting environment by working with other healthcare team members to support the care plan. Explain how the care plan may be different for clients with altered needs, i.e.: children, developmental disabilities, and the elderly.

Name
Safety and Infection Control: Employ principles of safety and infection prevention, including proper hand hygiene, the use of personal protective equipment (PPE), and infection control techniques. Recognize the characteristics of abuse, neglect and exploitation. Determine the chain of command for reporting purposes.

Name
Nutrition and Meal Preparation: Indicates competency in importance of supporting patients' nutritional needs by preparing healthy meals, understanding dietary restrictions, and assisting with feeding when necessary.

Name
Legal and Ethical Responsibilities: Apply knowledge of patient rights, confidentiality, and ethical practices in home health care, adhering to HIPAA and other legal guidelines. Understand the difference between palliative/ hospice care. Identify the psychosocial aspects of death and dying and discuss the plan of action in case of a death in the home. Discuss cultural diversity and religious differences and how they affect a persons personal care.

Requirements

Simple Requirements

A minimum grade of 'C' in Course CNA101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CNA101 - Certified Nurse Aide

HIS110 - United States History to 1877

Overview

Department
General Education

Course Description
This course traces development of the United States, 1492 to 1876, including English colonization, the American Revolution, formation of the Union, colonization of the West, development of sectionalism, the Civil War, and restoration of home rule in the South. Important political, cultural, economic, and religious/philosophical accomplishments of this period will be examined.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate Basic Skills and tools of the Historians' Craft

Objective
Demonstrate the ability to analyze synthesize and evaluate historical information

Name
Demonstrate research and writing skills, including the ability to: Interpret primary and secondary sources; Evaluate the validity of sources; Analyze historical perspectives; Recognize change over time

Objective
Interpret primary and secondary sources', Evaluate the validity of sources', Analyze historical perspectives', Recognize change over time

Name
Recognize that United States History is influenced by ethnicity, race, class, gender, and environment among other factors. With this awareness, students will: Describe major indigenous cultures of North America and evaluate their impact;

Objective
Describe major indigenous cultures of North America and evaluate their impact

Name
Describe and analyze significant political, social, economic, and diplomatic developments of the European exploration and colonization of North America; Trace and evaluate causes, developments and consequences of the American Revolution; Describe and analyze significant events in the creation of the American Republic; Describe and analyze significant political, social, economic, and diplomatic developments of the Early Republic; Describe and analyze significant political, social, economic, and diplomatic developments, including territorial expansion and sectionalism, of antebellum America; Trace and evaluate causes, developments and consequences of the Civil War; Describe the Era of Reconstruction and evaluate its impact

Objective
Describe and analyze significant political social economic and diplomatic developments of the European exploration and colonization of North America', Trace and evaluate causes developments and consequences of the American Revolution', Describe and analyze significant events in the creation of the American Republic', Describe and analyze significant political social economic and diplomatic developments of the Early Republic', Describe and analyze significant political social economic and diplomatic developments including territorial expansion and sectionalism of antebellum America', Trace and evaluate causes developments and consequences of the Civil War', Describe the Era of Reconstruction and evaluate its impact

Name
Describe historical perspectives and change over time by analyzing, evaluating, and interpreting primary and secondary historical sources.

Name
Describe and analyze the social, political, and economic developments of the following periods of American History:

Objective
Describe major indigenous cultures of North America and evaluate their impact', Describe and analyze significant political social economic and diplomatic developmentsof the European exploration and colonization of North America', Trace and evaluate causes developments and consequences of the American Revolution', Describe and analyze significant events in the creation and development of American society institutions and political structures in the Early Republic', Describe and analyze significant political social economic and diplomatic developments including territorial expansion and sectionalism of antebellum America', Trace the development of the transAtlantic slave trade and the practice of slavery in the American colonies and analyze the impact of slavery on US institutions events and peoples', Trace and evaluate causes developments and consequences of the Civil War', Describe the Era of Reconstruction and evaluate its impact

HIS120 - United States History since 1865

Overview

Department
General Education

Course Description
This course is designed to provide the student with an introduction to United States history from the end of Reconstruction to the present. This course will survey the important political, cultural, economic, and religious/philosophical accomplishments during this period.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate the ability to analyze, synthesize, and evaluate change over time

Name
Demonstrate research skills, including the ability to: Utilize primary and secondary sources, evaluate the validity of sources, analyze historical perspectives, and demonstrate the ability to analyze, synthesize, and evaluate change over time

Objective
Utilize primary and secondary sources', Evaluate the validity of sources', Analyze historical perspectives', Demonstrate the ability to analyze synthesize and evaluate change over time

Name
Incorporating an awareness that historical perspectives are influenced by, race, class, and gender, among other factors, students completing American survey courses will be able to:

Objective
Describe the major indigenous cultures of North America and evaluate their impact', Describe and analyze the significant political social economic and diplomatic developments of the European exploration and colonization of North America', Trace and evaluate the causes course and consequences of the American Revolution', Describe and analyze the significant events in the creation of the American Republic', Describe and analyze the significant political social economic and diplomatic developments of the early republic', Describe and analyze the significant political social economic and diplomatic developments including territorial expansion and sectionalism of antebellum America', Trace and evaluate the causes course and consequences of the Civil War', Describe the era of Reconstruction and evaluate its impact', Describe and analyze the causes course and impact of American imperialism', Describe and analyze the significant political social economic and diplomatic developments including reform movements of modern industrial America', Trace and evaluate the causes course and consequences of World War I', Describe and analyze the significant political social economic and diplomatic developments of the interwar years', Describe the causes course and consequences of the Great Depression and New Deal and evaluate their impact', Trace and evaluate the causes course and consequences of World War II', Describe and analyze the significant political social economic developments of postwar America', Describe and analyze the international role of the United State in the postwar world', Describe and analyze the significant political social economic and diplomatic developments that transformed American from the modern Civil Rights movements through the Vietnam conflict', Describe and analyze recent political social economic and diplomatic developments

Objective
Describe the era of Reconstruction and evaluate its impact', Describe and analyze causes course and effects of American imperialism', Describe and analyze significant political social economic and diplomatic developments including reform movements of modern industrial America', Trace and evaluate causes developments and consequences of World War I', Describe and analyze significant political social economic and diplomatic developments of the interwar years', Describe causes course and consequences of the Great Depression and New Deal and evaluate their impact', Trace and evaluate causes developments and consequences of World War II', Describe and analyze significant political social economic developments of postwar America', Describe and analyze the international role of the United States in the Cold War Era world', Describe and analyze significant political social and economic developments that transformed America beginning with the modern Civil Rights movements', Describe and analyze postCold War political social economic and diplomatic developments

HIS130 - World History I

Overview

Department
General Education

Course Description
This course provides an introduction to the birth and development of World History to the mid-16th century. Students will survey the important political, cultural, economic, and religious/philosophical accomplishments of this period.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Through clear communication, students should demonstrate an understanding and be able to analyze and synthesize at least three of the following historical lenses: Arts and literature, Cultural identity, Diffusions and encounters, Economics, Environment, Ethnicity and race, Gender, Global thinking, Influential individuals and ideas of leadership, Intellectual culture, Material culture, Military developments, Politics, Religions, Social constructs, Scientific/technological developments

Objective
Arts and literature', Cultural identity', Diffusions and encounters', Economics', Environment', Ethnicity and race', Gender', Global thinking', Influential individuals and ideas of leadership', Intellectual culture', Material culture', Military developments', Politics', Religions', Social constructs', Scientifictechnological developments

Name
Relative to tracing and evaluating the origins and characteristics of prehistory, students will do the following: Identify stages of human evolution, Analyze the characteristics of Paleolithic societies, Evaluate the impacts of the Neolithic transformation/revolution

Objective
Identify stages of human evolution', Analyze the characteristics of Paleolithic societies', Evaluate the impacts of the Neolithic transformationrevolution

Name
Students will trace and evaluate the origins and characteristics of the earliest major civilizations, including the following: Mesopotamia, Egypt, Indus Valley, China, SubSaharan Africa, Americas

Objective
Mesopotamia', Egypt', Indus Valley', China', SubSaharan Africa', Americas

Name
Students will describe and analyze the significant political, social, economic, religious, and cultural developments of the ancient and classical worlds, including the following: China, Greece, India, Persia, Hellenistic World, Rome, Americas, Asia

Objective
China', Greece', India', Persia', Hellenistic World', Rome', Americas', Asia

Name
Students will describe and analyze the significant political, social, economic, religious, and cultural transformations, developments, and contributions of the postclassical civilizations, including the following: Transformation of the Roman world and development of postRoman societies, Development of Byzantium and Christian Europe, Development and spread of Islam, Development and contribution of Southeast Asian cultures, Development and contribution of the Indian subcontinent, Development and contributions of Eurasian trade networks

Objective
Transformation of the Roman world and development of postRoman societies', Development of Byzantium and Christian Europe', Development and spread of Islam', Development and contribution of Southeast Asian cultures', Development and contribution of the Indian subcontinent', Development and contributions of Eurasian trade networks

Name
Students will describe and analyze the significant political, social, economic, religious, and cultural developments of the Nomadic societies, including the following: Characteristics of nomadic societies, Impacts of Nomads on the development of civilizations

Objective
Characteristics of nomadic societies', Impacts of Nomads on the development of civilizations

Name
Students will describe and analyze the significant political, social, economic, religious, and cultural developments of medieval European civilizations, including the following: Characteristics of medieval European civilizations, Interactions between Western Europe and the Islamic world, Interactions between Western Europe, SubSaharan Africa, and South and East Asia

Objective
Characteristics of medieval European civilizations', Interactions between Western Europe and the Islamic world', Interactions between Western Europe SubSaharan Africa and South and East Asia

Name
Students will describe and analyze the significant political, social, economic, religious, and cultural developments of global integrations, including the following: Shaping of the Mongol Empire and its impact, Bantu migration and its impact, Development of trade networks, European voyages of exploration, Formation and consequences of European colonization, Impacts of global interactions on world societies, Transformations of coercive labor systems, including serfdom and slavery, Similarities between Atlantic Basin and Indian Basin trade systems

Objective
Shaping of the Mongol Empire and its impact', Bantu migration and its impact', Development of trade networks', European voyages of exploration', Formation and consequences of European colonization', Impacts of global interactions on world societies', Transformations of coercive labor systems including serfdom and slavery', Similarities between Atlantic Basin and Indian Basin trade systems

Name
Students will utilize the basic tools of the craft of history: Understand the difference between primary and secondary sources and use appropriate critical approaches for both, Prioritize, analyze, and synthesize historical materials and ideas, Write and communicate clearly, Describe and analyze change over time and global interactions

Objective
Understand the difference between primary and secondary sources and use appropriate critical approaches for both', Prioritize analyze and synthesize historical materials and ideas', Write and communicate clearly', Describe and analyze change over time and global interactions

Name
Students will describe and analyze the significant political, social, economic, religious, and cultural developments of the Sub-Saharan Africa, the Americas, and Oceania between 1000 and 1500 C.E., including the following: Characteristics of Sub-Saharan Africa, the Americas, and Oceania; Impacts of Sub-Saharan Africa, the Americas, and Oceania on world cultures.

HIS140 - Humanities Prospectus

Overview

Department
General Education

Course Description
This course combines humanities topics including art, religion, world history and U.S. history with the goal that students gain a greater understanding of how the humanities topics interact and impact the world around them. The course will survey world and United States history, broadly looking at politics, culture, economics, art and religious/philosophical accomplishments that have shaped our world today. Art – gain an appreciation for art, studying the concepts and artist's work so that students improve one's judgment and ability to understand art critically. Religion – Introduction to Buddhism, Christianity, Judaism, and Islam. Students will examine the basic components of each faith, as well as the historical and cultural impact of each religion. World and U.S. History – surveying world and U.S. history in the areas of politics, culture, economics, and religious/philosophical accomplishments, covering the period from the Renaissance to the 20th century.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate an understanding of art practices, meaning, values, and methods within historical and cultural contexts

Objective
Discuss how our knowledge and understanding of history and culture are influenced by the visual arts', Trace the development of Western art from prehistoric to modern times and identify the major historical and cultural artistic styles', Identify the major artists their respective works styles and influences from the Renaissance through modern times', Discuss the influences of nonWestern art

Name
Be familiar with Buddhism, Christianity, Judaism, and Islam

Objective
Describe the characteristics of the main text associated with each religion', Describe and understand the cultures that these religions originated from

Name
Students will describe and analyze the significant political, social, economic, religious, and cultural developments of the ancient and classical worlds, including the following:

Objective
China', Greece', India', Persia', Hellenistic World', Rome', Americas', Asia

Name
Students will describe and analyze the significant political, social, economic, religious, and cultural developments of global integrations, including the following:

Objective
Development of trade networks', European voyages of exploration', Formation and consequences of European colonization', Impacts of global interactions on world societies', Transformations of coercive labor systems including serfdom and slavery', Similarities between Atlantic Basin and Indian Basin trade systems

Name
Incorporating an awareness that historical perspectives are influenced by, race, class, and gender

Objective
Describe the major indigenous cultures of North America and evaluate their impact', Describe and analyze the significant political social economic and diplomatic developments of the European exploration and colonization of North America', Trace and evaluate the causes course and consequences of the American Revolution', Describe and analyze the significant events in the creation of the American Republic', Describe and analyze the significant political social economic and diplomatic developments including territorial expansion and sectionalism of antebellum America', Trace and evaluate the causes course and consequences of the Civil War', Describe the era of Reconstruction and evaluate its impact', Describe and analyze the significant political social economic and diplomatic developments including reform movements of modern industrial America', Trace and evaluate the causes course and consequences of World War I', Describe the causes course and consequences of the Great Depression and the New Deal and evaluate their impact', Trace and evaluate the causes course and consequences of World War II', Describe and analyze the significant political social economic developments of postwar America', Describe and analyze the international role of the United State in the postwar world', Describe and analyze recent political social economic and diplomatic developments

IND109 - Programmable Logic Controllers (PLC)

Overview

Department
Automation and Advanced Tech

Course Description
This course examines types, installation, programming procedures and troubleshooting of programmable logic controllers (PLC). Hardware and programming aspects, as well as ladder logic symbols and operations necessary to develop a PLC program are covered in this course.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Spring 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate safety procedures when working with PLCs.

Name
Connect a PLC to a programming device with proper wiring and terminations of inputs and outputs

Name
Identify the types, components, and basic operation of a PLC, including the primary function and the various basic components.

Name
Identify the numbering systems and symbols used in PLC relay ladder logic

Name
Describe addressing and the function of tags, how PLC module terminals are referenced by tag names, and the application of module-defined tag structures.

Name
Describe the purposes of the power supply, input/output (both discrete and analog), processor and programming sections of a PLC, and the function and operation of I/O diagrams and module indicator lights

Name
Develop a functional PLC program using appropriate programming languages.

Name
Demonstrate the execution of a created PLC program, including monitoring of the PLC operation, and running and stopping a PLC processor file

Name
Demonstrate the process of PLC system troubleshooting, including I/O sections of a PLC and related field devices.

IND111 - Foundations of Manufacturing

Overview

Department
Automation and Advanced Tech

Course Description
This course is designed to teach students the non-technical side of manufacturing that helps them to know where they fit into the value chain and how their performance affects the company, and to understand how and why decisions are made. Soft skills, proper selection and use of maintenance tools, safety, differences in maintenance practices will be introduced.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The students will describe the function of preventive maintenance

Objective
The student will be able to explain predictive maintenance practices, the student will be able to explain how the predictive maintenance practices are determined, the student will be able to describe the benefits of predictive maintenance, the student will be able to identify the equipment used in predictive maintenance, the student will be able to explain Best Practices in Troubleshooting.

Name
The students describe the function of reactive maintenance

Name
The students will understand key maintenance terms

Name
The student will be able to understand failure consequences and modes

Name
The students will understand the basics of root cause analysis as it applies to the course content

Name
The student will apply the appropriate safety techniques.

Name
The student will understand accountability and its role in the industry

Name
The students will apply lean manufacturing techniques to the course projects

IND115 - Industrial Safety

Overview

Department
Automation and Advanced Tech

Course Description
The primary purpose of this course is to introduce and familiarize new students with the use and safety precautions to consider and apply as an Industrial Mechanic. This course will cover the principles of Lockout/Tagout and Arc Flash. These standards along with safety principles within a production environment will be covered.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
Describe the purpose and steps required for proper Lockout/Tagout of industrial equipment.

Name
Demonstrate Lockout /Tagout operations

Name
Describe the purpose and principals of Arc Flash Safety.

Name
Demonstrate safe Arc Flash operations

Name
Apply industrial safety techniques in all course projects and exercises.

IND116 - Advanced Motor Controls

Overview

Department
Automation and Advanced Tech

Course Description
This course provides instruction in two-wire motor control circuits using relays, contractors, and motor starts with application sending devices. Topics include: wiring limit switches, wiring pressure switches, wiring float switches, wiring temperature switches, wiring proximity switches, wiring photo switches, sequencing circuits, reduced voltage starting, motor control centers, and troubleshooting.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to install and adjust a variety of switches

Objective
Install motor control limit switches to control magnetic starters', Adjust motor control limit switches for proper operation', Install a pressure switch to control a magnetic starter of a motor controller', Adjust the range and differential settings for given pressure limits of motor controller', Install a motor controller float switch to operate a pump', Adjust a motor controller float switch for given operating levels', Install a motor controller temperature switch to control a heating element', Adjust a motor controller temperature switch for a given range of temperature', Install a motor controller proximity switch in a control circuit to detect the pressure of metal', Install a motor controller proximity switch for use as a motion detector', Calibrate a motor controller proximity switch for sensitivity', Install a motor controller photo switch in a control circuit to detect the pressure of light', Install a motor controller photo switch for use as light detector', Calibrate a motor controller photo switch for sensitivity

Name
The student will be able to install time delay relay and sequence with two motors

Objective
Identify the various types of timers used in motor control circuits', Operate ondelay timers for applications in motor control circuits', Operate offdelay timers for applications in motor control circuits', Install a time delay relay for use in a motor control circuit', Adjust the time on a time delay relay used in a motor', Install a time delay relay and two magnetic starters to sequence the operation of two motors

Name
The student will be able to install and operate reduced voltage starting

Objective
Install and operate a primary resistance starter motor controller', Install and operate an autotransformer starter in a motor control circuit', Install and operate a wyedelta starter in a motor control circuit', Install and operate a solid state starter in a motor control circuit

Name
The student will be able to perform installation process in a motor control center

Objective
Install various motor control components in a motor control center

Name
The student will be able to perform troubleshooting processes

Objective
Use proper troubleshooting techniques to eliminate problems in motor control systems', Use a VOM to troubleshoot a motor control circuit and diagnose the problems', Use motor controller schematic diagrams a VOM test terminals and terminal strips to locate and diagnose problems at motor control centers', Utilize meggrs to troubleshoot motor control systems

Name
The student will be able to complete final project

Objective
Final project will be industrial based using 2 wire diagrams

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

IND117 - Variable Speed Motor Control

Overview

Department
Automation and Advanced Tech

Course Description
This course provides instruction in the fundamentals of variable speed drives, industrial motors, and other applications of variable speed drives. Topics include: fundamentals of variable speed control, AC frequency drives, DC variable speed drives, installation procedures, and ranges.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to define the fundamentals of variable speed control

Objective
Cite industrial applications of variable speed motor control circuits', Define parameters torque acceleration deceleration pwm frequency voltagehertz ratio boost IR compensation and high bus fault as applicable to variable speed motor controllers

Name
The student will be able to demonstrate knowledge of AC frequency drives

Objective
Describe how an AC frequency drive operates to vary motor speed', Install an AC frequency drive to control motor speed', Set up and calibrate an AC frequency drive change parameters', Determine the interconnections needed for various AC motor speed applications on two speed motors

Name
The student will be able to demonstrate knowledge of stepper motors

Objective
Describe how an stepper motor drive operates to vary motor speed', Install an stepper motor drive to control motor speed', Set up and calibrate an stepper motor drive change parameters', Determine the interconnections needed for various stepper motor speed applications on two speed motors

Name
The student will be able to demonstrate knowledge of DC variable speed drives

Objective
Identify the relationships of torque and speed to series shunt and compound DC motors', Identify armature rheostat variable speed circuits for DC motors', Identify compound variable speed DC motors', Identify methods used to obtain variable speed control of compound DC motors', Install a DC variable speed drive for a DC motor', Calibrate a DC variable speed drive for a DC motor

Name
The student will be able to install components for AC and DC variable motor circuits

Objective
Select appropriate control cabinets for variable speed motor control circuits', Sketch floor plans for the installation of variable speed motor control systems', Sketch the layout of electrical accessories and conductors used in variable speed motor control circuits', Install components wire control cabinets operators stations and motors for variable speed DC motor circuits', Install components wire control cabinets operators stations and motors for variable speed AC motor circuits

Name
The student will be able to evaluate the use of motors and variable speed motors in industrial applications

Objective
Explain the formulas for determining the synchronous speed of AC motors', Diagram a bank of starters used to achieve speed ranges for AC motors', Sketch circuits which use mechanical interlocks for starters in AC motor variable speed controllers', Sketch circuits which use auxiliary contacts for interlocks between starts in AC motor variable speed controllers', Sketch circuits which use pushbuttons for interlocks between starts in AC motor variable speed controllers', Describe the limiting factors of speed ranges for variable speed DC motor controllers', Evaluate the use of DC motors and variable speed controllers in specific industrial applications

Requirements

Simple Requirements

A minimum grade of 'C' in Course IND116

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- IND116 - Advanced Motor Controls

IND121 - Mechanical Systems Reliability

Overview

Department
Automation and Advanced Tech

Course Description
This course provides understanding of mechanical energy transmission concepts along with lab experience to operate, install, analyze performance, and design mechanical drive systems using right angle gears, bearings and couplings. Students learn how to setup and operate laser shaft alignment and apply vibration analysis to various power transmission systems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Identify various types of plain bearings and their applications installation and maintenance

Name
Demonstrate how to install maintain and specify plain and antifriction bearings'

Name
Demonstrate selection maintenance and troubleshooting of a variety of couplings'

Name
Calculate gear ratio shaft speed and torque of a gear drive system'

Name
Select and identify gears for a given application'

Name
Explain laser shaft alignment principles and operation'

Name
Demonstrate vertical parallel and vertical angular alignment'

Name
Demonstrate horizontal parallel and horizontal angular alignment'

Name
Explain vibration concepts resonant frequency and sympathetic vibration'

Name
Demonstrate velocity acceleration and spike energy measurement with vibration meter

Requirements

Simple Requirements

A minimum grade of 'C' in Course IND117

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- IND117 - Variable Speed Motor Control

IND122 - AC/DC Circuits

Overview

Department
Automation and Advanced Tech

Course Description
AC/DC circuits addresses the basics of direct and alternating current circuits.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Describe and apply Ohms, Watts, and Kirchhoff laws

Name
Define, demonstrate, and apply the characteristics of series, parallel, and combination circuits.

Name
Explain DC theory concepts

Name
Explain AC theory concepts.

Name
Perform and interpret electrical measurements using industry standard equipment.

Name
Read and interpret electrical symbols and schematics.

Name
Troubleshoot basic AC and DC circuits.

IND130 - Mechanical Systems

Overview

Department
Automation and Advanced Tech

Course Description
This course provides instruction in basic physics concepts applicable to mechanics of industrial production equipment, teaches basic industrial application of mechanical principles with emphasis on power transmission and specific mechanical components. Students will also design basic mechanical transmission systems using chains, v-belts and gears.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify shaft size using precision measuring instruments.

Name
The student will be able to demonstrate shaft alignment using a flexible jaw coupling and a straight edge and feeler gage.

Name
The student will be able to select, measure, and install a key fastener to locate a hub on a shaft.

Name
The student will be able to demonstrate shaft alignment skills necessary to install chain, grid, and gear couplings using the straight edge and feeler gage method.

Name
The student will be able to demonstrate selection, maintenance, and troubleshooting of a variety of couplings.

Name
The student will be able to calculate sprocket ratio, shaft speed, and torque of a chain drive system.

Name
The student will be able to demonstrate installation and alignment of a chain drive system to include the use of master link connectors, and determine allowable chain sag and adjust chain tension.

Name
The student will be able to calculate pulley ratio, shaft speed, and torque of a v-belt drive system.

Name
The student will be able to demonstrate installation and alignment of a v-belt drive system, and calculate allowable belt deflection and adjust tension.

Name
The student will be able to demonstrate installation and alignment of spur gear drive system, and determine and adjust backlash in gear drive system.

Name
The student will be able to identify, specify, and select v-belts and their drive components, and demonstrate maintenance and troubleshooting skills for v-belt drives.

Name
The student will be able to explain the purpose and application of different types of lubrication.

Requirements

Simple Requirements

A minimum grade of 'C' in Course IND121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- IND121 - Mechanical Systems Reliability

IND131 - Industrial Programmable Logic Controls (PLC)

Overview

Department
Automation and Advanced Tech

Course Description
This course examines types, installation and troubleshooting of programmable logic controllers (PLC). Hardware and programming aspects, as well as ladder logic symbols and operations necessary to develop a PLC program are covered in this course.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to develop and troubleshoot a functional programmable logic controller program

Objective
Demonstrate the safety procedures when working with programmable logic controllers', Identify the types and components of a programmable logic controller', Connect a programmable logic controller to a programming device', Select the proper wiring and terminations of inputs and outputs', Identify the numbering systems used in programmable logic controllers', Identify the symbols used in programmable logic controller relay ladder logic', Develop a functional programmable logic controller program', Document a programmable logic controller program', Demonstrate the process of programmable logic controller system troubleshooting

Name
Demonstrate the safety procedures when working with programmable logic controllers

Name
Identify the types and components of a programmable logic controller

Name
Connect a programmable logic controller to a programming device

Name
Select the proper wiring and terminations of inputs and outputs

Name
Identify the numbering systems used in programmable logic controllers

Name
Identify the symbols used in programmable logic controller relay ladder logic

Name
Develop a functional programmable logic controller program

Name
Document a programmable logic controller program

Name
Demonstrate the process of programmable logic controller system troubleshooting

Requirements

Simple Requirements

A minimum grade of 'C' in Course IND109

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- IND109 - Programmable Logic Controllers (PLC)

IND132 - Industrial Process Control

Overview

Department
Automation and Advanced Tech

Course Description
This course provides understanding of different types of process control systems like temperature, flow and level control. The course includes process control principles, thermocouples, RTD's, temperature measurement devices, ON/Off temperature controlled, programmable process heat controllers, transmitters, process loop test and operate system found in industrial application.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explain the basic principles & importance of process control in industrial process plants and specify the required instrumentation and final elements to ensure that well-tuned control is achieved.

Name
The student will be able to understand the setup and operation of a (PID) Proportional, Integral, Derivative Controller.

Name
The student will be able to read mechanical schematics and hook up plumbing.

Name
The student will be able to read electrical schematics and hook up wiring.

Name
The student will be able to adjust PID to a control process.

Requirements

Simple Requirements

A minimum grade of 'C' in Course IND131

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- IND131 - Industrial Programmable Logic Controls (PLC)

IND137 - Industrial Schematics

Overview

Department
Automation and Advanced Tech

Course Description
This course is designed to provide students with the skills and knowledge necessary to read and interpret various types of schematics commonly used in electrical hydraulic, pneumatics, and IOT systems. Through theoretical instruction and hands on practice, students will learn how to analyze and understand schematics accurately, identify key components, interpret symbols and diagrams and help troubleshoot systems issues effectively.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Read and interpret electrical, hydraulic, and pneumatic schematics accurately.

Name
Identify and understand the function of key components within schematic diagrams.

Name
Analyze basic system operations based on schematic representations.

Name
Develop a basic understanding of troubleshooting basic system faults and malfunctions using schematic diagrams.

Name
Apply schematic reading skills to practical engineering tasks and projects.

Name
Demonstrate basic understanding in integrating multiple types of schematics for complex systems.

Name
Describe the principles of equipment installation utilizing drawings and schematics

Name
Demonstrate basic understanding of schematics to integrate of IIOT systems including main/control panels and machine operations.

IND139 - CNC Operation for Maintenance Applications

Overview

Department
Automation and Advanced Tech

Course Description
This course will train the student in the basic manual operation of CNC Machine tools. It will cover the required programming codes to move the machine using Manual Data Input (MDI), as well as hand and jog functions. It is designed to teach the student how to manipulate the machine to perform maintenance, troubleshooting, and repair operations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be a champion for safe work practices.

Objective
The student will demonstrate the ability to perform a job hazard analysis to determine proper safety procedures and PPE equipment, the student will identify the correct Personal Protective Equipment (PPE) required for a specific maintenance or repair procedure, the student will apply safe principles and PPE in the performance of maintenance and repair procedures, the student will apply safety principles in a work environment to minimize hazards and prevent losses to productivity.

Name
The student will understand and apply machine tool program codes.

Objective
The student will be able to identify the named machine tool axes and their direction of movement, the student will identify and understand the application of various codes (M, S, T, G, H, and D) used in machine tool programs, the student will create handwritten programs using the correct machine tool codes, the student will utilize these codes in manual operation.

Name
The student will be able to energize and de-energize CNC machine tools.

Objective
The student will demonstrate the proper energizing sequence, the student will be able to execute emergency stop and restart procedures, the student will be able to interrupt automatic cycle mode manually to stop potential damage to part and/or machine, the student will demonstrate the proper de-energizing or shutdown procedures.

Name
The student will be able to manually operate a CNC machine tool.

Objective
The student will demonstrate manual operation in the handwheel and jog modes, the student will be able to enter programs in MDI (manual data input) mode, the student will be able to orientate multiple machine axes, the student will perform MDI (manual data input) operation, the student will demonstrate the ability to manipulate the machine tool as needed to perform troubleshooting and repair procedures.

Name
The student will be able to operate a CNC machine tool in automatic mode.

Objective
The student will perform Axis reference operation, the student will perform the home sequencing operation, the student will be able to execute CNC program sequences from machine zero or point of reference, the student will be able to enter a CNC program directly into the control, the student will establish Computer to CNC communication to load programs into the CNC control, the student will execute a CNC program from machine home or a separate reference position, the student will be able to correctly interrupt an automatic cycle, the student will perform automatic operation to confirm repairs are completed correctly and machine is fully operational.

Name
The student will combine competencies in the previous areas to facilitate troubleshooting and repair procedures of CNC machine tools.

Objective
The student will solve equipment problems using operational understanding, technical knowledge, teamwork, mathematics, and critical thinking.

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

IND143 - Electrical System Troubleshooting

Overview

Department
Automation and Advanced Tech

Course Description
Students will focus on the application and troubleshooting of advanced electrical applications in an industrial maintenance setting. A systems approach will be utilized to include panels, relays, power, and the impact of electrical code.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Identify and apply power supply requirements to industrial electrical systems

Name
Read electrical schematics

Name
Connect and operate relays for industrial operations

Name
Perform basic control panel setup and wiring

Name
Identify proper safety protocols utilised in industrial operations

Name
Discuss concepts associated with code based on project installation and troubleshooting

Name
Describe relationship of i/o, controls, and other industrial components in system integration

Name
Demonstrate skills associate with installation and troubleshooting of industrial electrical systems

Requirements

Simple Requirements

A minimum grade of 'C' in Course IND109

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- IND109 - Programmable Logic Controllers (PLC)

A minimum grade of 'C' in Course IND122

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- IND122 - AC/DC Circuits

IND147 - Fluid Power I

Overview

Department
Automation and Advanced Tech

Course Description
This course provides instruction in fundamental concepts and theories for safely operating hydraulic components and pneumatic systems. Topics include: hydraulic theory, suction side of pumps, actuators, valves, pumps/motors, accumulators, symbols and circuitry, fluids, filters, pneumatic theory, compressors, pneumatic valves, air motors and cylinders, pump identification and pump operation.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the concepts associated with hydraulic theory

Objective
efine the terms: force, weight, mass, work, and pressure, explain the term hydraulics, explain the term hydraulic power transmission, describe conservation of energy as it applies to a hydraulic system, state the laws of physics that relate to hydraulic applications, explain how force, weight, mass, and pressure are used in the operation of hydraulic devices, use formulas to compute solutions for single variable problems relating to hydraulic systems where force, weight, mass, pressure, and work are the unknowns, identify the advantages of hydraulic power when compared to other methods of power transmission.

Name
The student will be able to discuss concepts associated with suction Side of Pumps

Objective
Discuss cavitation in a hydraulic system, discuss pseudo-cavitation in a hydraulic system, discuss the effects of atmospheric pressure on the suction side of the pump.

Name
The student will be able to explain concepts associated with actuators

Objective
Check for symptoms of binding pistons (rods), align pistons (rods) of hydraulic cylinders, discuss purpose of servo-proportional valves, explain the use of SPV in systems, explain troubleshooting procedures, identify commonly used types of actuators, describe the operation of commonly used types of actuators, verify air motor.

Name
The student will be able to adjust hydraulic valves

Objective
Inspect pressure control (relief) valves, measure pressure within hydraulic systems, measure flow within hydraulic systems, null hydraulic servo valves, replace valves in hydraulic systems, adjust hydraulic pressure at valves.

Name
The student will be able to maintain accumulators

Objective
Test accumulator charge, recharge accumulators, replace defective accumulators.

Name
The student will be able to read hydraulic schematics

Objective
Identify symbols used to represent components in hydraulic systems, identify the purpose of a hydraulic system using circuit diagrams, draw a hydraulic schematic using symbols to show a complete hydraulic system, be able to read and interpret hydraulic schematics.

Name
The student will be able to discuss concepts associated with hydraulic fluids and reservoirs

Objective
Explain how hydraulic oil is manufactured, identify types of hydraulic fluids and their characteristics, explain viscosity ratings, select hydraulic fluid appropriate to type of seals used in the system, select viscosity rating according to system operational requirements, check fluid levels, replace and clean hydraulic strainers/filters, drain and refill hydraulic system fluid, discuss types and purposes of reservoirs.

Name
The student will be able to discuss concepts associated with pneumatic theory

Objective
Define the terms force, weight, mass, pressure, volume, work, PSI, PSIA, PSIG, compressibility, pneumatic energy, and kinetic energy, describe the relationship between force and area (pressure); work and time (power); volume and pressure; temperature and pressure; and temperature, volume, and pressure, describe the effects of air viscosity on velocity, explain Bernoulli's principle, describe the relationship between pneumatic leverage and travel, use formulas to compute pneumatic output force given input force and cylinder areas, use formulas to compute work given cylinder bore, stroke, and air pressure, use formulas to compute output cylinder travel given input cylinder travel and leverage increase ratio, identify symbols used to represent components of pneumatic systems, describe the operation of pneumatic systems given schematic diagrams, verify air logic with diagrams.

Name
The student will be able to manipulate air compressor

Objective
Describe various types of compressors, analyze the functions of compressors, service pneumatic system compressors, disassemble/ reassemble air compressor.

Name
The student will be able to perform functional analysis on pneumatic valves

Objective
Describe various types of pneumatic valves, analyze the function of commonly used types of pneumatic valves, verify pneumatic valve(s) operation.

Name
The student will be able to perform a Functional analysis vacuum valves

Objective
Describe various types of vacuum valves, analyze the function of commonly used types of vacuum valves, verify vacuum valve(s) operation.

Name
The student will be able to identify pumping industry standards

Objective
Identify the various pumps used in industry, refer to proper section of ASME codes for information on code requirements for industrial pumps.

Name
The student will be able to basic principles of piping operations

Objective
Discuss gear, vane, and piston pump principles of operation, discuss the applications of various pumps used in industry.

IND150 - Manufacturing Equipment and Tools

Overview

Department
Automation and Advanced Tech

Course Description
In this course students will learn how to use common manufacturing tools and equipment properly and safely. Students will learn the proper selection and applications of maintenance tools and demonstrate safe practices in a maintenance environment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will identify and select tools for manufacturing equipment maintenance.

Objective
Identify the usefunction of common tools used in predictive and reactive maintenance', Select the correct hand and power tools for different predictive and reactive maintenance scenarios

Name
The student will demonstrate safety practices of common maintenance tools and equipment.

Objective
Demonstrate safety precautions for common maintenance tools such as screwdrivers wrenches sockets hammers punches chisels files pliers and vise grips', Demonstrate safety procedures for maintenance power tools such as drilling cutting grinding and sanding tools', Demonstrate safety procedures for maintenance equipment found in the lab

Name
The student will demonstrate effective operation of common maintenance tools and equipment

Objective
Effectively operate common maintenance tools such as screwdrivers wrenches sockets hammers punches chisels files pliers and vise grips', Effectively operate power tools found in the laboratory', Effectively operate maintenance equipment found in the lab

Requirements

Simple Requirements

A minimum grade of 'C' in Course IND111

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- IND111 - Foundations of Manufacturing

IND152 - Predictive Maintenance

Overview

Department
Automation and Advanced Tech

Course Description
This course addresses regular routine predictive maintenance measures that allow for forecasted maintenance issues that may impact manufacturing operations. Introduces students to the various types and styles of predictive maintenance components, principles, and practices used in industrial applications.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The students will describe the use of infrared cameras

Objective
Discuss the history of infrared, discuss the key uses of infrared cameras, identify parts of infrared cameras, discuss reflectivity, discuss reflections, discuss how infrared imagers work.

Name
The students will describe various temperature scales and make conversions

Objective
The student will be able to identify the four temperature scales, the student will be able to demonstrate temperature conversions between the four scales, the student will be able to explain the three units of heat, the student will be able to explain the two laws of thermodynamics.

Name
The students will take quality images with an infrared camera

Objective
The student will be able to explain the span and level functions, the student will be able to explain the focus and range functions, the student will be able to explain color palette selection, the student will be able to explain how distance and orientation affect image quality.

Name
The students will conduct motor tests with the PDMA motor tester

Objective
The student will be able to demonstrate through classroom and lab projects the ability to safely conduct all motor tests according to published standards, the student will be able to explain what motor testing is, the student will be able to demonstrate the use of proper PPE, the student will be able to safely connect and disconnect the motor test equipment.

Name
The students will interpret test results and write a report on the findings

Objective
he student will be able to explain what the six offline test results mean, the student will be able to explain what the six online tests mean, the student will be able to demonstrate the ability to interpret the data of all twelve tests, the student will be able to demonstrate the ability to properly write a fault report.

Name
The students will demonstrate online and offline tests

Objective
The student will be able to explain the differences in how the online and offline tests are conducted, the student will be able to explain the difference between what the results will be between the online and offline tests, the student will be able to explain the differences between the online and offline tests for AC and DC motors, the student will be able to demonstrate the different connections of each test.

Name
The students will explain and demonstrate why temperature correction is important to the test

Objective
The student will be able to explain why IEEE 43 states that temperature correction is important, the student will be able to demonstrate display corrections, the student will be able to demonstrate the formula used for temperature correction when the actual temperature is unavailable

Name
The students will identify components (test leads, connectors, battery, battery indicator, switches) of the tester

Objective
The student will be able to demonstrate the correct cable selection for online testing, the student will be able to demonstrate the correct cable selection for offline testing, the student will be able to explain where and how the battery connects to the unit, the student will be able to explain the battery indicator.

Name
The students will describe the fundamentals of Tribology

Objective
The student will be able to explain the definition/origin of Tribology, the student will be able to explain the fundamentals of Tribology, the student will be able to explain Tribology components, the student will be able to explain Tribology testing.

Name
The students will describe differences in grease and oil

Objective
The student will be able to define oil, the student will be able to define grease, the student will be able to define the differences in oil and grease, the student will be able to define correct lubricant selection, the student will be able to explain the differences in testing oil and grease

Name
The students will describe various mechanical equipment

Objective
The student will be able to demonstrate the ability to identify motors, the student will be able to demonstrate the ability to identify gear types, the student will be able to demonstrate the ability to identify various bearings, the student will be able to demonstrate the ability to explain the uses of different mechanical equipment, the student will be able to demonstrate the ability to explain conveyor systems, the student will be able to demonstrate the ability to identify pumps.

Name
The student will describe various electrical equipment

Objective
The student will be able to demonstrate the ability to identify various disconnect means, the student will be able to demonstrate the ability to identify fuses, the student will be able to demonstrate the ability to identify breakers, the student will be able to demonstrate the ability to explain lockout/tagout, the student will be able to demonstrate the ability to explain basic electrical terms, the student will be able to demonstrate the ability to properly use electrical test equipment.

Name
The students will identify the different data patterns and the problems they may represent

Objective
The student will be able to interpret the results of the AC standard test, the student will be able to interpret the results of the polarization index test, the student will be able to interpret the results of the RIC test, the student will be able to interpret the results of the resistance to ground test, the student will be able to interpret the results of the capacitance to ground test, the student will be able to interpret the results of the step voltage test, the student will be able to interpret the results of the Emax auto test, the student will be able to interpret the results of the Inrush/Startup test, the student will be able to interpret the results of the eccentricity test.

Name
The students will explain the filtration system design and filter selection.

Objective
The student will be able to explain absolute filter ratings, the student will be able to explain nominal filter ratings, the student will be able to explain beta filter ratings, the student will be able to design a filtration system, the student will be able to explain various filter media, the student will be able to define filtration guidelines.

Name
The students will demonstrate sampling methods

Objective
he student will be able to explain the critical aspects of sampling, the student will be able to demonstrate the proper sampling methods, the student will be able to demonstrate proper sampling location, the student will be able to demonstrate proper sampling procedures, the student will be able to define sampling hardware.

Name
The students will identify lubricant failure mechanisms

Objective
The student will be able to explain the effects of misalignment, the student will be able to explain the effects of water on lubrication, the student will be able to explain the effects of particle contamination, the student will be able to explain the P-F curve, the student will be able to explain the six failure patterns.

Name
The students will explain the history of ultrasound

Objective
The student will be able to explain when ultrasound was discovered, the student will be able to explain the uses of ultrasound through history, the student will be able to define ultrasound frequencies

IND157 - Preventative Maintenance

Overview

Department
Automation and Advanced Tech

Course Description
This course addresses regular routine preventative maintenance measures that allow for continued manufacturing operations. Introduces students to the various types and styles of preventative maintenance components, principles, and practices used in industrial applications.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The students will describe various temperature scales and make conversions

Objective
The student will be able to identify the four temperature scales, the student will be able to demonstrate temperature conversions between the four scales, the student will be able to explain the three units of heat, the student will be able to explain the two laws of thermodynamics.

Name
The students will conduct motor tests with the PDMA motor tester

Objective
The student will be able to demonstrate through classroom and lab projects the ability to safely conduct all motor tests according to published standards, the student will be able to explain what motor testing is, the student will be able to demonstrate the use of proper PPE, the student will be able to safely connect and disconnect the motor test equipment.

Name
The students will interpret test results and write a report on the findings

Objective
The student will be able to explain what the six offline test results mean, the student will be able to explain what the six online tests mean, the student will be able to demonstrate the ability to interpret the data of all twelve tests, the student will be able to demonstrate the ability to properly write a fault report.

Name
The students will demonstrate online and offline tests

Objective
The student will be able to explain the differences in how the online and offline tests are conducted, the student will be able to explain the difference between what the results will be between the online and offline tests, the student will be able to explain the differences between the online and offline tests for AC and DC motors, the student will be able to demonstrate the different connections of each test.

Name
The students will explain and demonstrate why temperature correction is important to the test

Objective
The student will be able to explain why IEEE 43 states that temperature correction is important, the student will be able to demonstrate display corrections, the student will be able to demonstrate the formula used for temperature correction when the actual temperature is unavailable.

Name
The students will identify components (test leads, connectors, battery, battery indicator, switches) of the tester

Objective
The student will be able to demonstrate the correct cable selection for online testing, the student will be able to demonstrate the correct cable selection for offline testing, the student will be able to explain where and how the battery connects to the unit, the student will be able to explain the battery indicator.

Name
The students will describe the fundamentals of Tribology

Objective
The student will be able to explain the definition/origin of Tribology, the student will be able to explain the fundamentals of Tribology, the student will be able to explain Tribology components, the student will be able to explain Tribology testing.

Name
The students will describe differences in grease and oil

Objective
The student will be able to define oil, the student will be able to define grease, the student will be able to define the differences in oil and grease, the student will be able to define correct lubricant selection, the student will be able to explain the differences in testing oil and grease.

Name
The students will describe various mechanical equipment

Objective
The student will be able to demonstrate the ability to identify motors, the student will be able to demonstrate the ability to identify gear types, the student will be able to demonstrate the ability to identify various bearings, the student will be able to demonstrate the ability to explain the uses of different mechanical equipment, the student will be able to demonstrate the ability to explain conveyor systems, the student will be able to demonstrate the ability to identify pumps.

Name
The student will describe various electrical equipment

Objective
The student will be able to demonstrate the ability to identify various disconnect means, the student will be able to demonstrate the ability to identify fuses, the student will be able to demonstrate the ability to identify breakers, the student will be able to demonstrate the ability to explain lockout/tagout, the student will be able to demonstrate the ability to explain basic electrical terms, the student will be able to demonstrate the ability to properly use electrical test equipment.

Name
The students will explain the functions of a lubricant

Objective
The student will be able to explain what a lubricant does, the student will be able to explain the types of lubricants, the student will be able to define why contamination is bad, the student will be able to define characteristics of new base lubricants, the student will be able to define the various types of lubrication regime.

Name
The students will explain the filtration system design and filter selection.

Objective
The student will be able to explain absolute filter ratings, the student will be able to explain nominal filter ratings, the student will be able to explain beta filter ratings, the student will be able to design a filtration system, the student will be able to explain various filter media, the student will be able to define filtration guidelines.

Name
The student will demonstrate the proper methods to find air leaks

Objective
The student will be able to demonstrate the proper frequency to find air leaks, the student will be able to demonstrate the gross to fine method of finding air leaks, the student will be able to explain how sound travels.

IND160 - Fluid Power II

Overview

Department
Automation and Advanced Tech

Course Description
This course provides instruction in advanced concepts and theories for safely operating hydraulic components and pneumatic systems. Topics include the maintenance and troubleshooting of hydraulic and pneumatic systems including valves, motors, actuators, fluids, and pump operations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the concepts associated with hydraulic theory

Objective
Define the terms: force, weight, mass, work, and pressure, explain the term hydraulics, explain the term hydraulic power transmission, describe conservation of energy as it applies to a hydraulic system, state the laws of physics that relate to hydraulic applications, explain how force, weight, mass, and pressure are used in the operation of hydraulic devices, use formulas to compute solutions for single variable problems relating to hydraulic systems where force, weight, mass, pressure, and work are the unknowns, identify the advantages of hydraulic power when compared to other methods of power transmission.

Name
The student will be able to discuss concepts associated with suction Side of Pumps

Objective
Discuss cavitation in a hydraulic system, discuss pseudo-cavitation in a hydraulic system, discuss the effects of atmospheric pressure on the suction side of the pump.

Name
The student will be able to explain concepts associated with actuators

Objective
Check for symptoms of binding pistons (rods), align pistons (rods) of hydraulic cylinders, discuss purpose of servo-proportional valves, explain the use of SPV in systems, explain troubleshooting procedures, identify commonly used types of actuators, describe the operation of commonly used types of actuators, verify air motor.

Name
TThe student will be able to adjust hydraulic valves

Objective
Inspect pressure control (relief) valves, measure pressure within hydraulic systems, measure flow within hydraulic systems, null hydraulic servo valves, replace valves in hydraulic systems, adjust hydraulic pressure at valves.

Name
The student will be able to maintain pumps

Objective
Inspect hydraulic pumps, determine type of pumps and motors and check for wear and/or damage.

Name
The student will be able to maintain accumulators

Objective
Test accumulator charge, recharge accumulators, replace defective accumulators.

Name
The student will be able to read hydraulic schematics

Objective
Identify symbols used to represent components in hydraulic systems, identify the purpose of a hydraulic system using circuit diagrams, draw a hydraulic schematic using symbols to show a complete hydraulic system, be able to read and interpret hydraulic schematics.

Name
The student will be able to discuss concepts associated with hydraulic fluids and reservoirs

Objective
Explain how hydraulic oil is manufactured, identify types of hydraulic fluids and their characteristics, explain viscosity ratings, select hydraulic fluid appropriate to type of seals used in the system, select viscosity rating according to system operational requirements, check fluid levels, replace and clean hydraulic strainers/filters, drain and refill hydraulic system fluid, discuss types and purposes of reservoirs.

Name
The student will be able to discuss concepts associated with pneumatic theory

Objective
Define the terms force, weight, mass, pressure, volume, work, PSI, PSIA, PSIG, compressibility, pneumatic energy, and kinetic energy, describe the relationship between force and area (pressure); work and time (power); volume and pressure; temperature and pressure; and temperature, volume, and pressure, describe the effects of air viscosity on velocity, explain Bernoulli's principle, describe the relationship between pneumatic leverage and travel, use formulas to compute pneumatic output force given input force and cylinder areas, use formulas to compute work given cylinder bore, stroke, and air pressure, use formulas to compute output cylinder travel given input cylinder travel and leverage increase ratio, identify symbols used to represent components of pneumatic systems, describe the operation of pneumatic systems given schematic diagrams, verify air logic with diagrams.

Name
The student will be able to manipulate air compressor

Objective
Describe various types of compressors, analyze the functions of compressors, service pneumatic system compressors, disassemble/ reassemble air compressor.

Name
The student will be able to perform functional analysis on pneumatic valves

Objective
Describe various types of pneumatic valves, analyze the function of commonly used types of pneumatic valves, verify pneumatic valve(s) operation.

Name
The student will be able to perform a Functional analysis vacuum valves

Objective
Describe various types of vacuum valves, analyze the function of commonly used types of vacuum valves, verify vacuum valve(s) operation.

Name
The student will be able to identify pumping industry standards

Objective
Identify the various pumps used in industry, refer to proper section of ASME codes for information on code requirements for industrial pumps.

Name
The student will be able to basic principles of piping operations

Objective
Discuss gear, vane, and piston pump principles of operation, discuss the applications of various pumps used in industry.

Name
The student will be able to demonstrate skills associated with installation and troubleshooting

Objective
Install, maintain, and troubleshoot an industrial pump, discuss and calculate fitting allowances and pipe measurements, cut, ream, and thread steel pipe, prepare tubing for installation by flaring, soldering, and using compression fittings, operate the pump after installation.

Name
The student will be able to identify the materials used in piping systems

Objective
Discuss and identify various materials used in piping systems, identify various fittings used in piping systems.

Name
The student will be able to install piping valves

Objective
iscuss the types of valves, identify the various types of valves, install various valves.

Requirements

Simple Requirements

A minimum grade of 'C' in Course IND147

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- IND147 - Fluid Power I

IND165 - Industrial Process Control II

Overview

Department
Automation and Advanced Tech

Course Description
This course provides advanced procedures for the install, operations, and troubleshooting of different types of process control operations. The course includes systematic approach to the instrumentation, tuning, and application of equipment used to control and regulate temperature, flow, pressure, speed, and other process variables in industrial control systems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
• Demonstrate proper tuning of process control systems.

Name
• Describe and identify final elements within a PID system including communication with Controllers.

Name
Calculate and adjust proper flow rates, pressure difference and other controls and tuning outputs.

Name
Specify and utilize the required instrumentation in Process control systems.

Name
Describe SCADA level control for PID operations

Name
Demonstrate installation, maintenance, and troubleshooting of process control within a systems environment.

Requirements

Simple Requirements

A minimum grade of 'C' in Course IND132

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- IND132 - Industrial Process Control

IND170 - CNC Installation

Overview

Department
Automation and Advanced Tech

Course Description
The course will cover the steps and tools utilized in the installation of precision manufacturing equipment. Topics covered include the review of the tools and measuring devices, safe and proper setup, alignment, and calibration procedures for advanced machinery including laser alignment, hands-on practice with installation techniques, safety protocols, and thorough quality checks to ensure optimal performance and accuracy of the equipment within customer and/or OEM tolerances.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
2

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Describe the principles and factors related to CNC installation

Name
The student will be able to read OEM or customer provided schematics for installation of precision manufacturing machines

Name
Describe and utilize the hand tools and measuring devices utilized in precision manufacturing machine installation

Name
Describe the roles and responsibilities of the personnel needed to engage in teamwork and successful collaboration in the installation process

Name
Correctly calibrate and measure surfaces and planes in the installation environment

Name
Setup and perform laser alignment and tracking

Name
Perform installation procedures utilizing the tools including but not limited to laser alignment and tracking, hand tools, and measuring devices within the provided parameters.

Requirements

Simple Requirements

A minimum grade of 'C' in Course IND139

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- IND139 - CNC Operation for Maintenance Applications

IND175 - Advanced CNC Maintenance Applications

Overview

Department
Automation and Advanced Tech

Course Description
Building on the foundational skills acquired in the CNC Maintenance course, this advanced hands-on training program dives deeper into the complexities of maintaining and optimizing CNC machines. Designed for experienced technicians and maintenance personnel, this course focuses on advanced troubleshooting techniques, system integration, and enhancing machine reliability through innovative maintenance practices.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Advanced Troubleshooting Techniques: Gain expertise in diagnosing and resolving intricate issues within CNC systems. Participants will learn advanced methods for identifying root causes of machine failures, including electrical, mechanical, and software-related problems.

Name
System Integration and Upgrades: Explore the integration of new technologies and upgrades into existing CNC systems. This module covers retrofitting, software updates, and hardware enhancements to improve functionality and performance.

Name
In-Depth Predictive Maintenance Strategies: Expand on predictive maintenance concepts by analyzing data from condition monitoring systems. Participants will learn how to interpret analytics and develop maintenance schedules that optimize machine uptime.

Name
Failure Analysis and Root Cause Investigation: Engage in practical exercises focused on failure analysis techniques. Learn to conduct thorough investigations and implement corrective actions that prevent future occurrences.

Name
Customized Maintenance Plans: Discover how to create tailored maintenance plans that reflect the unique needs of specific CNC machines and operational environments. Participants will explore the balance between preventive, predictive, and corrective maintenance strategies.

Name
Hands-On Projects: Participate in advanced hands-on workshops where participants will troubleshoot complex issues, implement system upgrades, and analyze data from CNC machinery in real-time scenarios

Requirements

Simple Requirements

A minimum grade of 'C' in Course IND139

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- IND139 - CNC Operation for Maintenance Applications

INF105 - CompTIA A+ Core 1

Overview

Department
Information Technology

Course Description
This course will prepare the student for entry level work in the Information Technology career field. Successful students will have the skills necessary for installing, maintaining, configuring, and upgrading PC (Personal Computer) workstations. Students will utilize troubleshooting techniques and tools to effectively and efficiently resolve PC, OS, and network connectivity issues and implement security practices. Job titles in some organizations that would describe the role of this individual may be: Enterprise technician, IT administrator, field service technician, PC or support technician etc.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify basic hardware components and explain their function

Objective
Categorize storage devices and backup media, Explain motherboard components, types and features, Classify power supplies types and characteristics, Explain the purpose and characteristics of CPUs (Central Processing Unit) and their features, Explain cooling methods and devices, Compare and contrast memory types, characteristics and their purpose, Distinguish between the different display devices and their characteristics, Install and configure peripherals and input devices, Summarize the function and types of adapter cards, Install, configure and optimize laptop components and features, Install and configure printers

Name
The student will demonstrate an understanding of various troubleshooting techniques

Objective
Given a scenario, explain the troubleshooting theory, Given a scenario, explain and interpret common hardware and operating system symptoms and their causes, Given a scenario, determine the troubleshooting methods and tools for printers, Given a scenario, explain and interpret common laptop issues and determine the appropriate basic troubleshooting method, Given a scenario, integrate common preventative maintenance techniques

Name
The student will demonstrate an understanding of networking fundamentals

Objective
Compare and contrast the different Windows Operating Systems and their features, Given a scenario, demonstrate proper use of user interfaces, Explain the process and steps to install and configure the Windows OS (Operating System), Explain the basics of boot sequences, methods and startup utilities

Name
The student will demonstrate an understanding of basic operational procedures relating to safety and professionalism

Objective
Summarize the basics of networking fundamentals, including technologies, devices, and protocols, Categorize network cables and connectors and their implementations, Compare and contrast the different network types

Name
The student will demonstrate an understanding of personal computer and laptop components and how to troubleshoot related issues

Objective
Explain the basic principles of security concepts and technologies, Summarize a variety of security features

INF110 - CompTIA A+ Core 2

Overview

Department
Information Technology

Course Description
This course will prepare the student for entry level work in the Information Technology career field. Successful students will have the knowledge required to understand the fundamentals of computer technology, networking and security, and will have the skills required to identify hardware, peripheral, networking, and security components. Upon completion of the course students will understand the basic functionality of the operating system and basic troubleshooting methodology, practice proper safety procedures, and will effectively interact with customers and peers.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will demonstrate an understanding of Windows Operating System

Name
The student will demonstrate an understanding of basic security features and technology

Name
The student will be able to troubleshoot common problems related to Windows Operating system

Name
The student will be able to troubleshoot and install a small network

Name
The student will demonstrate an understanding of implementing and maintaining system security

Requirements

Simple Requirements

A minimum grade of 'C' in Course INF105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INF105 - CompTIA A+ Core 1

INF112 - Network Essentials

Overview

Department
Information Technology

Course Description
This course teaches the fundamentals of networking. It covers how devices communicate on a network, network addressing and network services, how to build a home network and configure basic security, the basics of configuring Cisco devices, and testing and troubleshooting network problems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Explain how end-user devices and local networks interact with the global Internet.

Name
Explain the requirements for network connectivity.

Name
Build a small network using an integrated network router.

Name
Explain the importance of IP addressing.

Name
Explain how the protocols of the TCP/IP suite enable network communication.

Name
Configure an integrated wireless router and wireless clients to connect securely to the Internet.

Name
Configure basic network security.

Name
Build a simple computer network using Cisco devices.

Name
Troubleshoot common network issues found in home and small business networks.

Requirements

Simple Requirements

A minimum grade of 'C' in Course INF105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INF105 - CompTIA A+ Core 1

INF113 - Introduction to Programming

Overview

Department
Information Technology

Course Description
Programmers are in higher demand today than ever before. Get the essential skills and tools to become a successful software engineer and learn the fundamental concepts and practices that are critical to the task of coding—no matter what language you choose. In this course, students will develop the knowledge to begin programming in any language, connect programming theory to practice in real-life scenarios, and apply best practices from experts in the field.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Programming Foundations: Fundamentals

Name
Programming Foundations: Object-Oriented Design

Name
Programming Foundations: Algorithms

Name
Programming Foundations: Design Patterns

Name
Programming Foundations: Data Structures

Name
Programming Foundations: Databases

Name
Programming Foundations: APIs and Web Services

Name
Programming Foundations: Web security

Name
Programming Foundations: Test-Driven Development

Name
Programming Foundations: Software Testing/QA

Name
Programming Foundations: Secure Coding

Name
Programming Foundations: Fuzzy Logic

INF115 - Network+ Part I

Overview

Department
Information Technology

Course Description
This course prepares a student for entry level installing, maintaining, troubleshooting, and repairing a computer network.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to understand the elements of a network and certifications available to network professionals.

Name
The student will be able to describe the layers of the OSI model and identify standards for organizational networking.

Name
The student will be able to understand and identify characteristics of a network protocols.

Name
The student will be able to explain concepts related to data transmission, benefits and limitations of networking media, and identify the best practices for cabling work areas.

Name
The student will be able to explain the benefits and uses of different topologies.

Name
The student will be able to distinguish between the different types of networking hardware.

Name
The student will be able to understand and have the ability to distinguish between WAN technology and remote connectivity.

Requirements

Simple Requirements

A minimum grade of 'C' in Course INF112

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INF112 - Network Essentials

INF116 - Network+ Part II

Overview

Department
Information Technology

Course Description
This is a continuation of INF 115 Networking Part 1. This class prepares students to work with network operating systems and network design issues.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to work with Windows Server and manage users, groups and rights under Windows server

Name
The student will be able to understand the purposes and uses of PXE (Pre-Execution Environment), DHCP (Dynamic Host Configuration Protocol), and DNS (Domain Name System). Students will used TCP/IP (Transmission Control Protocol/Internet Protocol) protocols for network troubleshooting

Name
The student will be able to troubleshoot using software and hardware network tools to diagnose problems

Name
The student will be able to perform baseline analysis of a network, plan regular hardware/software maintenance, know the pitfalls of making changes to the network, and research trends for future network upgrades

Name
The student will be able to identify network threats and protect a network from loss or damage The student will be able to understand how physical security contributes to network security

Name
The student will be able to analyze the status of a network and perform a needs assessment for managing network implementation project

Name
The student will be able to identify network hardware and explain their uses

Requirements

Simple Requirements

A minimum grade of 'C' in Course INF115

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INF115 - Network+ Part I

INF120 - Security+

Overview

Department
Information Technology

Course Description
This course prepares students for the CompTIA Security+ Certification exam. CompTIA Security+ is a global certification that validates the baseline skills needed to perform core security functions and pursue an IT security career. The Security+ course focuses on the latest trends and techniques in risk management, risk mitigation, threat management, and intrusion detection. The Security + course provides students with the knowledge and skills required to assess an enterprise environment's security posture, recommend and implement appropriate security solutions, and monitor and secure hybrid environments, including cloud, mobile, and IoT. In this course, students will learn to operate with an awareness of applicable laws and policies, including principles of governance, risk management, and compliance, while identifying, analyzing, and responding to security events and incidents. This course prepares the student for a System Administrator, Network Administrator, Security Administrator, Junior IT Auditor/ Penetration Tester, Security Specialist, Security Consultant or Security Engineer.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Compare and contrast various types of controls related to governance, risk, and compliance

Objective
Explain the importance of applicable regulations, standards, or frameworks that impact organizational security posture, Explain the importance of polices to organizational security, Explain the importance of security concepts in an enterprise environment, Summarize risk management processes and concepts

Name
Summarize the techniques used in security assessments

Objective
Given a scenario, use the appropriate tool to assess organizational security, Explain the techniques used in penetration testing

Name
Explain different threat actors, vectors, and intelligent sources

Objective
Compare and contrast different types of social engineering techniques, Given a scenario, analyze potential indicators associated with network attacks, Explain the security concerns associated with various types of vulnerabilities, Given a scenario, analyze potential indicators associated with application attacks

Name
Given a scenario, implement secure network designs

Objective
Summarize the basics of cryptographic concepts, Distinguish and differentiate network design elements and compounds, Explain the security function and purpose of network devices and technologies, Apply and implement secure network administration principles, Identify commonly used default network ports, Implement wireless network in a secure manner, Explain the importance of physical security controls, Explain the security implications of embedded and specialized systems, Exemplify the concepts of confidentiality, integrity, and availability (CIA) (Confidentiality, Integrity and Availability), Summarize authentication and authorization design concepts, Given a scenario, install and configure wireless security settings, Given a scenario, implement secure protocols, Given a scenario, implement public key infrastructure, Given a scenario, apply cybersecurity solutions to the cloud, Given a scenario, implement cybersecurity resilience Given a scenario, implement host or application security solutions, Given a scenario, implement identity and account management controls

Name
Explain privacy and sensitive data concepts in relation to security

Name
Given and incident, utilize appropriate data sources to support an investigation

Objective
Execute disaster recovery plans and procedures, Explain risk related concepts, Execute appropriate incident response procedures, Explain the importance of security related awareness and training, Compare and contrast aspects of business continuity, Carry out appropriate risk mitigation strategies, Explain the impact and proper use of environmental controls, Explain the key aspects of digital forensics, Given a scenario, analyze potential indicators to determine the type of cyber-attack, Given an incident, apply mitigation techniques or controls to secure and environment Summarize the importance of policies, processes, and procedures for incident response

Name
Summarize secure application development, deployment, and automation concepts

Requirements

Simple Requirements

A minimum grade of 'C' in Course INF116

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INF116 - Network+ Part II

INF127 - Linux

Overview

Department
Information Technology

Course Description
This course provides an in-depth introduction to Linux System administration. It equips students with foundational skills necessary to manage and troubleshoot Linux environments in real-world enterprise settings. Topics covered include Linux file systems, package management, basic system configuration, shell scripting, networking, security, and administrative tasks. Through hands-on labs, students will gain practical experience with command-line tools and key system administration tasks such as user management, permissions, disk quotas, and process control. The course emphasized the ability to work with various Linux distributions, including Debian, Red Hat, and CentOS, providing a broad understanding of Linux-based environments.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Analyze system properties and remediate accordingly

Objective
Understand the correct locations of files under the FHS, Know the location and purpose of important file and directories as defined in the FHS, Find files and commands on a Linux system, Determine what files a package provides, as well as find which package a specific file comes from, Obtain information on RPM packages such as version, status, dependencies, integrity and signatures, Install, re-install, upgrade and remove packages using RPM and YUM, Install, upgrade and uninstall Debian binary packages, Find packages containing specific files or libraries that may or may not be installed, Obtain package information such as version, content, dependencies, package integrity and installation status (whether or not the package is installed), Load shared libraries, Identify the typical locations of system libraries, Identify shared libraries, Install, configure and monitor kernel modules

Name
Install and configure various Linux operating systems

Objective
Configure and implement appropriate access and authentication methods, Providing alternative boot locations and backup boot options, Interact with the boot loader, Install and configure a boot loader such as GRUB Legacy, Perform basic configuration changes for GRUB 2, Summarize security best practices in a Linux environment, Use links to support system administration tasks, Copying versus linking files, Identify hard and/or soft links, Create links, Analyze system processes to optimize performance, Signal a program to continue running after logout, Monitor active processes, Select and sort processes for display, Send signals to processes, Run jobs in the foreground and background

Name
Manage storage in a Linux environment

Objective
Use find to locate and act on files based on type, size or time, Copy multiple files and directories recursively, Copy, move and remove files and directories individually, Usage of tar, cpio, and dd, Remove files and directories recursively, Use simple and advanced wildcard specifications in commands, Edit, check, and generate user quota reports, Set up a disk quota for a filesystem, Use the group field to grant file access to group members, Use access modes such as suid, sgid and the sticky bit to maintain security, Know how to change the file creation mask, Manage access permissions on regular and special files as well as directories, Manually mount and unmount filesystems, Configure user mountable removeable filesystems, Configure file system mounting on bootup, Differentiate between the various types of mass storage devices, Describe and navigate the Linux file system, Verify the integrity of filesystems, Repair simple filesystem problems, Monitor free space and inodes, Allocate filesystems and swap space to separate partitions or disks, Ensure the /boot partition conforms to the hardware architecture requirements for booting, Allocate filesystems and swap space to separate partitions or disks, Knowledge of basic features of LVM

Name
Deploy and execute basic BASH scripts

Objective
Navigate a document using vi, Insert, edit, delete, copy and find text, Use basic vi modes, Send output to both stdout and a file, Use the output of one command as arguments to another command, Redirecting standard input, standard output and standard error, Pipe the output of one command to the input of another command, Send text files and output streams through text utility filters to modify the output using standard UNIX commands found in the GNU text utils package, Invoke commands inside and outside the defined path, Use single shell commands and one line command sequences to perform basic tasks on the command line, Use and edit command history, Use and modify the shell environment including defining, referencing and exporting environment variables, Create simple regular expressions containing several notational elements, Use regular expression tools to perform searches through a filesystem or file content

Name
Demonstrate Linux usage

Objective
Create, modify, and redirect files, Configure and verify network connection paraments, Configure localization options, Tools and utilities to list various hardware information, Determine hardware resources for devices, Know the differences between coldplug and hotplug devices, Conceptual understanding of sysfs, udev, dbus, Configure systems with or without external peripherals such as keyboards, Enable and disable integrated peripherals, Tools and utilities to manipulate USB devices, Conduct software installations, configurations, updates, and removals, Explain Linux boot process concepts, Know the default priority of a job that is created, Run a program with higher or lower priority than the default, Change the priority of a running process, Demonstrate knowledge of the boot sequence from BIOS to boot completion DELETED, Provide common commands to the boot loader and options to the kernel at boot time, Understanding of SysVinit and systemd, Check boot events in the log file, Awareness of Upstart, Alert users before switching runlevels/boot targets or other major system events, Properly terminate processes, Set the default runlevel or boot target, Change between runlevels/boot targets including single user mode, Shutdown and reboot from the command line

Name
Summarize and explain server roles

Objective
Use various mkfs commands to create various filesystems such as: ext2/ ext3/ext4, XFS, VFAT, Manage MBR partition tables, Basic knowledge of gdisk and parted with GPT, Awareness of ReiserFS and Btrfs

Requirements

Simple Requirements

A minimum grade of 'C' in Course INF110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INF110 - CompTIA A+ Core 2

A minimum grade of 'C' in Course INF116

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INF116 - Network+ Part II

INF134 - Server +

Overview

Department
Information Technology

Course Description
This course prepares students for the CompTIA Server+ Certification exam. This course is vendor neutral and works with Microsoft Windows Server Operating Systems, Linux Open Source Operating Systems, and VMware virtualization products. This course covers the basics from how the hardware and operating systems works to more advanced concepts of RAID, virtualization, security, network storage, building domain controllers for an enterprise environment, managing users, groups, and permissions and troubleshooting. The course prepares students to work in a wide variety of jobs such as System Administers, Webserver administrators, virtualization, and cloud administrator roles.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will setup and maintain server hardware

Objective
Configure RAID 0, 1, 5, 6 and hot spares, Configure servers to use network infrastructure services including aggregating NICs, Deploy and manage network storage, Install physical server hardware, Perform hardware maintenance, Summarize proper server decommissioning concepts

Name
The student will install, configure, and maintain Server operating system software

Objective
Configure DNS, DHCP, and failover, Configure server firewalls, Install and configure Windows Active Directory, Create and implement group polices in AD, Create a file structure and assign appropriate permissions, Summarize scripting basics for server administration, Configure and maintain server functions and features, Explain important concepts pertaining to identity and access management for server administration, Explain licensing concepts, Configure and maintain server functions and features, Implement drive encryption

Name
The student will configure and maintain virtualization

Objective
Summarize the purpose and operation of virtualization, Implement virtualization by installing ESXi, Configure ESXi Building virtual servers

Name
The student will troubleshoot both physical and virtual systems

Objective
Explain troubleshooting theory and methodology, Given a scenario, troubleshoot common hardware failures, Given a scenario, troubleshoot common operating system and software problems, Given a scenario, troubleshoot network connectivity issues, Given a scenario, troubleshoot security problems, Given a scenario, troubleshoot storage problems

Name
The student will understand the basics of disaster recovery

Objective
Explain the importance of backups and restores, Explain the importance of disaster recovery, Explain data security risks and mitigation strategies, Explain the importance of asset management and documentation

Requirements

Simple Requirements

A minimum grade of 'C' in Course INF110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- INF110 - CompTIA A+ Core 2

INF136 - Introduction to PowerShell

Overview

Department
Information Technology

Course Description
Introduction to PowerShell provides an overview and application of the next generation command shell developed by Microsoft. Students learn to interact with Windows PowerShell from the command line. This course prepares students to demonstrate an understanding and application of the fundamentals of how to develop and execute PowerShell scripts, and how to become an effective programmer in the PowerShell environment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate an understanding of the Windows PowerShell environment

Objective
Orient with the Windows PowerShell environment, Identify new features of Windows PowerShell, Install and configure Windows PowerShell, Configure Windows Remote Management, Interact with the PowerShell Command Prompt, Engage in Windows PowerShell Scripting, Execute PowerShell scripts.

Name
Interact with the PowerShell Console Window and Integrated Scripting Environment

Objective
Access Windows PowerShell, Specify Default Working Directory, Configure the PowerShell Console Window, Work with the Integrated Scripting Environment, Use Administrative Privileges with Windows PowerShell, Navigate Hierarchical Data Stores

Name
Demonstrate an understanding of object-based scripting with .NET

Objective
Identify additional PowerShell customization techniques, Operate in the Microsoft .NET Framework, Execute Cmdlets, Execute Background jobs, Demonstrate Windows PowerShell Plumbing, Work with Aliases

Name
Work with variables, arrays, and hashes

Objective
Identify PowerShell Language Features, Demonstrate storing and retrieving data

Name
Implement conditional logic

Objective
Compare values, Combine pipelines and operators, Implement conditional logic, Demonstrate use of Windows PowerShell Operators (comparison operators, logical operators, string comparison operators)

Name
Use loops to process data

Objective
Set Up do while Loops, Set Up do until Loops, Create for Loops, Create for each Loops, Use while Loops, Alter Loop execution using the Break Command, Alter Loop execution using the continue Command

Name
Organize scripts using functions

Objective
Change the Script Design using functions and filters, Improve Script organizations, Create reusable code, Enhance script organization with functions, Demonstrate function structure, Process Arguments, Process incoming result, Restrict variable scope, Replace Functions with filters

Name
Work with files and folder

Objective
Match simple patterns, Match alternative patterns, Work with regular expression characters, Work with Quantifiers, Match patterns based on ranges, Administer files and folders, Verify file and folder existence, Retrieve file and folder information, Copy and move files and folders, Delete files and folders, Rename files and folders, Search files and folders, Read from and Writing to folders, Create files and folders, Write to Text files, Reformat Cmdlet Output, Read from Text files, Erase file contents, Save data output as HTML, Save data as an XML file, Read data from an XML file, Save data in a comma-separated value file, Read data from a comma-separated value file, Send output to the printer, Display data in a graphic window using the out-grid view Cmdlet, Display output, Sort data

Name
Demonstrate an understanding and application of Basic System Administration

Objective
Specify script requirements, Access and administer system resources, Programmatically interact with the Windows Registry, Remote one to one, Remote to many, Demonstrate Eventing

Name
Demonstrate an understanding and application of the process of debugging PowerShell Scripts

Objective
Understand PowerShell Errors (syntax, runtime, logical), Identify terminating vs. nonterminating errors, Dissect the structure of error messages, Create error handlers, Trace script execution, Debug PowerShell scripts, Debug scripts using ISE

Name
Demonstrate an understanding and application of the PowerShell and Windows Management Instrumentation

Objective
Summarize Windows Management Instrumentation, Retrieve System Information Using the WMI Cmdlets, Retrieve System Information using the CIM Cmdlets

Requirements

Simple Requirements

A minimum grade of 'C' in Course INF116

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INF116 - Network+ Part II

INF139 - Cybersecurity Essentials

Overview

Department
Information Technology

Course Description
In this course, learners develop workforce readiness skills and build a foundation for success in cybersecurity-related careers. With video and rich interactive media support, participants learn, apply, and practice cybersecurity knowledge and skills through a series of in-depth, hands-on experiences and simulated activities that reinforce their learning. Cybersecurity Essentials teaches comprehensive cybersecurity concepts and skills at the entry level, from threat mitigation and defense to post-incident forensics. Learners will progress from basic cybersecurity concepts to experiences in assessing vulnerabilities and risks later in the curriculum.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Explain how threat actors execute some of the most common types of cyber attacks.

Objective
Explain the threats vulnerabilities and attacks that occur in the various domains', Identify the different deception methods used by attackers to deceive their victims', Describe some common types of network attacks', Describe common types of wireless and mobile device attacks', Describe types of application attacks

Name
Explain network security principles.

Objective
Describe the current network security landscape', Explain how network threats have evolved

Name
Explain how TCP/IP vulnerabilities enable network attacks.

Objective
Explain the IPv4 and IPv6 header structure', Explain how IP vulnerabilities enable network attacks', Explain how TCP and UDP vulnerabilities enable network attacks

Name
Recommend measures to mitigate threats.

Assessment
Recommend measures to mitigate threats.

Objective
Explain IP service vulnerabilities', Explain how network application vulnerabilities enable network attacks', Recommend basic threat mitigation measures

Name
Troubleshoot a wireless network.

Assessment
Troubleshoot a wireless network.

Objective
Explain how wireless devices enable network communication', Describe threats to WLANs', Troubleshoot a wireless connection

Name
Explain how devices and services are used to enhance network security.

Objective
Explain how specialized devices are used to enhance network security, Explain how services enhance network security

Name
Use cybersecurity best practices to improve confidentiality, integrity, and availability.

Objective
Use hashes to verify the integrity of files', Compare the three states of data', Compare the types of cybersecurity countermeasures

Name
Explain approaches to network security defense.

Objective
Explain how the defenseindepth strategy is used to protect networks', Explain how an organization monitors cybersecurity threats', Explain security policies regulations and standards

Requirements

Simple Requirements

A minimum grade of 'C' in Course INF116

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INF116 - Network+ Part II

INF142 - Cloud+

Overview

Department
Information Technology

Course Description
This course prepares students and professionals who are interested in mastering fundamental, vendor-independent cloud computing concepts. No previous cloud computing experience is necessary to begin learning from this course, although knowledge of basic computer, networking, and security principles is helpful.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Analyze the different cloud models to determine the best solution to support technical needs

Objective
Analyze deployment results to confirm they meet the baseline, Analyze sizing, subnetting, and basic routing for a provided deployment of the virtual network, Analyze system requirements to determine if a given testing plan is appropriate, Given SLA requirements, determine the appropriate metrics to report, Execute a provided deployment plan, Analyze system requirements to ensure successful system deployment, Analyze characteristics of the workload (storage, network, compute) to ensure a successful migration, Analyze CPU and memory sizing for a provided deployment

Name
Apply security configurations and compliance controls to meet given cloud infrastructure requirements

Objective
Given a cloud service model, apply the appropriate security automation technique to the target system, Apply an appropriate backup or restore method, Apply the appropriate ACL to the target objects to meet access requirements according to a security template, Implement account provisioning techniques in a cloud environment to meet security and policy requirements, Given a cloud service model, implement defined security technologies to meet given security requirements

Name
Maintain and monitor cloud environment for proper operation

Objective
Given a specific environment and related data (e.g., performance, capacity, trends), apply appropriate changes to meet expected criteria, Determine when to provision/deprovision cloud resources, Determine the appropriate allocation of cloud resources, Apply the appropriate steps to ensure business continuity, Apply the appropriate maintenance automation technique to the target objects, Apply elements required to extend the infrastructure into a given cloud solution, Given a cloud service model, determine the appropriate methodology to apply given patches, Analyze defined metrics to determine the presence of an abnormality and/or forecast future needed cloud resources, Analyze testing results to determine if the testing is successful in relation to given system requirements, Given a scenario, apply the appropriate automation tools to update cloud elements, Analyze the appropriate storage type and protection capability for a provided deployment

Name
Apply proper troubleshooting techniques to remediate problems

Objective
Given a scenario, explain the troubleshooting methodology, Given a scenario, troubleshoot a deployment issue, Given a scenario, troubleshoot a security issue, Given a scenario, troubleshoot automation/orchestration issues, Given a scenario, troubleshoot common capacity issues, Given a scenario, troubleshoot connectivity issues

Requirements

Simple Requirements

A minimum grade of 'C' in Course INF110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INF110 - CompTIA A+ Core 2

INF144 - Virtualization

Overview

Department
Information Technology

Course Description
In this course students will learn how to implement and support virtualization of clients of servers in a networked computing environment. Through the course curriculum student will explore installation, configuration, and management of computer virtualization workstation and servers.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Configure and manage a Storage Area Network (SAN)

Name
Configure and manage virtual network and storage such as vCenter server or ESxi

Name
Configure security through best practices

Name
Deploy, manage and migrate virtual machines

Name
Describe the architecture of a Data Center environment with RAID and Intelligent Storage Systems

Name
Install and configure virtual server components such as vCenter

Name
Install and configure virtualization technology such as VMware

Requirements

Simple Requirements

A minimum grade of 'C' in Course INF134

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INF134 - Server +

INF148 - Computer Support Specialist Capstone Experience

Overview

Department
Information Technology

Course Description
The capstone course is designed to serve as a summative evaluation of the student's skills and abilities. The student is given the opportunity to demonstrate integrated knowledge and growth in the area of computer support. The course assesses student's cognitive, affective, and psychomotor learning in the program and offers the opportunity to apply employability skills (soft skills) relevant to customer service and work ethic. The course requires the student to design and implement a unique project that incorporates all of the program level outcomes. Additionally, the student will present their project to representatives from WATC faculty in the technical program. The project itself can serve as a portfolio artifact to present to potential employers.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
1

Contact Hours

Contact Hours Min:
30

Billing Hours

Billing Hours Min:
1

Lab Hours

Lab Hours Min:
30

Requirements

Simple Requirements

A minimum grade of 'C' in Course INF142

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- INF142 - Cloud+

INF154 - Ethical Hacker

Overview

Department
Information Technology

Course Description
In this course, learners develop ethical hacking and penetration testing skills that build a foundation for success in the cybersecurity industry. With the support of video and rich interactive media, participants learn, apply, and practice ethical hacking skills in meaningful ways through a series of realistic hands-on lab experiences. The course also includes many opportunities for learners to practice what they are learning as they are learning it. Learning by doing is the most powerful way to build new skills and knowledge.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Explain the importance of methodological ethical hacking and penetration testing.

Objective
Explain the importance of ethical hacking and penetration testing', Explain different penetration testing methodologies and frameworks', Configure a virtual machine for your penetration testing learning experience

Name
Create penetration testing preliminary documents.

Objective
Explain the role of governance risk compliance and environmental factors in planning penetration testing', Create a penetration test scope and plan document that addresses organizational requirements for penetration testing services', Create your personal code of conduct to provide professionalism and integrity in your ethical hacking practice

Name
Perform information gathering and vulnerability scanning activities.

Objective
Perform passive reconnaissance activities', Perform active reconnaissance activities', Perform vulnerability scans', Analyze the results of reconnaissance exercises

Name
Explain how social engineering attacks succeed.

Objective
Explain how pretexting is used in social engineering attacks', Explain different types of social engineering attacks', Explain different types of physical attacks', Explain how social engineering attack tools facilitate attacks', Explain how social engineering attacks enlist user participation

Name
Explain how to exploit wired and wireless network vulnerabilities.

Objective
Explain how to exploit networkbased vulnerabilities', Explain how to exploit wireless vulnerabilities

Name
Explain how to exploit application-based vulnerabilities.

Objective
Explain common web application attacks', Describe common web application testing tools', Explain how business logic flows enable attackers to exploit web applications', Use tools to conduct injection attacks', Use tools to exploit authenticationbased vulnerabilities', Explain how authorizationbased vulnerabilities are exploited', Explain crosssite scripting vulnerabilities', Explain crosssite request forgery CSRFXSRF and serverside request forgery attacks', Explain clickjacking', Explain how file inclusion vulnerabilities are exploited', Explain how to exploit insecure code

Name
Explain how to exploit cloud, mobile, and IoT security vulnerabilities.

Objective
Explain how to attack cloud technologies', Explain common attacks against specialized systems

Name
Explain how to perform post-exploitation activities.

Objective
Explain how to create a foothold and maintain persistence after compromising a system', Explain how to perform lateral movement detection avoidance and enumeration

INF160 - Server Security

Overview

Department
Information Technology

Course Description
Server Security is designed to provide the students with concepts to develop, deploy, and maintain reliable and secure servers. Topics will include SSH keys, Firewalls, PKI systems, SSL and TLS encryption, service and file auditing.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explain the purpose of SSH keys.

Objective
The student will complete an SSH key authentication

Name
The student will be able to explain the purpose of a Firewall.

Objective
Set up a Firewall configuration

Name
The student will understand the definition and function of a Virtual Private Network (VPN).

Objective
Establish a VPN connection

Name
The student will be able to explain the Public Key Infrastructure (PKI).

Objective
Set up a PKI system

Name
The student will be able to understand and use SSL and TLS encryption.

Objective
Set up a SSLTLS service on a server

Name
The student will be able to generate and interpret a Service Audit.

Objective
Harden a server by shutting down unnecessary services

Name
The student will be able to create and explain a File Audit.

Objective
Ability to compare backed up files to active files to verify username and password have not been altered

Requirements

Simple Requirements

A minimum grade of 'C' in Course INF134

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INF134 - Server +

INF164 - Switching, Routing, and Wireless Essentials

Overview

Department
Information Technology

Course Description
Delve further into the world of networking with the second CCNA course in a 3-course series. This course focuses on switching technologies and router operations that support small-to-medium business networks, including wireless local area networks (WLAN) and security concepts. Students will perform basic network configuration and troubleshooting, identify and mitigate LAN security threats, and configure and secure a basic WLAN. CCNAv7: Switching, Routing, and Wireless Essentials (SRWE) covers the architecture, components, and operations of routers and switches in small networks and introduces wireless local area networks (WLAN) and security concepts. Students learn how to configure and troubleshoot routers and switches for advanced functionality using security best practices and resolve common issues with protocols in both IPv4 and IPv6 networks.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Configure VLANs and Inter-VLAN routing applying security best practices

Name
Troubleshoot inter-VLAN routing on Layer 3 devices

Name
Configure redundancy on a switched network using STP and EtherChannel

Name
Troubleshoot EtherChannel on switched networks

Name
Explain how to support available and reliable networks using dynamic addressing and first-hop redundancy protocols

Name
Configure dynamic address allocation in IPv6 networks

Name
Configure WLANs using a WLC and L2 security best practices

Name
Configure switch security to mitigate LAN attacks

Name
Configure IPv4 and IPv6 static routing on routers

Requirements

Simple Requirements

A minimum grade of 'C' in Course INF116

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INF116 - Network+ Part II

INF165 - Advanced Cyber Security

Overview

Department
Information Technology

Course Description
Advanced Cyber Security is designed to enhance students knowledge of security practices. The course will cover a range of topics that are vital for securing modern enterprises. Topics will include plans and policies, enterprise roles, security metrics, risk management, standards and regulations, physical security and business endurance.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to assess the current security landscape; threats, vulnerabilities, consequences of security failures.

Objective
Understanding the current threats and vulnerabilities

Name
The student will be able to recognize and determine the general strength and weaknesses of entry level cybersecurity models.

Objective
Analyze various cybersecurity models for various organizations

Name
The student will be able to appraise the domains of security interactions to achieve valid system-wide security.

Objective
Use network vulnerability assessment tools

Name
The student will be able to appraise the tendency and patterns that drive future of cybersecurity.

Objective
Learn the tools to stay current on present and emerging threats

Name
The student will have the knowledge and skill to configure and use threat detection tools.

Objective
Configure and implement IDS and Firewalls

Name
The student will be able to explain the relationship in frameworks, common policies, controls, and procedures.

Objective
Understanding the security tools and software analysis

Name
The student will be able to explain the practices used to secure an organizations environment.

Objective
Understanding the purposes of conducting a penetration test internally or externally contractor

Name
The student will be able to take data and determine the impact of the attack.

Objective
Analyze the depth of an attack and develop a recovery procedure

Name
The student will be able to summarize the incident from the time of attack to the post-incident response process.

Objective
Understanding the attack from the beginning to the end Complete a recovery plan

Requirements

Simple Requirements

A minimum grade of 'C' in Course INF120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INF120 - Security+

INF167 - Enterprise Networking, Security, and Automation

Overview

Department
Information Technology

Course Description
Large enterprises depend heavily on the smooth operation of their network infrastructures. The third course in the 3-course CCNA series describes the architectures and considerations related to designing, securing, operating, and troubleshooting enterprise networks. It covers wide area network (WAN) technologies and quality of service (QoS) mechanisms used for secure remote access along with the introduction of software-defined networking, virtualization, and automation concepts that support the digitalization of networks. CCNAv7: Enterprise Networking, Security, and Automation (ENSA) describes the architecture, components, operations, and security to scale for large, complex networks, including wide area network (WAN) technologies. The course emphasizes network security concepts and introduces network virtualization and automation. Students learn how to configure, troubleshoot, and secure enterprise network devices and understand how application programming interfaces (API) and configuration management tools enable network automation.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Configure single-area OSPFv2 in both point-to-point and multiaccess networks

Name
Explain how to mitigate threats and enhance network security using access control lists and security best practices

Name
Implement standard IPv4 ACLs to filter traffic and secure administrative access

Name
Configure NAT services on the edge router to provide IPv4 address scalability

Name
Explain techniques to provide address scalability and secure remote access for WANs

Name
Explain how to optimize, monitor, and troubleshoot scalable network architectures

Name
Explain how networking devices implement QoS

Name
Implement protocols to manage the network

Name
Explain how technologies such as virtualization, software defined networking, and automation affect evolving networks

Requirements

Simple Requirements

A minimum grade of 'C' in Course INF164

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- INF164 - Switching, Routing, and Wireless Essentials

INF172 - Multi-Cloud Networking

Overview

Department
Information Technology

Course Description
Cloud networking impacts all careers, and an awareness of the opportunities associated with this emerging field is critical. Support Specialists need to understand what it means to manage on and migrate to the cloud—and comprehend the overall landscape before diving into the platform. In this course, you will get a high-level overview just for support specialist, focusing on the features and services in a multi-cloud networking environment using Google Cloud, Amazon Web Services, and Microsoft Azure.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Describe cloud concepts

Name
Describe Azure architecture and services

Name
Describe Azure management and governance

Name
Identify and understand the basic functions of each AWS networking service

Name
Recognize the relationship between group AWS networking services by understanding the functions and business goals of each

Name
Describe how networking concepts and protocols are implemented in AWS

Name
Recognize ways to balance performance, cost, and availability, for different combinations of AWS networking services

Name
Configure Google VPC networks, subnets, and routers and control administrative access to VPC objects

Name
Route traffic by using DNS traffic steering

Name
Control access to VPC networks

Name
Implement network connectivity between Google Cloud projects

Requirements

Simple Requirements

A minimum grade of 'C' in Course INF142

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- INF142 - Cloud+

INF174 - Information Technology Capstone

Overview

Department
Information Technology

Course Description
In this course students, will have the opportunity to link classroom/lab theory with a capstone learning opportunity. Through hands on application, reflection and evaluations, students will demonstrate integrated knowledge and growth in the field of information technology. Students will produce a critical reflection on their capstone experience demonstrating how they have addressed specific learning goals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
3

Other Hours

Other Hours
Min:
135

Course Learning Outcomes

Learning Outcomes

Name
Demonstrates effective workplace behaviors

Objective
Effectively demonstrates appropriate workplace attitudes, Effectively demonstrates appropriate workplace appearance, Effectively demonstrates appropriate workplace ambition skills, Effectively demonstrates appropriate workplace accountability skills, Effectively demonstrates appropriate workplace acceptance skills, Effectively demonstrates appropriate workplace appreciation skills

Name
Applied your knowledge, skills, experience to a work environment

Name
Acquired new learning through challenging and meaningful activities

Name
Reflected on the content and process of the learning experience

Name
Advocated for your own learning in alignment with internship goals

Name
Demonstrated professional skills in the workplace

Name
Built and maintained positive professional relationships

Name
Demonstrated awareness of community and/or organizational issues

Name
Identified, clarified and/or confirmed professional direction as it relates to your academic studies and future career path

Name
Developed self-understanding, self-discipline, maturity and confidence

Name
Developed strong networking/mentoring relationships

Requirements

Simple Requirements

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

All of the following requirements

Enroll in the following Courses:

- INF120 - Security+

AND

All of the following requirements

Earn a minimum grade (UG) of C in the following:

- INF120 - Security+

INF175 - Information Technology Internship

Overview

Department
Information Technology

Course Description
In this course, students will have the opportunity to link classroom/lab theory with an experimental learning opportunity. Through direct observation, reflection and evaluation, students gain an understanding of the internship site's work, mission, and customers, how these relate to their program of study, as well as the organization's position in the broader industry or field. Students will produce a critical reflection on their internship experience demonstrating how they have addressed specific learning goals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
3

Other Hours

Other Hours
Min:
135

Course Learning Outcomes

Learning Outcomes

Name
Demonstrates effective workplace behavior

Objective
Effectively demonstrates appropriate workplace attitudes, Effectively demonstrates appropriate workplace appearance, Effectively demonstrates appropriate workplace ambition skills, Effectively demonstrates appropriate workplace accountability skills, Effectively demonstrates appropriate workplace acceptance skills, Effectively demonstrates appropriate workplace appreciation skills

Name
Applied your knowledge, skills, experience to a work environment

Name
Acquired new learning through challenging and meaningful activities

Name
Reflected on the content and process of the learning experience

Name
Advocated for your own learning in alignment with internship goals

Name
Demonstrated professional skills in the workplace

Name
Built and maintained positive professional relationships

Name
Demonstrated awareness of community and/or organizational issues

Name
Identified, clarified and/or confirmed professional direction as it relates to your academic studies and future career path

Name
Developed self-understanding, self-discipline, maturity and confidence

Name
Developed strong networking/mentoring relationships

Requirements

Simple Requirements

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

All of the following requirements

Enroll in the following Courses:

- INF120 - Security+

AND

All of the following requirements

Earn a minimum grade (UG) of C in the following:

- INF120 - Security+

INF180 - Advanced Network Security

Overview

Department
Information Technology

Course Description
Advanced Network Security is designed to provide the student advanced concepts in network security including defending the network. Topics will include configuring network appliances, defending against unauthorized access, misuse, modification, or denial of network resources.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to analyze and configure network and security components, concepts and architectures.

Objective
Configure network appliances firewalls switches routers

- INF165 - Advanced Cyber Security

Name
The student will be able to apply environmental search approaches using tools and process to assess network security status.

Objective
Configure and run NMAP Netstat and other network analysis tools

Name
The student will be able to interpret the results of a network surveillance.

Objective
Review and interpret logs and packet captures

Name
The student will be able to implement the correct response and remedy a network-based threat.

Objective
Monitor and interpret the IDS

Name
The student will be able compare common vulnerabilities found in targets in the organization.

Objective
Able to identify common current threats

Name
The student will be able to analyze security planning and provide recommendations on implement balanced controls.

Objective
Ability to develop and implement a defense in depth plan

Name
The student will be able to compare and contrast the general reason for using particular networking tools and technology.

Objective
Understanding the networking tools and software analysis

Requirements

Simple Requirements

A minimum grade of 'C' in Course INF165

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

INT101 - Interior Design Fundamentals

Overview

Department
Professional Studies

Course Description
This course emphasizes the fundamentals of design by exploring design elements and principles, color rendering, space planning, and problem solving skills for interior design. Inclusive in this course are research techniques, creating illustration boards, and honing presentation skills.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to successfully demonstrate the ability to use the principles and elements of design

Objective
Demonstrate recognition and appropriate use of design elements line form material and space', Demonstrate recognition and appropriate use of design principles balance harmony proportion and scale

Name
The student will be able to successfully demonstrate the ability to create schematics

Objective
Ability to utilize schematics with the bubble concept to floor plan', Ability to create a space plan', Demonstrate creative thinking and problem solving skills', Demonstrate ability to follow directions

Name
The student will be able to successfully demonstrate the ability to create a professional illustration board

Objective
Demonstrate ability to create an appropriate illustration board', Use appropriate selections for visual illustrations', Demonstrate ability to defend selections in a professional manner', Demonstrate creative thinking and problem solving skills

Name
The student will be able to successfully demonstrate the ability to use problem solving and listening skills

Objective
Define and analyze case studies for appropriate design', Complete client survey both during and after client consultations', To professionally verbalize choices and defend them

Name
The student will be able to successfully demonstrate the ability to make a professional presentation

Objective
Speaking and presentation skills developed', Appropriate vocabulary and design terms being utilized correctly', Appropriate attire and appearance for presentation

INT105 - Blueprint Reading for Interior Design

Overview

Department
Professional Studies

Course Description
This is an introduction to blueprints for interior construction and service systems. Students will learn basic detail drawings, architectural drawings, and symbol and abbreviation identification used in blueprints. By using an architectural scale students will learn to draft floor plans. Construction documents, and introduction to material estimating are included in this course.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to successfully demonstrate the ability to perform basic mathematical skills

Objective
Measure and estimate for wallpaper from a blueprint', Measure and estimate for paint from a blueprint', Measure and estimate for carpet from a blueprint', Estimate costs for wallpaper paint and carpet

Name
The student will be able to successfully demonstrate the ability to identify symbols, abbreviations, and alphabet of lines used on blueprints

Name
The student will be able successfully demonstrate the ability to recognize and understand elevation plans, floor plans, foundations plans, and plot plans

Name
The student will be able to successfully demonstrate the ability to recognize various types of doors, windows, roof styles and stairs

Name
The student will be able to successfully demonstrate the ability to use an architectural scale

INT110 - Color Theory

Overview

Department
Professional Studies

Course Description
This course introduces the use of color for interior design. Emphasis is on color theory, psychology of color and how it affects the brain and moods, and application of color in interior environments and lighting conditions. Included is the vocabulary of color, color temperatures, the principles of the color wheel and how to use it. Color values, tones, and shades are mastered.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to successfully demonstrate the ability to use color as applied to the human psyche

Name
The student will be able to successfully demonstrate the ability to use color fundamentals

Name
The student will be able successfully demonstrate the ability to use light and color appropriate together

Name
The student will be able to successfully demonstrate the ability to render objects artistically

Objective
Accurately illustrate rendering project', Show ability to use fundamentals of color for illustration purposes', Illustrate ability to successfully use color and blending techniques to show value tine tone and shade artistically

INT126 - Textiles

Overview

Department
Professional Studies

Course Description
By the end of the semester, each student will know various soft materials and treatments necessary for design of interior spaces, the functions of each, and their appropriate uses. Students should feel confident in researching design products. Students will be able to design window treatments for various window shapes and sizes.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to successfully demonstrate the ability to recognize various types of fabrics weaves and knits and appropriate usage for them

Name
The student will be able to successfully demonstrate the ability to estimate yardage, fabrication costs, and create appropriate designs for various window treatments

Objective
Successfully complete the window treatment package with appropriate treatments fabrics and estimations', Show evidence of accurate measuring of windows', Show evidence of accurate ordering of fabrics fabrication labor charges and professional contracts with clients vendors and fabricators

INT127 - Materials for Interior Environments

Overview

Department
Professional Studies

Course Description
Explorations of various hard treatments used in design are covered in this course. By the end of the semester, each student will know various materials necessary for design of interior spaces, the functions of each, and their appropriate uses. Accurate specifications of interior materials are emphasized in this course. Students should feel confident in researching design products. Each student will have started a reference library of local and national vendors.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to successfully demonstrate the ability to compile a digital resource file.

Name
The student will be able to successfully demonstrate the ability to research various areas of materials for interior design and specify them appropriately

INT141 - History of Furniture & Architecture

Overview

Department
Professional Studies

Course Description
This course provides students with the historical foundation of architecture and furniture, furniture styles, accent pieces, and accessories from Ancient Civilizations period through Post Modern. Students will learn chronologies, key terms, designer contributions, and ruler influence on furniture and architectural elements in a time line manner. Through hands on experience with furniture and actually creating pieces of "art styled" furnishings they will comprehend what is involved in furniture making.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
120

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to students will be able to successfully demonstrate the ability to recognize various styles and functions furniture from antiquity to post modern

Name
The student will be able to successfully demonstrate the ability to research and present architects from history.

Objective
Show ability to accurately research architects', Demonstrate ability to present findings on architects', Be able to show architects work visually

Name
The student will be able to successfully demonstrate the ability to visually and physically create an artistic style chair or table and execute the construction.

Objective
Follow directions and construct an art piece style chair or table', Create appropriate signage for art work', Creation of illustration board for art pieces of furniture

INT155 - Lighting Technologies

Overview

Department
Professional Studies

Course Description
This is an introduction to the basics of lighting technologies used in interior design: color, lighting styles, and lighting fixtures. Students will learn to read lamp indicators, calculate wattage, and determine proper heights and usage for various lighting techniques. An understanding of light analysis, residential and commercial lighting, lighting design, lighting applications, lumens and foot candles and requirements for various types of lighting are studied. Developments of lighting and electrical layouts on floor plans are inclusive in this course.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to successfully demonstrate the ability to calculate wattage, color temperatures, and estimate appropriate usage

Objective
Pass written and oral exams calculating footcandles', Accurately estimate wattage for various areas', Accurately select color and type of lamp usage for various areas

Name
The student will be able to successfully demonstrate the ability to accurately select appropriate luminaries for various areas and usage

Name
The student will be able to successfully demonstrate the ability to develop a lighting layout

Objective
Complete lighting project accurately', Create a lighting plan', Show evidence of understanding of lighting schedules legends and specifications through layouts and oral exam

Name
The student will be able to successfully demonstrate the ability to understand lighting concepts

Objective
Demonstrate concept of ambient lighting', Demonstrate concept of task lighting', Demonstrate concept of accent lighting', Demonstrate other concepts of lighting techniques up down grazing decorative through illustration

Name
The student will be able to successfully demonstrate the ability to understand and use energy codes and specifications

INT160 - Design Studio I

Overview

Department
Professional Studies

Course Description
This course provides long projects that address real life design situation. It will develop competencies in solving design problems. Technical and conceptual concerns, color theory, lighting technology, scale, materials selection, and creative design articulation through presentation and illustrations are critical elements for this class. Deployment of invoicing techniques, material selection, and working within codes and standards are emphasized. Focus is on Residential.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Students will be able to successfully demonstrate the ability to accurately research and find appropriate products within a set budget and given timeline.

Name
Students will be able to successfully demonstrate the ability to follow client information including a client profile, questionnaire, and interview.

Name
Students will be able to successfully demonstrate the ability to manage a budget including meeting budget expectations.

Name
Students will be able to successfully demonstrate the ability to create successful time frames for a given project.

Name
Students will be able to successfully demonstrate a final client presentation.

Requirements

Simple Requirements

A minimum grade of 'C' in Course INT190

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INT190 - Drafting for Interiors

A minimum grade of 'C' in Course INT101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INT101 - Interior Design Fundamentals

A minimum grade of 'C' in Course INT105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INT105 - Blueprint Reading for Interior Design

A minimum grade of 'C' in Course INT110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INT110 - Color Theory

A minimum grade of 'C' in Course INT126

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INT126 - Textiles

A minimum grade of 'C' in Course INT141

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INT141 - History of Furniture & Architecture

A minimum grade of 'C' in Course INT155

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INT155 - Lighting Technologies

Enrolled in Course INT166

Type
Corequisite

Enroll in the following Courses:
- INT166 - AutoCAD for Interior Design

A minimum grade of 'C' in Course INT196

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INT196 - Interior Design Codes & Standards

Enrolled in Course INT218

Type
Corequisite

INT165 - Design Studio II

Overview

Department
Professional Studies

Course Description
This course provides long-term projects that address real life design situation. It will develop competencies in solving design problems. Technical and conceptual concerns, color theory, lighting technology, scale, materials selection, and creative design articulation through presentation and illustrations are critical elements for this class. Development of invoicing techniques, material selection, working within codes and standards and working with a budget is emphasized in the course. Students will be working with real time case studies. Students may be invited to participate in events such as the Wichita Area Building Associations (WABA) Parade of Homes. Focus is on Residential and Commercial design.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Upon completion of the unit, students will be able to successfully demonstrate the ability to accurately research for appropriate products within set criteria

Objective
Show evidence that they can find appropriate product', Show evidence they can work within a set budget', Show evidence they can work within a given timeline

Name
Upon completion of the unit, students will be able to successfully demonstrate the ability to develop a client profile, do a successful client interview, and accurately analyze that information

Objective
Follow a client questionnaire, Illustrate they understand the information by presentations

Name
Upon completion of the unit, students will be able to successfully demonstrate the ability to work in a given budget

Objective
Show evidence of budget management while completing a project', Show evidence of research for product within set budget that is appropriate and functional', Illustrate problem solving skills that work within a given budget

Name
Upon completion of the unit, students will be able to successfully demonstrate the ability to create successful time frames for a given project

Objective
Show evidence by illustration that they can manage time elements for completion of a project by a set date', Illustration that products will fit into the time frame given for completion', Create a time line schedule for installations deliveries and labor work that fit into the time frame for completion

Name
Students will be able to successfully demonstrate a final client presentation.

Requirements

Simple Requirements

Students must take INT160 at the same time

Type
Corequisite

Enroll in the following Courses:
- INT160 - Design Studio I

INT166 - AutoCAD for Interior Design

Overview

Department
Professional Studies

Course Description
This course introduces computer-aided drafting (CAD). AutoCAD is used to set up drawings and construct lines, circles, arcs, other shapes, geometric constructions, and text. This course introduces drafting standards used for drawings with AutoCAD. Included are dimensioning, blocks, elevations, floor plans, construction drawings, standards for symbols and abbreviations, and printing.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
120

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply AutoCAD screen dialog and vocabulary through classroom and laboratory work assignments

Objective
Identify the central processing unit of a CAD system', Identify the input devices of a CAD system', Identify the output devices of a CAD system

Name
The student will be able demonstrate through classroom and laboratory work assignments the ability to manipulate commands in the CAD software to complete assigned drawings.

Objective
Identify the commands used for file loading and saving drawing output and environment configuration', Identify the commands used for creating entities', Identify the commands used for editing existing entities', Identify the commands used for entering text on the drawing', Identify the commands used for transforming entities', Identify the commands used for dimensioning the drawing', Demonstrate proper file management techniques', Create text using appropriate style and size to annotate drawings', Create new drawings', Perform drawing set up', Create joined surfaces

Requirements

Simple Requirements

A minimum grade of 'C' in Course INT105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INT105 - Blueprint Reading for Interior Design

A minimum grade of 'C' in Course INT190

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INT190 - Drafting for Interiors

INT168 - Basic Chief Architect for Interior Design

Overview

Department
Professional Studies

Course Description
Students use the computers to learn how to utilize three dimensional software to design houses with residential design concepts. This course provides instruction in how to use the software and draw walls, windows, doors, cabinets, plumbing and electrical fixtures, furniture and accessories.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to draw working drawings used for interior design projects

Objective
Design and draw the floor plan for a residential dwelling based on the bill of requirements', Draw all appropriate details for a residential dwelling based on the bill of requirements', Draw a kitchen plan', Create different camera views for elevations and perspective views

Name
The student will be able to demonstrate time management skills in the laboratory

Objective
Identity role of planning in time management', Identify planning tools including current technologies', Identify role of prioritizing in time management', Demonstrate prioritizing techniques', Demonstrate planning skills

Requirements

Simple Requirements

Enrolled in Course INT166

Type
Corequisite

Enroll in the following Courses:
- INT166 - AutoCAD for Interior Design

INT170 - Business Practices & Portfolio Development

Overview

Department
Professional Studies

Course Description
This course covers client contracts, presentation skills, resource development, business forms and legal forms, business management and laws pertaining to interior design. A professional personal portfolio is refined in this class for employment purposes. A professional resume will be included as part of the portfolio package. Students will obtain background knowledge necessary for successful business practices for interior design.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to successfully demonstrate the ability to write an effective resume

Objective
Completion resume

Name
The student will be able to successfully demonstrate the ability to understand contracts and legal documentation for interiors

Name
The student will be able to successfully demonstrate the ability to develop marketing strategies for interiors

Objective
Creating a suite of marketing material for a fictitious design firm: Letterhead, business cards, webpage, and logo.

Name
The student will be able to successfully demonstrate the ability to handle pricing and how to charge clients appropriately

Objective
Evidence of appropriate contracts and invoice forms

Name
The student will be able to successfully demonstrate a professional looking student portfolio.

Objective
Complete and showcase the portfolio both physical and digital formats.

Requirements

Simple Requirements

A minimum grade of 'C' in Course INT160

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INT160 - Design Studio I

A minimum grade of 'C' in Course INT218

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INT218 - Kitchen & Bath Design

INT173 - Design Studio III

Overview

Department
Professional Studies

Course Description
This is the third course in the Design Studios series. In this course students will further develop competencies in solving design problems. Technical and conceptual concerns, color theory, lighting technology, scale, materials selection, and creative design articulation through presentation and illustrations are critical elements for this class. Development of invoicing techniques, material selection, working within codes and standards and working with a budget is emphasized in the course. Students will be working with real time case studies. Students may be invited to participate in events such as the Wichita Area Building Associations (WABA) Parade of Homes. Focus will be on Commercial.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Upon completion of the unit, students will be able to successfully demonstrate the ability to work with multiple clients at once .

Objective
Show evidence that they can find appropriate product', Show evidence they can work with multiple clients at once'

Name
Upon completion of the unit, students will be able to successfully demonstrate the ability to accurately research for appropriate products within set criteria

Objective
Follow a client questionnaire', Show evidence they can collect appropriate products', Illustrate they understand the information by presentations

Name
Upon completion of the unit, students will be able to successfully demonstrate the ability to create successful time frames for a given project

Objective
Show evidence by illustration that they can manage time elements for completion of a project by a set date', Illustration that products will fit into the time frame given for completion', Create a time line schedule for installations deliveries and labor work that fit into the time frame for completion

Name
Upon completion of the unit, students will be able to successfully demonstrate the ability to follow a client profile, and accurately analyze that information.

Objective
By creating a material spreadsheet to demonstrate material selection, successfully demonstrate furniture, fixtures, and equipment on floorplans and elevations, and properly present materials needed to best tell the best story of the design for the client.

Name
5. Students will be able to successfully demonstrate a final client presentation.

Objective
By being able to give an oral and physical presentation with appropriate material arranged on boards/digital boards, and to be able to walk the client through completed floorplans, elevations, and if required by a few clients a perspective drawing.

Requirements

Simple Requirements

A minimum grade of 'C' in Course INT165

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INT165 - Design Studio II

INT190 - Drafting for Interiors

Overview

Department
Professional Studies

Course Description
This course is designed to help the student increase their knowledge concerning drafting blueprints for interior construction and service systems, and emphasizes the development of fundamental drafting techniques. Topics include terminology, care and use of drafting equipment, lettering, line relationships and geometric construction.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to successfully demonstrate the ability to identify symbols, abbreviations, and alphabet of lines used on blueprints.

Objective
Complete drawings with of abbreviations used on blueprints', Complete drawings with symbols used on blueprints', Complete drawings using alphabet of lines used on blueprints

Name
The student will be able to successfully demonstrate the ability to draft and understand elevation plans, floor plans, and detail drawings.

Name
The student will be able to successfully demonstrate the ability to use an architectural scale.

Objective
The student will be able to successfully the ability to use an architectural scale by creating accurately scaled drawings drawn to the proper scale.

Name
The student will be able to successfully demonstrate the ability to draft various types of doors, windows, and details on drawings.

Objective
By creating doors, windows, and other detail elements on floorplans and elevations.

INT192 - Perspective Drawing for Interior Design

Overview

Department
Professional Studies

Course Description
This course is designed to help the student increase their knowledge of the fundamentals of design through the exploration of sketching, hand drawing and drawings in one and two point perspective using a variety of grid layouts, eye-levels, and vanishing points are used.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to successfully demonstrate the ability to draw a grid in various scales

Objective
Accurately construct grid system for one point perspective drawings', Construction of perspective views using geometric tools diagonals squares and cubes

Name
Students will be able to draw in one-point perspective with the aid of a grid

Objective
Demonstrate the ability to create a room showing walls floor and ceiling using a one-point perspective', Demonstrate the ability to add furnishings in one-point perspective', Create figures in perspective showing scale and space

Name
Students will be able to draw using horizon (eye) line and vanishing point(s) to create one and two point drawings.

Objective
Demonstrate rooms and objects using horizon (eye) line and vanishing points.

Requirements

Simple Requirements

Enrolled in Course INT170

Type
Corequisite

Enrolled in Course INT173

Type
Corequisite

A minimum grade of 'C' in Course INT190

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INT190 - Drafting for Interiors

INT193 - Rendering for Interior Design

Overview

Department
Professional Studies

Course Description
This course is designed to help the student increase their knowledge of the fundamentals of design through the exploration perspectives, cones of vision, and lighting sources. Rendering techniques are mastered by employing markers and colored pencils. Rendered finishes include, but not limited to, reflective finishes, textures (wood, stones, and other elements), and shadows.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to successfully demonstrate the ability to accurately render their work

Objective
Demonstrate the ability to create texture reflection and light source on their drawings', Demonstrate the ability to create shading and shadows', Demonstrate the ability to create realistic rendering of materials such as brick stone carpet wood and other materials used in interiors

Name
Students will be able to render using a light source

Objective
Demonstrate the ability to create a rendering using a light source and show shadows', Demonstrate the ability to create a rendering using a light source and show highs lows and shades of grays to evoke the illusion of light source

Name
Students will be able to render colored drawings using marker, pencils and other medium to show highs and lows from a light source

Objective
Demonstrate the ability to create colored renderings using a light source and show depth of color as from a lighted source and shadows

Name
Students will be able to successfully demonstrate the use of shadows and highlights on items and the rooms.

Objective
By using proper techniques the student will be able to show light source and shadows on items and room drawings.

INT196 - Interior Design Codes & Standards

Overview

Department
Professional Studies

Course Description
This course is designed to focus on the most current and widely used building codes, fire codes, electrical and plumbing codes as required by the industry.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Understand the National Fire Protection Agency Codes

Objective
NFPA 5000 codes', How to use the table and charts set forth by the NFPA

Name
The student will be able to understand the Life Safety Codes

Objective
Identify the values of life safety codes by exam', Compare LSC with NFPA

Name
The student will be able understand how to research International Building Code, NFPA Building Construction and Safety Code, and Life Safety Codes

Objective
Pass written and oral exam for code research methods

INT218 - Kitchen & Bath Design

Overview

Department
Professional Studies

Course Description
This course is designed to help the student develop special considerations necessary to design and plan kitchens and baths. Topics include the study of the basic principles of kitchen and bath design, planning, proper function and layout, accurate measuring techniques, specification documentation, theme and historical design. The application of the National Kitchen and Bath Association's Guidelines of Planning Standards and Safety Criteria for residential kitchens and bathrooms, including Universal Design concepts, will be covered. Topics include the use of building codes, safety criteria, universal and accessibility criteria, and ergonomics.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to successfully demonstrate the ability to use kitchen and bath space planning

Objective
Demonstrate recognition and appropriate use of design planning for various kitchen styles such as oneway gallery twoway gallery Ushape Lshape Gshape and island kitchens', Demonstrate use of specifications by documentation for application of cabinetry fixtures appliances and other elements as required for kitchen design', Demonstrate recognition and appropriate use of design planning for various bath styles such as full bath compartmental bath bath and powder rooms', Demonstrate use of specifications by documentation of application of cabinetry fixtures and furnishings for bath design

Name
The student will be able to successfully demonstrate math skills

Objective
Demonstrate ability to use an architectural scale to successfully measure for and placement of kitchen and bath layout space plan placement of cabinetry appliances and other elements required for kitchen spaces', Demonstrate ability to use an architectural scale to successfully measure and placement for cabinetry toilet bidet tub shower and other elements used for a bath space

Name
The student will be able to successfully demonstrate the ability used in problem solving, critical thinking, and listening skills.

Objective
Professionally illustrate and verbalize choices', Use critical thinking and problem solving to complete projects accurately

Name
Students will be able to successfully demonstrate proper notation of cabinetry nomenclature.

Name
Students will be able to successfully demonstrate proper material for the end use of items in kitchen and bathroom settings.

Requirements

Simple Requirements

A minimum grade of 'C' in Course INT105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INT105 - Blueprint Reading for Interior Design

A minimum grade of 'C' in Course INT190

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- INT190 - Drafting for Interiors

IWT225 - Ironworker Apprenticeship

Overview

Department
Apprenticeship & Appl Learning

Course Description
This course serves as a credit placeholder for students participating in the Ironworker Technology Apprenticeship program in partnership with WSU Tech, industry partners, and the Kansas Office of Apprenticeships. Students who have successfully completed the approved apprenticeship training may receive 45 credit hours of prior learning. Students must provide approved documentation outlining successful completion of apprenticeship training.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
45

Contact Hours

Contact Hours
Min:
2025

Billing Hours

Billing Hours
Min:
45

Other Hours

Other Hours
Min:
2025

Course Learning Outcomes

Learning Outcomes

Name
Students will demonstrate mastery of technical competencies gained through the Ironworker Apprenticeship program

LEN100 - Lean for Operations

Overview

Department
Professional Studies

Course Description
This course is designed to familiarize the students with the concepts and practices of Lean Manufacturing as applied in industry today. Students begin with a discussion of Lean Manufacturing's place in the overall process of continuous improvement. Students will then move on to learning to apply basic elements of lean, lean system design, lean tools and measurement methods to industry based scenarios.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Hybrid

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the role continuous improvement in the workplace

Objective
Identify the history of continuous improvement including Quality Circles Total Quality Management Process Based Management New Product and System Improvement Six Sigma and Lean Manufacturing', Define lean manufacturing', Identify the tools and methods used in lean manufacturing

Name
The student will be able to apply basic elements of lean manufacturing to industry based scenarios

Objective
Identify the Elements of Waste', Identify Standardized Work and Training', Compare and contrast the Push vs Pull System', Identify the 5 S System', Apply the basic elements to industry based scenarios

Name
The student will be able to apply lean system design to industry based scenarios

Objective
Explain Value Stream Mapping', Explain Current State Mapping', Explain Future State Mapping', Explain Pull System Design

Name
The student will be able to apply lean tools and methods to industry based scenarios

Objective
Explain a 5 s System', Define PDCA plan do check action', Explain a Kanban', Define the Six Sigma methodology', Explain a Kaizen event', Apply lean tools and methods to industry based scenarios

Name
The student will be able to apply lean manufacturing measurement tools to industry scenarios

Objective
Define process monitoring', Identify tools for measuring effectiveness of lean manufacturing', Identify root cause', Identify processmonitoring tools including praetor graphs histo graphs and scatter graphs', Utilize process monitoring tools in industry based scenarios', Identify preventative action', Identify corrective action', Apply lean manufacturing measurement tools to industry scenarios

LEN105 - Lean Culture - People Systems

Overview

Department
Professional Studies

Course Description
This course has been developed to enable the student to understand the differences between the current work cultures and a lean culture. Students will be able to identify the steps and changes necessary to implement lean while changing the culture to ensure the gains from Lean activities will continue.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Hybrid

Effective Start Term
Fall 2010

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the history and basic principles and methods of Lean Manufacturing and Lean Management

Objective
Describe the History and Concepts of Lean', Define Lean Management tools and methods used in Lean Manufacturing', Identify the principle elements of Lean Management

Name
The student will be able to identify standard work and communicate the relevance of standard work to a lean culture

Objective
Identify Standard Work', Develop Standard Work checklist and utilization plan', Define Concepts and Enablers

Name
The student will be able to properly apply visual controls to any process

Objective
Describe Visual Controls', Identify how to track processes with visual controls', Define the importance of Discipline and Standardization in 5s

Name
The student will be able to explain personal accountability and the importance of it in every meeting and process

Objective
Develop effective meeting structure', Describe Problem Solving Methodology- PDAC', Describe closing the gap between expectations and actuals', Define how to Enhance Employee Performance in meetings

Name
The student will be able to discuss lean management and how it applies to a production or office environment

Objective
Identify Supporting Elements', Describe leadership tasks', Describe lean conversion projects vs ongoing lean operations

Name
The student will be able to identify the process to conclude the true root cause and the steps needed to solve problems and improve processes

Objective
Identify Root Cause Analysis', Define Tools used in Root Cause Analysis', Identify preventative action', Identify corrective action

Name
The student will be able to communicate the importance of creating a Lean culture with highly involved people sustaining the improvements

Objective
Describe Daily Labor planning rotation plans', Identify effective Expectations and Applications', Describe Communication processes', Identify Dimensions to ensure selfsustaining

Requirements

Simple Requirements

A minimum grade of 'C' in Course LEN100

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- LEN100 - Lean for Operations

LEN106 - Value Stream Alignment

Overview

Department
Professional Studies

Course Description
This course is designed to familiarize the students with the process of Value Stream Mapping and how to apply it to improve processes. The class will begin with a description of Value Stream Mapping and how it utilizes material and information flows. Students will learn how to complete a Current State Value Stream Map, evaluate the map and then create a Future State Value Stream Map and Implementation Plan.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Hybrid

Effective Start Term
Fall 2010

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the importance of Value Stream Mapping

Objective
Describe Value Stream Mapping', Identify Material and Information Flow', Describe how to Select a Product Family', Define the Value Stream Manager

Name
The student will be able to develop a Current State Value Stream Map

Objective
Identify Current State Mapping', Describe the elements of a Current State Map', Draw a Current State Map', Identify improvements

Name
The student will be able to identify a Lean Value Stream and discuss the pitfalls of overproduction

Objective
Define Lean Value Streams', Describe the effects of Overproduction', Define characteristics of a Lean Value Stream

Name
The student will be able to develop a Future State Value Stream Map

Objective
Identify Future State Mapping', Describe the elements of a Future State Map', Draw a Future State Map', Define Starbursts', Identify Material and information flow improvements', Evaluate a Future State Value Stream Map

Name
The student will be able to apply an Implementation plan and Value Stream Plan

Objective
Define the Implementation Plan', Demonstrate the importance of breaking Implementation into Steps', Define the Value Stream Plan', Identify Value Stream Improvement', Apply an implementation plan and value stream plan to classroom project

LEN109 - Lean for Engineering

Overview

Department
Professional Studies

Course Description
This course is designed to familiarize the students with the concepts and practices of Lean Manufacturing as applied in Engineering practices today. Students begin with an overview of Lean Manufacturing and continuous improvement. Students will then learn to apply basic elements of lean and process improvement to Engineering scenarios.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Hybrid

Effective Start Term
Fall 2010

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify role continuous improvement in the workplace

Objective
Identify the history of lean', Define concepts such as JIT and DFM', Identify the types of waste and discuss waste elimination

Objective
Describe Lean principles', Identify how value and flow apply to Engineering', Identify the fundamentals of flow', Define cellular thinking and current processes', Apply basic elements of lean manufacturing to industry based scenarios

Name
The student will be able to apply lean system design to industry based scenarios

Objective
Define Design for Manufacturability Concurrent Engineering', Define Designing the Product for Lean Production BTO', Describe Minimizing Cost by Design Designing for Quality', Define DFM Guidelines Implementation', Apply lean system design to industry based scenarios

Name
The student will be able to apply lean tools and methods to industry based scenarios

Objective
Define the Defects in Engineering', Demonstrate how to structure projects', Identify the right project in a structured approach', Demonstrate Project selection

Name
The student will be able to apply lean manufacturing measurement tools to industry scenarios and will be prepared to conduct lean projects in Engineering

Objective
Analyze team preparation', Discuss the steps for conducting a Lean Event', Construct a Simulation', Define Solution Implementation', Identify Follow up and Closure', Apply measurement tools to industry scenarios

Requirements

Simple Requirements

A minimum grade of 'C' in Course LEN100

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- LEN100 - Lean for Operations

LEN110 - Lean for Services - Offices

Overview

Department
Professional Studies

Course Description
This course will teach students the basics of both Lean and Six Sigma and how these problem solving methodologies apply to the service organizations. Students completing this course will be better prepared for real business world issues, and have the ability to apply these concepts and tools at a basic level.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Hybrid

Effective Start Term
Fall 2010

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to define and describe the role and elements of lean services

Objective
Describe how to make the case for lean services', Describe the relevance for lean within the service industry', Explain the role of excellence within service operations', Define value from the lean perspective', Define waste as it relates to the lean process', Discuss the case studiesapplications as they relate to the lean process', Explain and correlate time dimensions to lean service

Name
The student will be able to define and explain the principles of lean services

Objective
Define lean principles', Explain the systems view vs localized optimization', Explain Value Stream Management', Describe the fundamentals of flow', Describe cellular thinking

Name
The student will be able to define and explain how to understand defects in the service industry

Objective
Explain the multi skillssetting cellular competencies', Define the defects in lean services', Explain the perspective from the waste walk', Explain the public service success stories

Name
The student will be able to define and explain how to develop competencies for the lean service implementation

Objective
Explain how to engage and align leaders', Describe Building the Structure Identify the Value Streams', Explain how to organize the team for Lean', Define the Charter', Describe how to structure the organization for change', Describe how to install the links', Explain Digging In and Rooting out Waste', Describe what the Single Variable consists of

Name
The student will be able to define and explain how to take intermediate lean thinking to the next level

Objective
Explain the people principles', Explain the processes of Lean Thinking', Explain how to link supplierscustomers to the idea of Lean Thinking', Explain Rewarding the Champions and Linking the System', Define the A3 Improvement Document Problem Solving', Apply lean thinking concepts to industry scenarios

Name
The student will be able to discuss how to prepare and develop the Kaizen event

Objective
Explain the evaluation of the Kaizen', Describe how to develop the Charter', Explain Gathering the Evidence', Discuss setting targets', Explain the Nuts and Bolts while tying the Kaizen event together', Explain the preparation for the final considerations', Apply Kaizen tools to industry scenarios

Name
The student will be able to define and describe how to conduct the kaizen event

Objective
Describe the Kaizen Kickoff', Describe Lean Training for Kaizen Team', Explain team building and how to Chart the Flows', Define trystorming', Describe the results of the Kaizen simulation', Explain the 7 ideas while prioritizing solutions', Describe how to implement the solutions', Explain Team Reporting', Explain how to Sustain the Gains', Apply Kaizen - sustaining the gains to industry scenarios

LGM101 - Principles of Logistics and Supply Chain Management

Overview

Department
Professional Studies

Course Description
Introduction to the field of logistics and supply chain management. Includes development of logistics systems, careers in logistics, distribution planning, supply chain security, and customer service. Also includes roles and functions of: purchasing, inventory control, physical distribution, warehousing, transportation methods, packaging, and customs.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Describe the objectives of logistics.

Objective
Total cost approach', Avoidance of suboptimization', Cost tradeoffs

Name
Examine the development and growth of logistics systems.

Name
Describe the responsibilities of logistics managers.

Name
Analyze various roles and functions involved in logistics.

Objective
Purchasing', Inventory control', Manufacturing', Physical distribution and warehousing', Transportation and freight forwarding', Product integrity', Regulatory compliance Customs

Name
Review methods of controlling pilferage and combating organized theft.

Objective
Review various types of Supply Chain Security including physical security logistics security information security loss prevention and threat awareness

Name
Analyze aspects of product distribution critical to customer satisfaction.

Objective
Identify the critical elements of productservice delivery including reasonable cost good condition and on time delivery', Analyze the impact of establishing and maintaining rapport with the customer', Determine mutually satisfying goals', Foster positive relationships', Measure customer satisfaction', Analyze the impact of first impressions the moment of truth', Review the impact of positive interactions at all points of contact', Problem resolution

Name
Relate the impact on profitability of effective logistics planning.

Objective
Demand planning', Fulfillment strategy', Resource requirement', Make versus buy', Network', Constraint awareness

LGM102 - Inventory Control

Overview

Department
Professional Studies

Course Description
A study of inventory control concepts and techniques. Includes, cost concepts, determining size and nature of inventory, forecasting, and inventory planning and control. Also includes ordering methods, controlling pilferage, and matching customer demand with supply.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Describe common costs associated with inventory

Objective
Identify the cost benefits of sourcing or making', Identify Inventory investment capital investment', Identify Insurance costs that drive inventory management', Identify taxes costs that drive inventory management', identify storage acquisition procession costs that drive inventory management', Identify controlling pilferage costs that drive inventory management', Identify warehouse costs that drive inventory management', Identify lead time costs that drive inventory management', Identify customer Satisfaction costs value of achieving cost of failing that drive inventory management', Identify obsolescence costs that drive inventory management

Name
Discuss techniques for determining size and nature of inventory

Objective
Discuss range of merchandise', Describe types of stock', Identify variations in costs', Describe the cost of capital investment', Discuss mail order operations', Discuss wholesaleretail finished goods inventory costs', Review chain of supply', Determining distribution inventories', Review customer requirementsactivity based costing ABC analysis', Compare push versus pull inventory strategy

Name
Compare multiple forecasting techniques.

Objective
Identify the purpose', Discuss the rationale for automation', Compare and contrast forecasting techniques including averages lost period sales and moving average', Review the reasons for forecast failure', Compare qualitative versus quantitative methodologies

Name
Describe methods of inventory planning and control.

Objective
Identify company strategy', Describe sales plan', Describe sourcing strategy', Describe master production plan', Identify typical inventory controls including Stock control cost concepts Time based logistics strategies Just in Time TPS Vendor Managed Inventory VMI and Continuous replenishment

Name
Summarize ordering methods.

Objective
Critique fixed order quantity FOQ', Appraise the fixed order point FOP', Summarize calculating order quantity', Explain fixed interval ordering', Summarize order up to level', Summarize stock order point

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Earn a minimum grade (UG) of C in the following:
- MTH020 - Math Fundamentals (Inactive)

OR

Earn a minimum grade (UG) of C in the following:
- MTH025 - PACER Mathematics I (Inactive)

LGM103 - Contracts and Freight Claims

Overview

Department
Professional Studies

Course Description
A study of the considerations involved in the drafting and negotiation of freight and logistics contracts, and of loss avoidance and mitigation in transit. Includes legal and regulatory requirements applicable to contracts for product transportation, and logistics functions and considerations for drafting and negotiating contracts with freight carriers, warehousemen and other logistics service providers. Also includes customer satisfaction, claim preparation, filing procedures, and claim dispute resolution.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Analyze how losses occur in transit.

Objective
Conditions of carriage', Incoterms standard trade definitions most commonly used in international sales contracts', Carriage of Goods by Sea Act COGSA', The Warsaw Convention', The Montreal Protocol', The International Multimodal Convention', Cabotage law

Name
Prepare freight claims.

Name
Explain procedures for filing freight claims

Objective
Preparing Freight Claims', Filing Freight Claims

Name
Explain how claims impact customer satisfaction

Objective
Showing empathy for the customer', Quick turnaround for claims', Resolving freight claim disputes', Things that negatively impact customer satisfaction', Proactive education of customers regarding proper packaging

Name
Employ freight claim dispute processes.

Name
Analyze contracting needs in the supply chain.

Objective
Legal and regulatory requirements of logistics contracting', Types of freight and logistics contracts', Freight and logistics contract provisions

Name
Explain the legal and regulatory requirements of logistics

Name
Contracting

Name
Analyze types of freight and logistics contracts and their provisions.

Name
Evaluate freight and logistics contract provisions.

LGM105 - Warehouse Management

Overview

Department
Professional Studies

Course Description
Survey of warehouse function, process, organization and operations. Includes analysis of warehouse location, operation, and management. Also includes controls and procedures, financial analysis, security, cargo/materials handling, and productivity.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Analyze issues involved in locating warehouses.

Objective
Analyze warehouse site selection', Analyze warehouse layout and design', Compare and contrast private and public warehouses

Name
Examine warehouse operating and service procedures.

Objective
Identify receiving', Discuss inspection', Review product mixing', Examine consolidating shipments', Describe distribution of shipments', review packaging', Discuss cycle inventory', Review impact of meetingor exceeding customer expectations

Name
Assess financial analysis of warehouse operations.

Objective
Identify usable space', Examine utilization of cubic space', Demonstrate warehouse cost controls', Assess product placement

Name
Discuss warehouse security issues.

Objective
Describe employee safety', Identify hazardous materials', Examine warehouse sanitation', Discuss stock controls', Identify zoned access', review perimeter security', Describe conveyance inspection

Name
Analyze warehouse handling systems.

Objective
Standard systems', Automated systems', Materials handling equipment', Warehouse equipment

Name
Compare warehouse utilization metrics and productivity improvement methods.

Objective
Utilize cycle counts', Demonstrate orders fulfilled', Identify the impact of number of days accident free

LGM106 - Transportation and Traffic Management

Overview

Department
Professional Studies

Course Description
A study of the domestic freight transportation system. Includes demand for freight movement, laws, regulations, pricing, and policies. Also includes traffic management, customer service, security, and international transportation issues.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Assess the domestic freight transportation system.

Name
Compare different modes of transportation.

Objective
Compare and contrast road freight transport to rail sea and air', Compare and contrast rail freight transport to road sea and air', Compare and contrast sea freight transport to road rail and air', Compare and contrast air freight transport road rail and sea

Name
Analyze the demand for and pricing of freight transportation.

Objective
identify the elements of freight transportation pricing', Identify the elements of freight costs', Analyze the elements of freight costs including dumurrage detention fuel surcharge FSC and inspections

Name
Discuss use of Transportation Management Systems for selection of appropriate carrier.

Name
Explain freight transportation, laws, regulations, and policies.

Name
Examine freight traffic management, customer service, and security.

Objective
Examine lossdamage prevention for goods in transit', Examine tracing and expediting shipments', Examine precautions for shipping hazardous materials', Review tamper evidence', Identify customer service management techniques that impact freighttraffic management including relation of the customer to the organization customer retention attracting new customers and dimensions of good customer services reliability responsiveness feeling valued empathy competency

Name
Discuss international transportation issues

Objective
International Transportation Issues', Carrier Selection Criteria

LGM107 - Introduction to Purchasing

Overview

Department
Professional Studies

Course Description
Survey of basic purchasing functions. Includes establishing requirements and quantities, developing policies and procedures for purchasing, making purchasing decisions, receiving acceptable goods, arranging packaging and shipping, and managing inventory levels.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Formulate requirements and quantities.

Objective
Make versus Buy', Scope and Objective of Purchasing', Establishing Requirements and Quantities', Total Landed Cost Concept

Name
Explain purchasing policies and procedures.

Objective
identify types of purchase orders', Complete purchase order forms', Identify the distribution of purchase order copies', Identify change notices', Explain letters of credit

Name
Formulate purchasing decisions.

Name
Describe the complete purchasing process.

Name
Calculate and analyze inventory levels.

Objective
Measuring Acceptable Deliveries', On time deliveries', Number of exceptions at delivery', Condition of freight upon delivery', Packaging and Shipping', Managing Inventory Levels', Vendor Selection Criteria', Vendor Score Card

LGM108 - International Logistics

Overview

Department
Professional Studies

Course Description
An introduction to the role of logistics in global business. Includes the economic and service characteristics of international transportation providers, the government's role, documentation and terms of sale used in global business, and the fundamentals of effective export and import management.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Examine the role of logistics in a global environment

Objective
International Logistics Environment

Name
Explain the specific functional elements involved in a global logistics process

Objective
Elements of International Logistics process', Global Transportation and Logistics Networks

Name
Design various transportation and logistics global networks for both shippers and Carriers

Name
Compare the value-added roles of global logistics intermediaries

Objective
Intermediaries

Name
Define each of the 13 Incoterms (standard trade definitions most commonly used in international sales contracts)

Objective
Incoterms

Name
Ascertain the key role of Governments (U.S. and others) in a global economy

Objective
Major US Trading Partners and Common Themes', Role of Government in International Logistics', Export and Import Controls', Licenses', Classifications', Permits

Name
Relate the importance of accuracy and timing of documentation in global transactions via all modes of transportation.

Objective
Documentation and Timing

Name
Recognize the critical importance of cargo insurance and liability in global transactions.

Objective
Insurance

Name
Compare customer aspects of international and domestic shipments.

Objective
Evaluate trade Agreements and Barriers Quotas', Identify duties and Taxes', Evaluate Export and Import Controls including licenses classifications and permits', Compare International Versus Domestic Shipments including single contact person single invoicing claim processing tracking of shipments transit times and rate quotes

LGM109 - Applications and ERP Systems

Overview

Department
Professional Studies

Course Description
This course explores how logistics and supply chain processes are supported through enterprise resource planning (ERP) systems. Students will examine how ERP integrates functions such as procurement, production, inventory, and distribution to improve efficiency and decision-making. Students will learn how supply chain data is applied to forecasting, planning, and global operations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Effectively demonstrate the ability to clearly communicate supply chain and logistical items utilizing word processing software programs.

Name
Effectively present a supply chain and logistical topic utilizing presentation software programs.

Name
Utilizing spreadsheet software programs, demonstrate the ability to process, sort, display, and interpret data.

Name
Demonstrate understanding of what an Enterprise Resource Planning (ERP) system is, and how it can help an organization’s supply chain management processes.

Name
Demonstrate how to utilize an Enterprise Resource Planning (ERP) system in an organization’s supply chain management processes.

Name
Demonstrate proficiency in utilizing artificial intelligence (AI) tool to aid in real-world supply-chain management scenarios.

LGM110 - Logistics Safety/OSHA 10

Overview

Department
Professional Studies

Course Description
The 10- Hour General Industry Outreach training Program is intended to provide entry-level general industry workers broad awareness on recognizing and preventing hazards on a general industry site. The training covers a variety of safety and health hazards which a worker may encounter at a general industry site. OSHA recommends this training as an orientation to occupational safety and health. Workers must receive additional training on hazards specific to their job. Training will emphasize hazard identification, avoidance, control and prevention, not OSHA standards. Instructional time will be a minimum of 10 hours. Additional training in equipment safety.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to recall a basic introduction to OSHA Safety Standards and practice

Objective
Recall the OSHA Act', Recall the General Duty Clause', Recall employer and employee rights and responsibilities', Recall Whistleblower rights', Recall basic recordkeeping practices', Recall the protocol for inspections citations and penalties', Recognize the value of Safety and Health', Recall the OSHA 800 Number

Name
The student will be able to identify common safety hazards of walking and working surfaces on the job

Objective
Identify hazards', Practice precautions', Recall procedures for accidents should they occur

Name
The student will be able to identify the importance of safety precautions and preventative measures

Objective
Recall postings for exits routes', Recall the procedures for following an emergency action plan', Identify the specifics for fire prevention', Identify the specifics for fire protection

Name
The student will be able to identify hazards when working with electricity and recall the proper procedural precautions for safe handling of electricity

Objective
Recall the OSHA regulations for work with electricity', Identify whether or not you are qualified to work with electricity', Identify ways to prevent electrical accidents', Identify safe work practices for handling electricity

Name
The student will be able to identify proper usage procedures and requirements for PPE

Objective
Identify proper usage procedures and requirements for eye and face protection', Identify proper usage procedures and requirements for head protection', Identify proper usage procedures and requirements for foot and leg protection', Identify proper usage procedures and requirements for hand and arm protection', Identify proper usage procedures and requirements for body protection', Identify proper usage procedures and requirements for hearing protection

Name
The student will be able to identify proper procedures and requirements for Hazard Communication

Objective
Recall the OSHA Hazard Communications regulations', Define hazardous chemicals', Define physical hazards', Define health hazards', Utilize the SDS safety data sheet', Recall labels and labeling requirements', Recall the written hazard communication program

Name
The student will be able to demonstrate a fundamental knowledge of safety hazards and practices relating to the following topics

Objective
Hazardous Materials', Machine Guarding', Blood borne Pathogens', Fall Protection, Utilizing machines in a warehouse setting

LGM111 - Purchasing, Contracts, and Freight Claims

Overview

Department
Professional Studies

Course Description
This course integrates essential purchasing, inventory management, and logistics functions with a focus on practical application and regulatory compliance. Students will learn to develop purchasing requirements and decisions, evaluate inventory processes, and analyze legal and contractual needs in logistics. The course also covers freight loss mitigation, claim preparation and dispute resolution, and strategies for maintaining customer satisfaction through effective claims management.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Formulate purchasing requirements and decisions by applying make-versus-buy analysis, purchasing policies and procedures, and total landed cost concepts.

Name
Describe and evaluate the complete purchasing and inventory management process, including establishing requirements, vendor selection, performance measurement, and inventory level analysis.

Name
Analyze legal and regulatory requirements in logistics contracting and evaluate key provisions in freight and logistics contracts.

Name
Apply freight claim processes by preparing and filing claims, resolving disputes, and mitigating losses in transit.

Name
Assess the impact of claims management on customer satisfaction through empathy, timely resolution, and proactive education.

LGM150 - Supply Chain Analytics

Overview

Department
Professional Studies

Course Description
This course introduces the student to data analytics and demonstrates the value of their effective use in supply chain management. By studying the key supply chain processes, the student will work through examples along with the descriptive, predictive and prescriptive analytic methods that can be applied to bring about improvements to those processes. Key topics addressed include optimization, big data, data mining and cloud computing. The course presents a comprehensive learning experience for the student regarding supply chain analytical problem solving.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Define data analytics and their importance in supply chain management

Name
Learn main methodologies used in supply chain analytics

Name
Evaluate how supply chain improvements are managed using data analytics

Name
Practice data analytics tools to enhance supply chain processes

Name
Apply methods used in reducing supply chain risks

Name
Analyze effective strategies in managing supply chain design processes

Name
Examine supply chain analytics in addressing people and organizational social issue

LGM190 - Logistics and Supply Chain Internship

Overview

Department
Professional Studies

Course Description
Culmination of logistics program. Includes guidelines and procedures for workplace learning, application of learned concepts on the job. Also includes initiation, management, and completion of capstone project. Consent of instructor is required before enrolling in this course. Students must complete 125 hours at a program-approved employer worksite.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2023

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
125

Billing Hours

Billing Hours
Min:
3

Other Hours

Other Hours
Min:
125

Course Learning Outcomes

Learning Outcomes

Name
Discuss guidelines and procedures for workplace learning.

Name
Discuss the importance of customer service.

Name
Relate work experience to theory.

Name
Practice business ethics.

Name
Examine career options.

Name
Report learning experience.

LGM196 - Capstone Experience in Logistics & Supply Chain Management

Overview

Department
Professional Studies

Course Description
This culminating course allows students to demonstrate mastery of Logistics and Supply Chain Management concepts through either a research-based capstone project or a supervised internship of at least 125 hours. Both options emphasize applying knowledge to real-world supply chain challenges while building critical thinking, problem-solving, and professional communication skills. Instructor approval is required for the internship site.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Analyze logistics and supply chain management systems, including organizational functions, global operations, and barriers to implementation.

Name
Develop logistics operational strategies, including demand forecasting models, inventory management plans, and warehouse performance metrics.

Name
Integrate ethical principles and sustainability practices into logistics decision-making and supply chain operations.

Requirements

Simple Requirements

A minimum grade of 'C' in Course LGM101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- LGM101 - Principles of Logistics and Supply Chain Management

A minimum grade of 'C' in Course LGM106

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- LGM106 - Transportation and Traffic Management

A minimum grade of 'C' in Course LGM105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- LGM105 - Warehouse Management

MAS123 - Masonry Materials and Methods

Overview

Department
Applied Technologies

Course Description
This course introduces foundational concepts and hands-on skills essential to the masonry trade. Students learn to identify and work with various masonry units, safely operate hand and power tools, and prepare mortar for structural applications. Emphasis is placed on developing core laying techniques, understanding material properties, and applying industry-standard safety practices. Upon completion, students will be prepared to perform basic masonry tasks in residential and light commercial settings.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Identify various types of masonry units and describe their applications in modern construction.

Name
Demonstrate safe use of PPE and adherence to masonry job site safety protocols.

Name
Select, use, and maintain hand tools, measuring tools, and mixing equipment used in masonry.

Name
Properly mix mortar and describe its role in masonry systems.

Name
Demonstrate proper spreading, furrowing, and laying techniques for masonry units

Name
Recognize the roles and career paths available within the masonry trade.

MAS133 - Masonry Installation Practices

Overview

Department
Applied Technologies

Course Description
This course builds on foundational masonry skills with an emphasis on accurate layout, measurement, and construction techniques used in the field. Students apply industry standards to interpret drawings and specifications, mix mortar to required properties, and construct masonry walls with proper alignment and spacing. Focus is placed on precision, efficiency, and adherence to safety and quality standards in both residential and commercial applications.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Interpret basic masonry drawings and specifications.

Name
Use measurement tools and apply accurate layout techniques.

Name
Describe mortar properties and mix ratios appropriate to specific masonry tasks.

Name
Demonstrate proper placement, alignment, and spacing of masonry units.

Name
Execute basic masonry wall construction to standard specifications.

Requirements

Simple Requirements

A minimum grade of 'C' in Course MAS123

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MAS123 - Masonry Materials and Methods

MAS143 - Masonry Layout and Bonding Techniques

Overview

Department
Applied Technologies

Course Description
This course emphasizes advanced layout, bonding, and reinforcement methods used in structural and architectural masonry projects. Students interpret complex blueprints, establish control lines and elevations, and construct arches, corners, and reinforced masonry assemblies. Hands-on projects focus on precision, sequencing, and inspection of masonry work to meet commercial construction standards and specifications.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
6

Contact Hours

Contact Hours Min:
165

Billing Hours

Billing Hours Min:
6

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
150

Course Learning Outcomes

Learning Outcomes

Name
Construct and restore masonry features using specialized materials (acid brick, refractory brick, etc.).

Name
Build and install masonry arches, including jack, semicircular, and multicentered types.

Name
Install commercial masonry components using complex blueprints.

Name
Demonstrate repair and restoration techniques for damaged masonry.

Name
Demonstrate repair and restoration techniques for damaged masonry.

Name
Identify and implement logistics for high-volume or commercial masonry projects.

Requirements

Simple Requirements

A minimum grade of 'C' in Course MAS133

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MAS133 - Masonry Installation Practices

MAS159 - Structural Masonry Applications

Overview

Department
Applied Technologies

Course Description
This course focuses on the planning and construction of structural masonry systems used in residential and light commercial projects. Students interpret architectural and structural drawings to estimate materials, layout reinforced walls, and apply proper rebar placement, grouting, and vibration techniques. Emphasis is placed on code compliance, precision in construction, and the integration of masonry with other building systems. Practical lab activities include the completion of foundations, bond beams, chimneys, and other load-bearing assemblies.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Interpret residential construction plans, elevations, and schedules.

Name
Estimate material needs based on residential drawings.

Name
Perform masonry tasks related to residential construction: foundations, patios, fireplaces, and chimneys.

Name
Describe and construct reinforced masonry including bond beams and vertical reinforcement.

Name
Demonstrate use of rebar, grout placement, and vibration techniques.

Requirements

Simple Requirements

A minimum grade of 'C' in Course MAS133

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MAS133 - Masonry Installation Practices

MAS169 - Masonry Finishes and Specialty Systems

Overview

Department
Applied Technologies

Course Description
This course focuses on advanced masonry techniques and specialty installations used in complex residential and commercial projects. Students construct openings, arches, and decorative bonds while integrating metalwork, lintels, and structural supports. Emphasis is placed on environmental considerations, quality assurance, and the use of proper bracing and safety systems when working at height. Learners will refine their craftsmanship and precision to meet industry standards for high-quality finishes and advanced masonry systems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
135

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
120

Course Learning Outcomes

Learning Outcomes

Name
Construct masonry openings with associated metalwork including lintels and frames.

Name
Apply advanced masonry laying techniques such as closures, archways, and decorative bond patterns.

Name
Identify and adjust for environmental impacts on masonry work.

Name
Perform inspection procedures for quality assurance and control.

Name
Safely construct elevated masonry systems using appropriate PPE, bracing, and fall protection.

Requirements

Simple Requirements

A minimum grade of 'C' in Course MAS159

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MAS159 - Structural Masonry Applications

MAS179 - Advanced Masonry Laying Techniques

Overview

Department
Applied Technologies

Course Description
This course serves as a capstone experience in masonry construction, integrating advanced techniques, project management, and leadership skills. Students plan and execute complex projects involving stone masonry, glazed and glass block installations, and large-scale layouts using precision instruments. Emphasis is placed on estimating, scheduling, and team coordination to meet project specifications and industry standards. Learners demonstrate mastery of craftsmanship, safety, and communication as they prepare for supervisory roles within the masonry field.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
6

Contact Hours

Contact Hours Min:
165

Billing Hours

Billing Hours Min:
6

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
150

Course Learning Outcomes

Learning Outcomes

Name
Estimate quantities and costs for commercial and residential masonry projects.

Name
Lay out and level large-scale projects using total stations or optical instruments.

Name
Construct stone masonry using dry-stack and mortared methods

Name
Install glazed masonry units and glass block walls to plan specifications.

Name
Lead masonry crews using fundamental jobsite communication and coordination skills.

Requirements

Simple Requirements

A minimum grade of 'C' in Course MAS169

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MAS169 - Masonry Finishes and Specialty Systems

MCD101 - Introduction to CAD I

Overview

Department
Manufacturing

Course Description
This course introduces computer-aided drafting (CAD) and examines the hardware that makes up a CAD workstation. It also covers the operating system (Microsoft Windows) that enables the equipment to function as a unit. The course shows how to use AutoCAD to set up drawings and construct lines, circles, arcs, other shapes, geometric constructions, and text. Students will use display and editing techniques as well to obtain information about their drawings and work with drawing files. This course also introduces recommended drafting standards for students to use for properly preparing drawings with AutoCAD. This course also examines dimensioning, blocks and attributes, section views, isometric drawings, multiview layouts, annotative objects, external references, and sheet sets. Students will learn how to use AutoCAD to dimension drawings, create section lines and graphic patterns, design symbols and attributes for multiple use, and create sheet sets. Student drawings will be plotted or printed. This course also covers recommended drafting standards and practices for students to use for properly preparing drawings with AutoCAD.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply AutoCAD screen dialog and vocabulary through classroom and laboratory work assignments

Objective
Identify the central processing unit of a CAD system', Identify the input devices of a CAD system', Identify the output devices of a CAD system

Name
The student will be able demonstrate through classroom and laboratory work assignments the ability to manipulate commands in the CAD software

Objective
Identify the commands used for file loading and saving drawing output and environment configuration', Identify the commands used for creating entities', Identify the commands used for editing existing entities', Identify the commands used for entering text on the drawing', Identify the commands used for transforming entities', Identify the commands used for dimensioning the drawing', Demonstrate proper file management techniques', Create text using appropriate style and size to annotate drawings', Create new drawings', Perform drawing set up', Create wireframe andor solid models', Create joined surfaces', Create a fillet or blend between two surfaces', Create feature based geometry for example holes slots and rounds', Apply architectural commands for office drawings

Name
The student will be able to demonstrate through classroom and laboratory work assignments the ability to manipulate entities in the CAD software

Objective
Create a hard copy of the drawing', Exit a CAD application', Establish the drawing environment', Create simple objects', Perform basic editing on existing objects', Enter text on the drawing', Translate scale rotate reflect and replicate a simple object', Dimension a simple object', Apply advanced dimensioning techniques', Control entity color properties', Use layering techniques', Explain coordinate systems', Draw with coordinate systems', Compute variety of text arrangements', Illustrate prints with auxiliary views and layer controls', Illustrate basic dimensioning variables

Name
The student will be able to demonstrate through classroom and laboratory work assignments the ability to manipulate line construction functions in the CAD software

Objective
Control line types', Create and edit polylines', Plot drawings on media using correct layout and scale

Name
The student will be able to demonstrate through classroom and laboratory work assignments the ability to manipulate system variables in the CAD software

Objective
Utilize geometry editing commands for example trimming extending and scaling', Utilize nongeometry editing commands for example text and drawing format', Save drawings to storage devices

Name
The student will be able to demonstrate time management skills in the laboratory

Objective
Identity role of planning in time management', Identify planning tools including current technologies', Identify role of prioritizing in time management', Demonstrate prioritizing techniques', Demonstrate planning skills

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- MMG113 - Print Reading

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- MCD104 - Blueprint Reading for Drafting

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- AVC112 - Blueprint Reading

MCD102 - Introduction to CAD II

Overview

Department
Manufacturing

Course Description
This course is a continuation of Introduction to CAD I. All the skills taught in Introduction to CAD I will be reinforced with projects.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
2

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able demonstrate through classroom and laboratory work assignments the ability to manipulate commands in the CAD software

Objective
Apply the commands used for file loading and saving drawing output and environment configuration', Apply the commands used for creating entities', Apply the commands used for editing existing entities', Apply the commands used for entering text on the drawing', Apply the commands used for transforming entities', Apply the commands used for dimensioning the drawing', Demonstrate proper file management techniques', Create text using appropriate style and size to annotate drawings', Create new drawings', Perform drawing set up', Create wireframe andor solid models', Create joined surfaces', Create a fillet or blend between two surfaces', Create feature based geometry for example holes slots and rounds', Apply architectural commands for office drawings

Name
The student will be able to demonstrate through classroom and laboratory work assignments the ability to manipulate entities in the CAD software

Objective
Create a hard copy of the drawing', Exit a CAD application', Establish the drawing environment', Create simple objects', Perform basic editing on existing objects', Enter text on the drawing', Translate scale rotate reflect and replicate a simple object', Dimension a simple object', Apply advanced dimensioning techniques', Control entity color properties', Use layering techniques', Explain coordinate systems', Draw with coordinate systems', Compute variety of text arrangements', Illustrate prints with auxiliary views and layer controls', Illustrate basic dimensioning variables', Control line types', Create and edit polylines', Plot drawings on media using correct layout and scale', Utilize geometry editing commands for example trimming extending and scaling', Utilize nongeometry editing commands for example text and drawing format', Save drawings to storage devices

Name
The student will be able to demonstrate time management skills in the laboratory

Objective
Identity role of planning in time management', Apply planning tools including current technologies', Apply role of prioritizing in time management', Demonstrate prioritizing techniques', Demonstrate planning skills

Name
The student will be able to demonstrate through classroom and laboratory work assignments the ability to manipulate line construction functions in the CAD software

Objective
Create a hard copy of the drawing, Exit a CAD application, Establish the drawing environment, Create simple objects, Perform basic editing on existing objects, Enter text on the drawing, Translate, scale, rotate, reflect, and replicate a simple object, Dimension a simple object, Apply advanced dimensioning techniques, Control entity color properties, Use layering techniques, Explain coordinate systems, Draw with coordinate systems, Compute variety of text arrangements, Illustrate prints with auxiliary views and layer controls, Illustrate basic dimensioning variables

Name
The student will be able to demonstrate through classroom and laboratory work assignments the ability to manipulate system variables in the CAD software

Objective
Utilize geometry editing commands, for example: trimming, extending, and scaling, Utilize non-geometry editing commands, for example: text and drawing format, Save drawings to storage devices

Name
The student will be able to demonstrate through classroom and laboratory work assignments the ability to manipulate line construction functions in the CAD software

Objective
Control line types, Create and edit polylines, Plot drawings on media using correct layout and scale

Requirements

Simple Requirements

A minimum grade of 'C' in Course MCD101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MCD101 - Introduction to CAD I

MCD104 - Blueprint Reading for Drafting

Overview

Department
Manufacturing

Course Description
This course introduces the basic principles of print reading. Topics include line types, orthographic projections, dimensioning methods, and notes. Upon completion, students should be able to interpret basic prints and visualize the features of a part or system.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to utilize a production drawing in the shop

Objective
Describe the types of production drawings detail installation and assembly', Describe the elements of detail assembly and installation drawing', Identify what is and is not an assembly', Discuss the common elements of production drawing border title block revision block picture area parts list

Name
The student will be able identify terminology common to blueprints and explain their relationships

Objective
List the basic shapes used on blueprints point and lines surfaces planes angles', Identify line types used on blueprints', Identify the angle types used on blueprints', Explain the relationships that exist between two or more lines surfaces planes angles perpendicular lines right angles parallel lines acute angle obtuse angle complimentary angle supplementary angle', Measure an angle', Identify types of circles and terminology associated with them including concentric eccentric circumference diameter and radius', Explain the relationships that exist between two or more circles concentric circles eccentric circles arc tangent chord straight arc arch between radii', Identify common angels and arcs including straight angle right angle acute angle obtuse angle complimentary angle supplementary angle arc between two radii

Name
The student will be able to compare and contrast the elements of blueprint views

Objective
Explain how blueprints are drawn', Describe pictorial drawings perspective view isometric view oblique view and orthographic drawings', Compare and contrast the differences between perspective isometric and orthographic drawings', Describe orthographic projection including its principles and views', Identify the most common orthographic views top front and right side', Interpret an orthographic projection', Compare and contrast first and third angle projection', Identify auxiliary views including primary secondary and tertiary', Identify additional views including enlarged sectional partial and rotated', Describe the unique characteristics of orthographic views and airplanes including airplane views and reference planes station buttock line water line wing reference planes

Name
The student will be able to interpret blueprint lines

Objective
Describe blueprint line standards including object hidden center dimension extension leader break section phantom stitch cutting plane and viewing plane', Identify the standards of line precedence', Interpret a product based upon a line drawing', Interpret hidden features on a blueprint drawing', Identify other views of a product on the blueprint drawing

Name
The student will be able to identify dimension and tolerance on blueprints and its application in manufacturing

Objective
Identify the different types of dimensions dimension of size and dimension of position', Describe the components of dimensions extension lines dimension lines and dimension', Identify dimension of angles', Define tolerance and its role', Describe methods of displaying tolerance on a blueprint with dimension separate note title block', Identify the different types of tolerance and their role plus and minus maximum and minimum maximum minimum', Explain the purpose of dimension lines and extension lines', Identify different dimensioning methods used in product drawings including chain and baseline or datum dimensioning arcs and radius typical dimensions and rivet location dimensions

Name
The student will be able to interpret common GD&T symbols on a blueprint

Objective
Identify the role of symbols on a blueprint', Define GDT

Name
The student will be able successfully demonstrate the ability to recognize and understand elevation plans, floor plans, foundations plans, and plot plans

Objective
Identify symbols on elevation plans', Identify symbols on floor plans', Identify symbols on foundation plans

Name
The student will be able to successfully demonstrate the ability to recognize various types of doors, windows, roof styles and stairs

Objective
Identify different types of doors', Identify different types of windows', Identify different types of roof styles', Understand the purpose of a schedule for doors and windows

Name
The student will be able to successfully demonstrate the ability to use an architectural scale

Objective
Pass written exam using an architectural scale', Demonstrate how to read and understand various sides of the architectural scale

MCD106 - Precision Measuring

Overview

Department
Manufacturing

Course Description
This course is designed to assist multiple technical training disciplines with the proper operation, calibration, and measuring technique’s required for utilizing precision measurement equipment effectively. Both SAE and metric measuring instruments will be covered; including steel rules, feeler gauges, precision straight edge, calipers, inside and outside micrometers, angle measurement, small hole gauges, telescoping gauges and dial indicators.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will demonstrate skills associated with Certification in Tape and Rule Measurement

Objective
Understand basic safety guidelines as related to the use of precision measuring tools in shops and laboratories', Describe the basic design of various tapes rules and calipers to include features sizes variations and the technology behind the tool', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks on various tapes rules and calipers', Demonstrate application of various tapes rules and calipers to include proper usage obtaining and reading measurements accurately and performing tool maintenance

Name
The student will demonstrate skills associated with Certification in Slide Caliper Measurement

Objective
Understand basic safety guidelines as related to the use of precision measuring tools in shops and laboratories', Describe the basic design of various dial calipers to include features sizes variations and the technology behind the tool', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks on various dial calipers', Demonstrate application of various dial calipers to include proper usage obtaining and reading measurements accurately and performing tool maintenance

Name
The student will demonstrate skills associated with Certification in Micrometer Measurement

Objective
Understand basic safety guidelines as related to the use of precision measuring tools in shops and laboratories', Describe the basic design of various micrometers small hole gages and telescoping gages to include features sizes variations and the technology behind the tool', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks on various micrometers small hole gages and telescoping gages', Demonstrate application of various micrometers small hole gages and telescoping gages to include proper usage obtaining and reading measurements accurately and performing tool maintenance

Name
The student will demonstrate all skills associated with Certification in Gage Measurement

Objective
Understand basic safety guidelines as related to the use of precision measuring tools in shops and laboratories', Describe the basic design of depth gages screw pitch gages and thickness gages', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks on depth gages screw pitch gages and thickness gages', Demonstrate application of depth gages screw pitch gages and thickness gages to include proper usage obtaining and reading measurements and performing tool maintenance

Name
The student will demonstrate all skills associated with Certification in Angle Measurement

Objective
Understand basic safety guidelines as related to the use of precision measuring tools in shops and laboratories', Describe the basic design of the steel protractor and combination square set to include features sizes variations and the technology behind the tool', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks on the steel protractor and combination square set', Demonstrate application of the steel protractor and combination square set to include proper usage obtaining and reading measurements accurately and performing tool maintenance

Name
The student will demonstrate all skills associated with Certification in Dial Indicator and Bore Gage Measurement

Objective
Understand basic safety guidelines as related to the use of precision measuring tools in shops and laboratories', Describe the basic design of various dial indicators and bore gages to include features sizes variations and the technology behind the tool', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks on various dial indicators and bore gages', Demonstrate application of various dial indicators and bore gages to include proper usage obtaining and reading measurements accurately and performing tool maintenance

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Earn a minimum grade (UG) of C in the following:
- AVC112 - Blueprint Reading

OR

Earn a minimum grade (UG) of C in the following:
- MCD104 - Blueprint Reading for Drafting

OR

Earn a minimum grade (UG) of C in the following:
- MMG113 - Print Reading

MCD112 - Industrial Materials & Processes

Overview

Department
Manufacturing

Course Description
Includes instruction in materials, measurement, specifications, design principles, hardware and fasteners, vocabulary, machine fabrication, Geometric Dimensioning and Tolerance (GD&T), Machinery's Handbook, surface finishes and an understanding of the fabrication practices used in manufacturing and construction.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
2

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Describe the characteristics, uses, and limitations of common construction materials including wood, engineered products, and fasteners.

Name
Analyze structural requirements for small-scale construction projects, including load paths, support systems, and material selection.

Name
Design and draft a complete floor plan for a small structure (shed) using standard architectural conventions.

Name
Create detailed wall section drawings that illustrate framing, sheathing, openings, and material layering.

Name
Develop roof truss drawings that accurately represent spans, pitch, and load considerations appropriate to small structures

Name
Interpret and apply building design principles to produce technical drawings and construction documentation for the shed model.

Name
Construct a scaled model of the designed shed using balsa wood, accurately representing the structural components and relationships.

Name
Demonstrate safe and effective use of hand tools and model-making equipment to simulate basic construction processes.

Name
Evaluate the completed model for accuracy, craftsmanship, and adherence to the original design documentation.

Name
Reflect on the design-build process to identify challenges, problem-solving strategies, and areas for improvement.

Requirements

Simple Requirements

A minimum grade of 'C' in Course MCD124

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MCD124 - Advanced AutoCAD

MCD114 - Architectural Drafting & Design

Overview

Department
Manufacturing

Course Description
Includes instruction in freehand drawing, basic residential planning, creative design, dimensioning, working details, light construction principles, building systems and blueprint development, learning construction terminology, applying ANSI Standards, local codes and drawing prints to industry standards.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to draw wall sections

Objective
Layout basic construction drawings site plans floor plans foundation plans elevations roof plans and sections using standard practices scales and techniques', Explain the purpose of sections', Explain the purpose of details', Draw a typical wall section for selected residential dwelling', Draw all appropriate details for a selected residential dwelling

Name
The student will be able to draw residential floor plans

Objective
Explain the purpose of foundation plans', Explain the purpose of floor plans', Explain where the horizontal cutting plane is located on foundation and floor plans', Draw the foundation plan for a small residential dwelling', Draw the floor plan for a small residential dwelling

Name
The student will be able to draw residential elevations

Objective
Explain the purpose of elevations', Explain what is drawn and what is not drawn on an elevation', Draw the elevations for a small residential dwelling', Draw the kitchen elevations for a small residential dwelling

Objective
Identity role of planning in time management', Identify planning tools including current technologies', Identify role of prioritizing in time management', Demonstrate prioritizing techniques', Demonstrate planning skills

Name
The student will be able to indentify the role of industry specifications

Objective
State the purpose of specifications', Explain the purpose of the Construction Specifications Institute MASTERFORMAT', Write a set of construction specifications for a selected residential dwelling using the Construction Specifications Institute MASTERFORMAT

Requirements

Simple Requirements

A minimum grade of 'C' in Course MCD102

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MCD102 - Introduction to CAD II

A minimum grade of 'C' in Course MCD104

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MCD104 - Blueprint Reading for Drafting

MCD115 - Machine Drafting & Design

Overview

Department
Manufacturing

Course Description
Includes instruction in creative design, geometric construction, auxiliaries, dimensioning, sectioning, isometrics, obliques, specifications and notes, manufacturing engineering techniques and the Machinery's Handbook. Includes developing prints of working drawings, researching trade periodicals, learning machine terminology, using ANSI Standards and basic manufacturing blueprint development.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to illustrate section views of parts

Objective
State the purpose of sectional views', Describe full half brokenout rotated removed auxiliary and assembly sections', Identify the material symbols used in section lining', Draw and dimension an object with a full section', Draw and dimension an object with a half section', Draw and dimension an object with a brokenout section', Draw and dimension an object with a rotated or removed section', Draw and dimension an object with an auxiliary section

Name
The student will be able to illustrate auxiliary views of parts

Objective
Define auxiliary view', State the purpose for using a primary auxiliary view on a drawing', State the purpose for constructing the primary auxiliary view before completing the regular views on a drawing', Identify a normal view of a line', Identify a point view of a line', Identify an edge view of a plane', Identify a normal view of a plane', Construct the normal view of an inclined surface given two regular views of a simple object', Construct the normal view of an inclined surface given two regular views of an object with a circular void

Name
The student will be able to illustrate Isometric Views of parts

Objective
Apply AutoCAD isometric drawing capabilities

Name
The student will be able to illustrate multi-view drawings

Objective
Draw parallel lines', Divide a line into equal parts', Draw a line perpendicular through a point on a line', Draw an arc tangent to a straight line and an arc', Draw an arc tangent to two arcs', Construct a triangle with sides given', Construct a right triangle', Construct an equilateral triangle with one side given', Inscribe a hexagon inside a circle', Construct a hexagon with the distance across the flat sides given', Construct a circle through three given points', Construct a pentagon by inscribing', Draw an involute of a circle', Draw an ellipse', Construct drawings using object hidden center and construction lines

Objective
Identity role of planning in time management', Identify planning tools including current technologies', Identify role of prioritizing in time management', Demonstrate prioritizing techniques', Demonstrate planning skills

Requirements

Simple Requirements

A minimum grade of 'C' in Course MCD101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MCD101 - Introduction to CAD I

A minimum grade of 'C' in Course MCD104

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MCD104 - Blueprint Reading for Drafting

A minimum grade of 'C' in Course MCD121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MCD121 - Descriptive Geometry

MCD121 - Descriptive Geometry

Overview

Department
Manufacturing

Course Description
Students use computers to study descriptive geometry as it applies to drafting, and they determine true length of lines, true shapes of planes and apply descriptive geometry to real problems. Students will also create flat pattern layouts for form three dimensional shapes.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to draw descriptive geometry

Objective
Define intersecting and nonintersecting lines', State which conditions must be met to establish the true length of a line by revolution', State in which plane of projection true length is shown', Draw the intersection of a line with a plane using the edgeview and cuttingplane methods', Draw the intersection of an oblique line with a solid having an oblique surface', Draw the intersection of an oblique line with a solid having an inclined surface', Draw the intersection of an oblique line with the principal plane of a solid', Draw the intersection of an inclined line with the principal line of a solid', Draw the intersection of a principal line with the principal line of a solid', Draw the intersection of two planes using the edgeview and cutting plane methods', Draw the intersection of an oblique plane with the oblique plane of a solid', Draw the intersection of an oblique plane with an inclined plane of a solid', Draw the intersection of an oblique plane with the principal plane of a solid', Develop the true surface of a plane by revolution', Develop the edge view of a plane by revolution

Name
The student will be able to draw flat pattern layouts

Objective
Define the term surface development', Describe how a surface is composed', Develop the lateral surfaces of a prism pyramid cylinder and cone', Develop the lateral surfaces of a prism and cylinder combination', Develop the lateral surfaces of cones and transition pieces

Objective
Identity role of planning in time management', Identify planning tools including current technologies', Identify role of prioritizing in time management', Demonstrate prioritizing techniques', Demonstrate planning skills

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Earn a minimum grade (UG) of C in the following:
- MCD101 - Introduction to CAD I

OR

Enroll in the following Courses:
- MCD101 - Introduction to CAD I

MCD124 - Advanced AutoCAD

Overview

Department
Manufacturing

Course Description
This course explores the three-dimensional construction and viewing capabilities of AutoCAD. Topics covered include a review of point coordinate entry and the user coordinate system (UCS). Spherical and cylindrical coordinate entry, 3D viewing and display techniques, construction of 3D solid primitives, 2D regions, solid modeling composites, and surfaces are also introduced. The use of multiple viewports for 3D constructions and creating 2D layouts are covered. Visual styles and rendering are also discussed.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to illustrate wire-frame and solid modeling

Objective
Create basic 3D shapes using Elev Thickness Vpoint and hide', Demonstrate use of the userdefinable and user coordinate systems', Create wireframe andor solid models', Create nonanalytic surfaces using appropriate modeling for example NURBS Bspline Gordon Bezier and Coons', Create analytic surfaces using appropriate modeling with planes and analytic curves for example conic cylinder revolution and ruled', Create offset surfaces', Find the intersection of two surfaces', Create joined surfaces', Create a fillet or blend between two surfaces', Create feature based geometry for example holes slots and rounds', Create cut sections', Construct and label exploded assembly drawings

Objective
Identity role of planning in time management', Identify planning tools including current technologies', Identify role of prioritizing in time management', Demonstrate prioritizing techniques', Demonstrate planning skills

Requirements

Simple Requirements

A minimum grade of 'C' in Course MCD115

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MCD115 - Machine Drafting & Design

MCD130 - Basic Solidworks

Overview

Department
Manufacturing

Course Description
Students Learn how to use the SOLIDWORKS mechanical design automation software to build parametric models of parts and how to make drawings of those parts.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate basic drafting competencies

Objective
Identify the correct reference planes', Identify the material measure and mass properties', Assign and Edit Material', Measure Tool', Locate the Center of Mass and Principal moments of inertia', Procedure to Create a Named Drawing View', Engineering Drawing Practices', Document Properties

Name
The student will be able to demonstrate basic Part and Intermediate Part Creation and Modification

Objective
Build and understand an Engineering Document', Build a Basic part from a detailed dimensioned illustration', 2D vs 3D Sketching', Tolerance Type', Dimension Text Symbols', Building Additional Basic Parts

Name
The student will be able to demonstrate drawing creation and modification

Objective
Sheet sizes', Title Block manipulation', Part importing', Dimensioning

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- MCD104 - Blueprint Reading for Drafting

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- MMG113 - Print Reading

MCD132 - Basic Chief Architect/ Architectural Desktop

Overview

Department
Manufacturing

Course Description
Students use the computers to learn how to utilize three dimensional software to design houses. This course provides instruction in how to use the software and draw walls, windows, doors, foundations, and roofs.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Navigate the Chief Architect Interface

Objective
Demonstrate proficiency in using menus, toolbars, layers, and drawing tools within Chief Architect.

Name
Construct Floor Plans

Objective
Draw walls accurately using Chief Architect tools, applying correct wall types, dimensions, and alignments.

Name
Insert Openings

Objective
Place and modify doors and windows according to architectural standards and project requirements.

Name
Apply Room Labels and Space Identification

Objective
Create and manage room labels with correct names, square footage, and designations.

Name
Add Dimensions and Annotations

Objective
Apply appropriate dimensioning standards for construction documents, ensuring clarity and accuracy

Name
Design Cabinet Layouts and Interior Fixtures

Objective
Place and adjust cabinets, fixtures, and millwork using Chief Architect's object library and editing tools.

Name
Organize Drawing Information

Objective
Use layers, line weights, and annotation tools to create legible and professional-quality drawings

Name
Develop Construction Documents

Objective
Compile a complete set of drawings (floor plans, door/window schedules, cabinet layouts, and annotated details) suitable for construction documentation.

Name
Produce and Export Professional Drawings

Objective
Generate scaled, properly formatted drawings for presentation and printing, including title blocks and sheet organization.

Name
Demonstrate Industry Standards in Drafting

Objective
Apply architectural drafting conventions and building terminology within Chief Architect to create documents that align with professional practices

MCD133 - Advanced Solidworks

Overview

Department
Manufacturing

Course Description
Students Learn how to use the SOLIDWORKS mechanical design automation software to create advanced part modeling and assemblies. Using the software we will also look at assembly blueprint creation as well as prepping for the CSWA exam.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate Advanced Part Creation and Modification

Objective
Build an advanced part from a detailed dimensioned illustration', Calculate the Center of Mass relative to a created coordinate system

Name
The student will be able to demonstrate Assembly Creation and Modification

Objective
Assembly Modeling', MatesStandard Mates', Build an Assembly for a detailed dimensioned illustration', Mate the first component with respect to the assembly reference planes

Requirements

Simple Requirements

A minimum grade of 'C' in Course MCD130

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MCD130 - Basic Solidworks

MCD134 - Advanced Chief Architect/ Architectural Desktop

Overview

Department
Manufacturing

Course Description
Students use the computers to learn how to utilize three dimensional software to design houses. This course provides instruction in how to add interior furniture, terrains, elevations, working drawings, presentation drawings and how to use the camera functions.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Navigate and Manage the Chief Architect Environment

Objective
Efficiently use drawing tools, layers, libraries, and project settings to organize and manage design projects.

Name
Create Complete Residential Floor Plans

Objective
Draw and edit walls, doors, windows, and room definitions that meet architectural standards.

Name
Develop Structural and Spatial Layouts

Objective
Apply design principles to accurately represent floor plans, roof systems, and framing elements.

Name
Generate Interior Layouts and Elevations

Objective
Produce interior elevations showing cabinets, fixtures, and finishes for kitchens, baths, and other spaces.

Name
Produce Electrical Plans

Objective
Insert and annotate electrical symbols, lighting layouts, outlets, and switches according to residential design standards.

Name
Design and Document Site Plans

Objective
Create site plans with property boundaries, setbacks, topography, landscaping, and building placement.

Name
Apply Dimensions, Labels, and Schedules

Objective
Use annotation tools to add dimensions, room labels, material lists, and door/window schedules that meet construction documentation requirements.

Name
Integrate Materials and Finishes

Objective
Assign materials, textures, and finishes to building components for both construction drawings and presentations.

Name
Create 3D Renderings and Visualizations

Objective
Generate realistic renderings, perspectives, and walkthroughs for client presentations.

Name
Assemble a Complete Construction Document Set

Objective
Compile and organize sheets including floor plans, site plans, electrical plans, elevations, schedules, and renderings into a professional drawing package

Name
Demonstrate Professional Drafting and Presentation Standards

Objective
Apply architectural conventions, line weights, sheet organization, and client-focused presentation methods to deliver customer-ready documentation.

Requirements

Simple Requirements

A minimum grade of 'C' in Course MCD132

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- MCD132 - Basic Chief Architect/Architectural Desktop

MCD137 - Introduction to 3D Printing

Overview

Department
Manufacturing

Course Description
This course seeks to provide the student with a basic understanding of the industrial design process, using the 3D printer capability to obtain hands-on experience in producing a design from concept to prototype. Major topics covered in this introductory course include: Basic Part Design using AutoDesk Inventor; Basic Part Design using Solidworks; 3D Part Modeling.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Students ability to 3D model using AutoDesk Inventor

Objective
Introduction to Sketching 2D Sketching', Saving Files', Sketching', Sketch Entities', Basic Sketching', Sketch Relations', Dimensions', Extrude', Sketching Guidelines', Terminology', Using the Hole Wizard', Filleting', Editing Tools

Name
Students ability to 3D model using Solidworks

Objective
Introduction to Sketching 2D Sketching', Saving Files', Sketching', Sketch Entities', Basic Sketching', Sketch Relations', Dimensions', Extrude', Sketching Guidelines', Terminology', Using the Hole Wizard', Filleting', Editing Tools

Name
Students ability to setup and run 3D model on 3D Printer

Objective
Discover what 3D printing is and the different types of printing', Unpack and run initial setup on a Dremel 3D40 printer', Learn how to level the build plate and load and unload filament', Learn how to use all the basic functions in Print Studio from bringing in a model to exporting and printing', Find out how to adjust basic and advanced printer settings before building a model', Learn how to utilize Print Cloud', Learn basic maintenance and troubleshooting for a 3D40 printer', Get an introduction to Tinkercad', Complete tutorials on Tinkercad fundamentals

MCD140 - Drafting Technology Internship

Overview

Department
Manufacturing

Course Description
Introduces students to the application and reinforcement of drafting and employability principles in an actual job setting. This internship acquaints the student with realistic work situations and provides insights into a drafting job. Topics include appropriate work habits, acceptable job performance, application of drafting/CAD knowledge and skills, interpersonal relations, and development of productivity.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
180

Billing Hours

Billing Hours
Min:
4

Other Hours

Other Hours
Min:
180

Course Learning Outcomes

Learning Outcomes

Name
Use Appropriate Work Habits in a Drafting/CAD office

Objective
Follow rules and office policies in a typical DraftingCAD office Use exemplary work habits

Name
Apply drafting/CAD knowledge to a job environment

Objective
Demonstrate the ability to use classroomlab drafting skills in a real life drafting environment

Name
Develop acceptable interpersonal relations with co-workers and supervisors

Objective
Demonstrate professional interaction with peers supervisor and clients

Name
Development of Productivity in a Drafting environment

Objective
Perform job assignments in an accurate and timely manner as instructed by immediate supervisor

Name
The student will be able to demonstrate time management skills in the laboratory

Objective
Identity role of planning in time management', Identify planning tools including current technologies', Identify role of prioritizing in time management', Demonstrate prioritizing techniques', Demonstrate planning skills

MCD156 - Intermediate Measuring Instruments

Overview

Department
Manufacturing

Course Description
This course provides a comprehensive introduction to Intermediate Measuring Instruments. It covers the fundamentals of Primary Standards, Dimensional Measurements, Support and Layout, Flexible Measurements, and more. You will learn how to properly use, maintain, and troubleshoot a wide range of measuring instruments. You will also gain an understanding of the theoretical principles of calibration and the importance of traceability. This course is designed for engineers, technicians, and other professionals who need an understanding of intermediate measuring instruments.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The Student will demonstrate all skills associated with Certification in Primary Standards

Objective
Understand basic safety guidelines as related to the use of semiprecision measuring and precision measuring instruments in shops and laboratories', Describe the basic design of surface plates and gage blocks Including features sizes variations and the technology behind the tool', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks on the granite surface plate and gage blocks', Demonstrate application of the granite surface plate and gage blocks Including proper usage obtaining and reading measurements accurately and performing tool maintenance

Name
The Student will demonstrate all skills associated with Certification in Flexible Measuring Tools

Objective
Understand basic safety guidelines as related to the use of semiprecision measuring and precision measuring instruments in shops and laboratories', Describe the basic design of flexible measuring tools Including features sizes variations and the technology behind the tool', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks on flexible measuring tools', Demonstrate application of flexible measuring tools Including proper usage obtaining and reading measurements accurately and performing tool maintenance

Name
The Student will demonstrate all skills associated with Certification in Dimensional Measurements

Objective
Understand basic safety guidelines as related to the use of semiprecision and precision measuring instruments in shops and laboratories', Describe the basic design of height measuring tools Including features sizes variations and the technology behind the tool', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks of height measuring tools', Demonstrate application of height measuring tools Including proper usage obtaining and reading measurements accurately and performing tool maintenance

Name
The Student will demonstrate all skills associated with Certification in Support and Layout

Objective
Understand basic safety guidelines as related to the use of semiprecision measuring and precision measuring instruments in shops and laboratories', Describe the basic design of various measuring and layout instruments used with surface plates and gage blocks Including features sizes variations and the technology behind the tool', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks on various measuring and layout instruments', Demonstrate application of various measuring and layout instruments Including proper usage obtaining and reading measurements accurately and performing tool maintenance

Requirements

Simple Requirements

A minimum grade of 'C' in Course MCD106

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MCD106 - Precision Measuring

MCD164 - Residential Design Using Autodesk Revit

Overview

Department
Manufacturing

Course Description
Residential Design Using Autodesk Revit is designed for users completely new to Autodesk Revit. This text takes a project-based approach to learning Autodesk Revit's architectural tools in which you develop a single-family residence all the way to photorealistic renderings.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to draw Floor Plans

Objective
Demonstrate setting up projects within the software', Demonstrate and manipulate exterior walls', Demonstrate and manipulate interior walls', Demonstrate placing and manipulate Doors Openings and Windows', Demonstrate adding stairs to their designs

Name
The student will be able to draw different Roof Systems

Objective
Identify different types of roof systems', Demonstrate and manipulate Gable Roofs', Demonstrate adding low roof elements to their plans', Demonstrate adding skylights to their designs

Name
The student will be able to draw Floor Systems & Reflected Ceiling Plans

Objective
Identify and draw different types of floor systems', Identify and draw different types of ceiling systems', Demonstrate placing lighting fixtures', Demonstrate adding annotations to the design

Name
The student will be able to produce Elevations and Sections

Objective
Demonstrate Creating and View Exterior Elevations', Demonstrate Creating and View Interior Elevations', Identify and apply different design options to their plans', Demonstrate specify section cutting planes in plan view', Demonstrate modifying the project model in section views', Demonstrate annotate and detail components in sections views

Name
The student will be able to produce construction documents

Objective
Demonstrate setting up sheets', Demonstrate navigation of the sheet index', Demonstrate printing of a set of drawings

Requirements

Simple Requirements

A minimum grade of 'C' in Course MCD114

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MCD114 - Architectural Drafting & Design

MCD201 - Geometric Dimensioning & Tolerance

Overview

Department
Manufacturing

Course Description
The Geometric dimensioning and tolerance course is an in-depth study designed to develop a basic working knowledge in geometric dimensioning and tolerancing (GD&T). It is delivered per the ASME Y14.5M, 1994 standard. This program has been presented and refined over the past 25 years and covers what personnel need to know in order to work in an industrial environment on a daily basis. The course includes emphasis on all the basics, such as the rules, measurement theory, the datum reference frame, form, orientation, profile and positional tolerancing. The program materials contain a variety of computer color animated graphics, video clips and plastic models which allow the students to clearly understand the concepts.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate foundational understanding of GD&T principles and practices

Objective
Students will explain the purpose, benefits, and basic structure of GD&T as a symbolic language used to communicate design intent and manufacturing requirements.

Name
. Identify and interpret GD&T symbols, terms, and datum systems

Objective
Students will recognize standard GD&T symbols and terminology, and define datum features and datum reference frames used to establish part orientation and location

Name
. Apply material condition modifiers and evaluate their impact on tolerance zones.

Objective
Students will use MMC, LMC, and RFS modifiers to analyze feature relationships and determine functional limits in part assemblies.

Name
. Differentiate and apply form tolerances to control feature geometry.

Objective
Students will apply straightness, flatness, circularity, and cylindricity tolerances to ensure proper form and manufacturability of components

Name
. Implement orientation and basic positional tolerances in engineering drawings.

Objective
Students will apply angularity, perpendicularity, parallelism, and basic position tolerances to control feature orientation and location.

Name
Analyze virtual conditions and perform tolerance stack-up evaluations

Objective
Students will calculate virtual conditions and use them to assess part fit, function, and assembly requirements

Name
. Interpret and apply profile and runout tolerances for complex surfaces and rotating parts

Objective
Students will use profile of a surface, profile of a line, circular runout, and total runout to control surface geometry and rotational accuracy

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC112

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC112 - Blueprint Reading

A minimum grade of 'C' in Course MMG113

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MMG113 - Print Reading

A minimum grade of 'C' in Course MCD104

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MCD104 - Blueprint Reading for Drafting

MCD205 - Residential Drafting

Overview

Department
Manufacturing

Course Description
Introduces architectural drawing skills necessary to produce a complete set of construction drawings given floor plan information. Topics include: footing, foundation, and floor plans; interior and exterior elevations; sections and details; window, door, and finish schedules; site plans, and specifications.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to understand design principals as they relate to residential houses

Objective
Identify the best layout for the client house', Work with client to layout the house the best way possible

Name
The student will be able to produce a full set of drawings

Objective
Explain which disciplines should be consulted for a given project', Identify the points in the design process of a given project where the consulting disciplines should', provide input', Complete a set of working drawings for a residential project a client list of needs and preliminary design

Name
The student will be able to demonstrate time management skills in the laboratory

Objective
Identity role of planning in time management', Identify planning tools including current technologies', Identify role of prioritizing in time management', Demonstrate prioritizing techniques', Demonstrate planning skills

Requirements

Simple Requirements

A minimum grade of 'C' in Course MCD132

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MCD132 - Basic Chief Architect/Architectural Desktop

MCD210 - Advanced Measuring

Overview

Department
Manufacturing

Course Description
This course is designed to assist multiple advanced technical training disciplines with the proper operation, field verification, and measuring techniques of instruments utilized in precision machining and manufacturing. Both SAE and metric measuring instruments will be covered in topics including Primary standards, Flexible Measuring Instruments, Support and Layout, Surface Finishing and Hardness, Data Acquisition and Optical Comparator.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will demonstrate competency in the safe and effective use of semiprecision and precision measuring instruments by applying knowledge of surface plates and gage blocks, distinguishing between calibration and field checks, accurately performing field checks, obtaining and interpreting measurements, and maintaining tools in proper working condition.

Objective
Understand basic safety guidelines as related to the use of semiprecision measuring and precision measuring instruments in shops and laboratories', Describe the basic design of surface plates and gage blocks Including features sizes variations and the technology behind the tool', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks on the granite surface plate and gage blocks', Demonstrate application of the granite surface plate and gage blocks Including proper usage obtaining and reading measurements accurately and performing tool maintenance

Name
The student will demonstrate competency in the safe and effective use of flexible measuring tools by applying knowledge of their design, features, and variations; distinguishing between calibration and field checks; accurately performing field checks; obtaining and interpreting measurements; and maintaining the tools in proper working condition.

Objective
Understand basic safety guidelines as related to the use of semiprecision measuring and precision measuring instruments in shops and laboratories', Describe the basic design of flexible measuring tools Including features sizes variations and the technology behind the tool', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks on flexible measuring tools', Demonstrate application of flexible measuring tools Including proper usage obtaining and reading measurements accurately and performing tool maintenance

Name
he student will demonstrate competency in the safe and effective use of various measuring and layout instruments in conjunction with surface plates and gage blocks by applying knowledge of their design, features, and variations; distinguishing between calibration and field checks; accurately performing field checks; obtaining and interpreting precise measurements; and maintaining instruments in proper working condition.

Objective
Understand basic safety guidelines as related to the use of semiprecision measuring and precision measuring instruments in shops and laboratories', Describe the basic design of various measuring and layout instruments used with surface plates and gage blocks Including features sizes variations and the technology behind the tool', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks on various measuring and layout instruments', Demonstrate application of various measuring and layout instruments Including proper usage obtaining and reading measurements accurately and performing tool maintenance

Name
The Student will demonstrate all skills associated with Certification in Surface Finish Inspection and Hardness Testing

Objective
Demonstrate proper application usage and maintenance of the surface hardness tester', Demonstrate the proper techniques to field check and calibrate the surface hardness tester', Understand the basic theory behind hardness testing and the basic design features and variations of hardness testers', Demonstrate proper application usage and maintenance of the surface finish tester', Demonstrate the proper techniques to field check and calibrate the surface finish tester', Understand the basic theory behind measuring surface finish and the basic design features and variations of the surface finish tester', Understand basic safety guidelines as related to the use of semiprecision measuring and precision measuring instruments in shops and laboratories

Name
The Student will demonstrate all skills associated with Certification in DataSure

Objective
Understand basic safety guidelines as related to the use of semiprecision measuring and precision measuring instruments in shops and laboratories', Describe the basic design of the DataSure data collection systems components instruments and software including installing and configuring the DataSure network', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks of the electronic measure instruments used with the DataSure system', Demonstrate application of the DataSure system Including proper usage obtaining and reading measurements accurately data logging setting up remote client applications and data processing as it relates to Statistical Process Control

Name
The Student will demonstrate all skills associated with Certification in Optical Comparator

Objective
Understand basic safety guidelines as related to the use of semiprecision measuring and precision measuring instruments in shops and laboratories', Describe the basic design of the optical comparator Including features sizes variations and the technology behind the tool', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks on the optical comparator', Demonstrate application of the optical comparator Including proper usage obtaining and reading measurements accurately and performing tool maintenance

Name
The Student will demonstrate all skills associated with Certification in Height Measuring Tools

Objective
Understand basic safety guidelines as related to the use of semiprecision and precision measuring instruments in shops and laboratories', Describe the basic design of height measuring tools Including features sizes variations and the technology behind the tool', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks of height measuring tools', Demonstrate application of height measuring tools Including proper usage obtaining and reading measurements accurately and performing tool maintenance

Requirements

Simple Requirements

A minimum grade of 'C' in Course MCD106

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MCD106 - Precision Measuring

MCD224 - Commercial Design Using Autodesk Revit

Overview

Department
Manufacturing

Course Description
Commercial Design Using Autodesk Revit is to provide you with a well-rounded knowledge of tools and techniques for use in both school and industry. A project-based approach to learning Revit's architectural tools in which you develop a three-story office building. General building codes and industry standard conventions are covered in a way that is applicable to the current exercise.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to draw Commercial Floor Plans

Objective
Demonstrate building new exterior walls', Demonstrate building new interior walls', Demonstrate placing and manipulating an elevator', Demonstrate placing and manipulating doors and windows', Demonstrate the ability to copy walls from one floor to the next', Demonstrate the ability to set different floortofloor heights

Name
The student will be able to draw Stairs and ramps

Objective
Demonstrate building new exterior walls', Demonstrate building new interior walls', Demonstrate placing and manipulating an elevator', Demonstrate placing and manipulating doors and windows

Name
The student will be able to draw Interior and Exterior Elevations

Objective
Demonstrate the ability to create and view exterior elevations', Demonstrate the ability to create and view interior elevations', Demonstrate the ability to add mullions to curtainwalls

Name
The student will be able to produce Commercial Construction Drawings

Objective
Demonstrate setting up a sheet for a project', Demonstrate using the sheet index', Demonstrate printing a set of drawings

Objective
Identity role of planning in time management', Identify planning tools including current technologies', Identify role of prioritizing in time management', Demonstrate prioritizing techniques', Demonstrate planning skills

Requirements

Simple Requirements

A minimum grade of 'C' in Course MCD164

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MCD164 - Residential Design Using Autodesk Revit

MDU010 - Medication Aide Update

Overview

Department
Health Sciences

Course Description
Provides the continuing education required every two years by the Kansas Department of Health and Environment for renewal of the medication aide certificate.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2019

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
12

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
12

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to understand legal, ethical and current practices of medication administration including: infection control, drug standards and names, and resource information

Objective
Understand the role and responsibility of a CMA', Understand the statutes and regulations of a CMA', Understand ethical standards of conduct for a CMA', Review the principles of standard precautions', Know that facilities will have specific policies relating to infection control', Identify proper hand hygiene techniques', Identify additional methods of infection control', Explain what is meant by drug standards and tell how they are determined', List and differentiate between two types of names by which drugs are known', State the importance of knowing how to find current information on medications', Demonstrate the ability to find and use drug references and other resources to obtain drug information', Be aware of how quickly information on medications change

Name
The student will be able to Prepare and administer medications

Objective
Identify ways in which medications are supplied to the nursing home', Describe unit dose and multiple dose packaging of medications', Explain proper storage of medications biological equipment and supplies in the medication room nurses room or work area medication cart and residents bedroom', Know how to dispose of unused medications', Know who may receive medication orders and how they are received and recorded Know how to check medication orders Understand automatic stop orders standing orders PRN and STAT orders', Explain the responsibility of the medication aide in questioning medication orders including what to do if the order is not clear or legible', Discuss methods for ordering medications from the pharmacy', Explain how a Kardex medication cards and a Medication Administration Record MAR are used to communicate medication orders Demonstrate how to document administration of a medication', Know general guidelines for medication preparation Identify potential sources for errors', Identify and demonstrate specific techniques to administer medications using the Seven Rights of medication administration including techniques for specific forms of medications Note previously there were only Five Rights to medication administration', Know techniques specific to liquid crushed and controlled medications

Name
The student will be able to understand a variety of drugs medications and alternative treatments and their effect on the body.

Objective
Be familiar with dietary guidelines for Americans', Identify the meaning of RDA', Discuss the role of vitamins know the difference between fat soluble vitamins and water soluble vitamins', Discuss the role of minerals know the difference between macrominerals and microminerals', Define and identify electrolytes', Identify nursing care and side effects regarding vitamins and minerals and their relationship to medications', Understand the bodys need for iron calcium and potassium', Discuss the role of herbs with regard to medications and know which ones are safe and which are unsafe', Understand the medical use of acupuncture chiropractic and other nonpharmacological methods of treatment

Requirements

Simple Requirements

Completed Course GRA101

Type
Prerequisite

Complete ALL of the following Courses:

Completed Course GRA119

Type
Prerequisite

Complete ALL of the following Courses:

MFG100 - Lean Manufacturing

Overview

Department
Manufacturing

Course Description
This course is designed to familiarize the students with the concepts and practices of Lean Manufacturing as applied in industry today. Students begin with a discussion of Lean Manufacturing's place in the overall process of continuous improvement. Students will then move on to learning to apply basic elements of lean, lean system design, lean tools and measurement methods to industry based scenarios.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Hybrid

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Transportation and Traffic Management

Name
Transportation and Traffic Management

Name
Transportation and Traffic Management

Name
Transportation and Traffic Management

MFG125 - Manufacturing Internship

Overview

Department
Manufacturing

Course Description
The internship represents an educational strategy linking the classroom with the acquisition of knowledge in the workplace. Through direct observation, reflection and evaluation, students gain an insight into the internship site's work, mission, and audience, how these relate to their academic study, as well as the organization's position in the broader industry or field. Students will produce a critical reflection on their internship experience demonstrating how they have addressed specific learning goals. NOTE: Course can be repeated for credit and does not follow standard college repeat policy.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
1

Other Hours

Other Hours
Min:
45

Number Of Repeats:
98

Course Learning Outcomes

Learning Outcomes

Name
Applied your knowledge, skills, experience to a work environment

Name
Acquired new learning through challenging and meaningful activities;

Name
Reflected on the content and process of the learning expereince

Name
Advocated for your own learning in alignment with internship goals;

Name
Demonstrated professional skills in the workplace;

Name
Built and maintained positive professional relationships;

Name
Demonstrated awareness of community and/or organizational issues;

Name
Identified, clarified and/or confirmed professional direction as it relates to your academic studies and future career path;

Name
Developed self-understanding, self-discipline, maturity and confidence;

Name
Developed strong networking/mentoring relationships

MGT106 - Introduction to Human Resources

Overview

Department
Professional Studies

Course Description
Comprehensive view of human resources within an organization. Students examine the human resource functions of strategic human resource management, workforce planning, recruitment and selection, human resource development (training and development), total rewards (compensation and benefits), employee and union relations and risk management (health, safety and security). Emphasis is placed on understanding how human resource management contributes to an organization's strategic direction and enhances the organization's competitiveness.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Spring 2014

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the basic element of the human resource environment

Objective
Define human resource management and explain how HRM contributes to an organizations competitiveness', Identify the responsibilities of HR departments', Explain the key competencies needed by HR professionals to be successful in their changing environment', Discuss ethical issues involved in human resource management', Explain how the three branches of government regulate human resource management', Identify the federal agencies that enforce equal employment opportunity and describe the role of each', Understand the laws surrounding equal employment opportunity', Describe the different types of employee discrimination', Discuss the challenges in HRM such as harassment all forms discrimination and employment law

Name
The student will be able to discuss talent management

Objective
Discuss how to plan for the human resources needed to carry out an organizations strategy', Describe the importance of human resource planning to the success of an organizations recruiting efforts', Define the elements of a job analysis and discuss their significance for human resource management', Be able to discuss different options available to organizations for recruiting employees', Discuss the recruiters role in the recruitment process including limits and opportunities', Discuss various selection techniques and the advantages and disadvantages of each', Discuss how technology has impacted recruitment selection and training of an organizations workforce', Summarize the advantages and disadvantages of methods used to eliminate a labor surplus and avoid a labor shortage', Define ways to measure the success of a selection method', Summarize the governments requirements for employee selection', Describe the major types of employment tests', Discuss how to conduct effective interviews

Name
The student will be able to discuss the elements of human resource development

Objective
Discuss how to link training programs to organizational needs', Explain how to assess the need for training', Describe how to plan an effective training program', Compare training methods and activities used in development efforts', Summarize how to implement a successful training program', Describe training methods for employee orientation and diversity management', Discuss the importance of succession planning to an organization', Understand the use of performance management in HRM', Discuss the difference between performance management and performance appraisal', Compare the major methods for measuring performance', Define types of rating errors and explain how to minimize them', Explain how to provide performance feedback effectively

Name
The student will be able to discuss the elements of total rewards including compensation and benefits

Objective
Understand the concept of equity theory and fairness in pay', Describe how organizations develop a job and pay structure', Understand federal and state regulations pertaining to compensation and benefits', Describe the concept of total rewards and its role in increasing an organizations competitiveness', Describe how employees evaluate the fairness of a pay structure', Discuss the connection between incentive pay and employee performance', Discuss issues related to performancebased pay for executives', Discuss the role of employee benefits in an organizations total rewards package', Summarize the types of employee benefits required by law', Describe the most common forms of paid leave', Describe the types of retirement plans offered by employers', Discuss the various types of pay systems and the advantages and disadvantages of each

Name
The student will be able to discuss employee and union relations

Objective
Discuss how employees determine whether the organization treats them fairly', Identify legal requirements for employee discipline', Understand the role of progressive discipline and involuntary separation in HRM', Understand how to manage turnover and voluntary separation', Define unions and labor relations and their role in organizations', Describe the union organizing process', Explain how management and unions negotiate contracts', Summarize the practice of contract administration', Discuss the legal requirements that affect labor relations

Name
The student will be able to discuss risk management

Objective
Explain employers duties under the Occupational Safety and Health Act', Describe the role for the occupational Safety and Health Administration', Discuss ways employers promote worker safety and health', Explain risk management techniques used by organizations', Define business continuity and disaster recovery plans and their importance to organizations', Describe the issues involved with workplace security', Identify key security issues facing organizations today', Discuss the concept of employee privacy and the legislation that governs it

MGT111 - Business Ethics

Overview

Department
Professional Studies

Course Description
Provides students with an overview of business ethics and ethical management practices, with emphasis on the process of ethical decision-making and working through contemporary ethical dilemmas faced by business organizations, managers and employees. The course is intended to demonstrate to the students how ethics can be integrated into strategic business decisions and can be applied to their own careers. The course uses a case study approach to encourage the student in developing analytical, problem-solving, critical thinking and decision-making skills. Topics include: An overview of business ethics; moral development and moral reasoning' personal values, rights and responsibilities; frameworks for ethical decision-making in business' justice and economic distribution' corporations and social responsibility' corporate codes of ethics and effective ethics programs' business and society; consumers and the environment; ethical issues in the workplace; business ethics in a global and multicultural environment; business ethics in cyberspace; and business ethics and the rule of law.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify and characterize fundamental theories of business ethics

Name
The student will be able to discuss ethical concepts that shaped moral development and moral reasoning

Name
The student will be able to discuss the differences between personal values, rights, and duties and how they relate to workplace ethics

Name
The student will demonstrate understanding of the framework for ethical decision making in business

Name
The student will demonstrate familiarity with the process for ethical analysis and decision making and be able to utilize the process

Name
The student will be able to identify and discuss various ethical beliefs

Name
The student will be able to identify factors that contribute to the development of an ethical organization

Name
The student will demonstrate understanding of the ethical relationships between business and society and between consumers and the environment

Name
The student will be able to discuss the characteristics of organizational and leadership ethics

Name
The student will be able to discuss the impact of business ethics in a global and multicultural environment

Name
The student will be able to apply the concepts of business ethics to the cyberspace environment

Name
The student will be able to discuss managerial ethics and rule of law

MMG113 - Print Reading

Overview

Department
Manufacturing

Course Description
Student will learn to identify basic lines, views, and abbreviations used in blueprints, interpret basic 2 D sketches using orthographic projections and blueprints, determine dimensions of features of simple parts, sketch simple parts with dimensional measurements, determine dimensions of a multi-feature part, interpret GDT symbols, frames and datums.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Interpret production drawings including detail, installation, and assembly types, while identifying key elements such as title blocks, revision areas, and parts lists.

Name
Analyze geometric features on blueprints including shapes, line types, angles, and circles, and explain their relationship using appropriate terminology and measurement techniques.

Name
Demonstrate understanding of blueprint drawing methods including orthographic, isometric, oblique, and auxiliary views and apply projection principles to interpret and compare technical drawings

Name
Apply mathematical operations including fractions, decimals and conversions to solve blueprint related problems and support accurate part interpretation

Name
Determine dimensions of simple and multi-feature parts identify features such as grooves, slots, keyways, flats, bosses, and pads while applying critical thinking to solve quality related challenges.

Name
Interpret blueprint standards and tolerances including line precedence, dimensioning methods, and GD&T symbols to assess part specification and ensure compliance with design intent.

MMG116 - Quality Control & Inspection

Overview

Department
Manufacturing

Course Description
Students are introduced to the science of dimensional metrology and its applications to ensure form and function of machined parts and assemblies using semi-precision and precision measuring instruments.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to perform first piece inspection

Name
The student will be able to inspect surface finishes

Name
The student will be able to inspect parts using radius gauges

Name
The student will be able to inspect parts using angle gauges

Name
The student will be able to inspect parts using dial indicators

Name
The student will be able to measure parts using vernier measuring tools

Name
The student will be able to measure parts using special micrometers

Name
The student will be able to measure parts using telescoping gauges

Name
The student will be able to measure parts with height gauges

Name
The student will be able to measure threads

Name
The student will be able to measure parts using small hole gauges

Name
The student will be able to measure parts using dial calipers

Name
The student will be able to measure parts using outside micrometers

Name
The student will be able to measure parts using depth micrometers

Name
The student will be able to inspect parts with comparison measuring tools

Name
The student will be able to determine what to do with a part that does not meet specifications

Name
The student will be able to clean and store precision measuring tools

MMG130 - Bench Work

Overview

Department
Manufacturing

Course Description
In this course students will learn the importance of tool management and tool presetting in a production environment. Examines tool presetting and tool presetter programming. Provides students with the opportunity to inspect and validate complex tool geometry using a computer numerical controlled (CNC) tool presetter.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
1

Contact Hours

Contact Hours Min:
30

Billing Hours

Billing Hours Min:
1

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Student will be able to conduct job hazard analysis for hand tools

Name
Student will be able to conduct job hazard analysis for power tools

Name
Student will be able to select hand tools for assigned tasks

Name
Student will be able to select power tools for assigned tasks

Name
Student will be able to lay out parts for machining using semi-precision and precision lay out practices

Name
Student will be able to drill holes using electric and pneumatic drills

Name
Student will be able to maintain pedestal grinders

Name
Student will be able to saw stock to length

Name
Student will be able to sharpen drill bits and lathe tools

Name
Student will be able to use free hand saws to cut angles and remove material

Name
Student will be able to maintain radial arm and sensitive drill press

Name
Student will be able to finish parts using electrical and pneumatic tools

Name
Student will be able to use a press to insert bushings, bearings and pins

Name
Student will be able to broach internal key ways

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

A minimum grade of 'C' in Course MMG113

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MMG113 - Print Reading

A minimum grade of 'C' in Course MMG116

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MMG116 - Quality Control & Inspection

MMG131 - Metallurgy

Overview

Department
Manufacturing

Course Description
Students learn the metallurgical terms and definitions in an effort to understand the behavior and service of metals in industry. Characteristics during heating, cooling, shaping, forming, and the stress related to their mechanical properties are covered, as well as the theory behind alloys, heat treatment processes and wear resistance.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to examine the history of iron and steel and its role in industry

Name
The student will be able to summarize the production of non-ferrous metals

Name
The student will be able to summarize the production of iron and steel

Name
The student will be able to differentiate special alloys and special steels

Name
The student will be able to investigate metallurgical processes

Name
The student will be able to anneal materials to specifications

Name
The student will be able to determine heat treating temperatures

Name
The student will be able to harden material to specifications

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

A minimum grade of 'C' in Course MMG113

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MMG113 - Print Reading

MMG132 - Machine Tool Processes

Overview

Department
Manufacturing

Course Description
This course provides students with the opportunity to demonstrate process and quality control through the use of information technology (IT) systems in the manufacturing environment. Covers the use of measure cuts in high-end machining, systems communication, and data transfer to monitor productivity and quality. Features tools to monitor part quality in process.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to conduct a job hazard analysis for a machine tool shop

Name
The student will be able to analyze blueprints to layout parts to be machined

Name
The student will be able to select hand tools for assigned applications

Name
The student will be able to calculate stock size for least amount drop

Name
The student will be able to examine specifications in machinery handbooks needed to machine parts to size

Name
The student will be able to summarize preparations for machining operations

Name
The student will be able to select common machine shop mechanical hardware for assigned applications

Name
The student will be able to apply precautions needed to minimize hazards for work with lathes, mills, drills and grinders

Name
The student will be able to prescribe cutting tools for assigned operations and applications

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

A minimum grade of 'C' in Course MMG113

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MMG113 - Print Reading

A minimum grade of 'C' in Course MMG116

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MMG116 - Quality Control & Inspection

MMG135 - Machining Fundamentals

Overview

Department
Manufacturing

Course Description
MMG 135 Machining Fundamentals introduces students to the principles and practices of modern CNC machining, with curriculum aligned to the America's Cutting Edge (ACE) program. Through a combination of interactive online modules, CAM software, and hands-on CNC machine operation, students learn to design toolpaths, set up machines, and analyze machining processes using simulation and digital tools.
The course emphasizes process planning, cutting parameter optimization, and material efficiency strategies to prepare students for high-performance roles in advanced manufacturing environments. Ideal for those pursuing careers in precision machining, this course builds a strong foundation in digital manufacturing workflows and both manual and CNC production techniques.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Explain fundamental machining principles including chip formation, cutting forces, and material removal processes

Name
Calculate and apply cutting speeds, feed rates, and depths of cut using machining formulas and digital tools.

Name
Use CAM software to design toolpaths and simulate machining operations for basic part geometries.

Name
Set up CNC machines and verify workholding, tool selection, and zero reference points for accurate part production.

Name
Analyze machining dynamics using simulation tools to evaluate force, vibration, and process stability.

Name
Apply cost analysis and material optimization strategies to improve machining efficiency and reduce waste.

Name
Student will safety set up and opeate a manual lathe and manual mill to peform basic functions using appropriate cutting tools and feeds/speeds.

Name
Student will demonstrate proper use of manual machines to produce a simple part to specification using basic machining processes

MMG140 - Metrology

Overview

Department
Manufacturing

Course Description
Students will learn the proper operation, field verification, and measuring techniques utilized in the machining industry. In this course students apply knowledge on state of art equipment and utilize simulation software. Additionally, students will learn and comply with TS-16949, ISO 9001 and MSA (Measurement Systems Analysis).

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Student will maintain the calibration system and perform designated calibrations per internal procedures

Name
Students will program, set up and operate CMM to create complex, precise measurements of materials and parts

Name
Students will use a variety of measuring instruments

Name
Students will interpret measurement output data and graphic data (be able to use SPC tools and perform CPk analysis)

Name
Students will effectively calibrate of all production and personal gages used within a facility

Name
Students will create and perform GR&Rs and correlation studies as needed

Name
Students will summarize results and communicate them to engineering and others as needed

Name
Students will interpret measurement results against customer drawings and specifications and perform PPAP dimensional layout inspection reports, first piece, and in-process and final inspection checks

Name
Students will understand and comply with TS-16949, ISO 9001 and MSA (Measurement Systems Analysis)

MMG154 - Multi-Cell Operations

Overview

Department
Manufacturing

Course Description
In this course students will learn robotic/automation principles needed to function in the modern machining environment. In the course students will obtain hands on experience by applying CNC operation skills to multi cell robotic environment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will demonstrate interface between CNC machines and automated and semi-automated assistive technologies including, but not limited to, collaborative robotic systems, tending systems, and automatic add-ons to the CNC machine family of products.

Name
The student shall demonstrate safety in a collaborative semi-automated multi-machine cell.

Name
Student shall identify and explain the operation of multi machine work cell.

Name
Student shall demonstrate basic operations of automated and semi-automated assistive technologies in a CNC environment.

Name
The student shall complete projects related to multiple machine operations and processes

MMG155 - CNC Lathe

Overview

Department
Manufacturing

Course Description
Introduces students to two axis computer numerical control lathes machining. The theory of operations is developed in the classroom and through interactive on line learning. Students then apply the knowledge in a cutting edge CNC laboratory. Topics include machine set up, coordinates terminology, cutter paths, angel cutting, and linear cutting.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the major components of the Haas SL Series Machine

Objective
Identify the machines found in the TL series TL1 TL2 TL3 TL3B TL3W TL4', Identify main components of TL series lathe machining area chuck guard hand wheels chip flow channel CNC pendant tailstock', Identify the components which are considered optional tail stock air system coolant systems', Identify the location of each of the components', Identify the function of each of the components', Identify the safety features of the TL series machines

Name
The student will be able to describe the machining area of Haas SL Series machine

Objective
Identify the function of the machining area', Describe the components of the machining area including saddle cross slide tool holding manual control hand wheels axis assembly spindle assembly chuck and tailstock', Identify the location of each of the components in the machining area', Describe the function of each the components of the machining area', Identify the components of the axis assembly servo motor ball screws ball nuts linear guides linear guide bearings', Identify the components of the spindle assembly spindle spindle motor drive belt', Compare and contrast the types of chuck found in the different types Haas SL series machines', Identify the components of the chuck cylinder master jaw top jaw tee nuts', Compare and contrast soft and hard jaws', Describe the components of the tailstock base quill and manual control hand wheel

Name
The student will be able describe the components of the air and coolant system

Objective
Describe the functions of the air system and coolant system', Identify the components of the coolant system coolant tank basket filter pump flexible coolant line', Identify the function and location of each of the components in the coolant system', Identify the types of coolant used in the coolant system', Identify the maintenance processes required by the coolant system', Identify the components of the air system filter regulator', Identify the safety precautions associated with air supply in the air system

Name
The student will be able to process to operate the Haas SL Series machine

Objective
Describe the required steps to power up the Haas SL series machine', Identify the relationship between safety and powering the machine', Describe how to set tool offsets', Describe the steps to measure the tool geometry offset', Load a program from disc and USB into the CNC memory', View a program in the CNC memory', Select a program from the CNC memory', Identify the value of viewing the program from the CNC memory before running the program', Run a program in graphics mode', Describe the role of running a program in graphics mode', Run a program using single block mode', Describe the role of running a program in single block mode', Run the CNC Haas SL series automatically', Stop the automatic machine operation', Operate the JOG HANDLE dial to move an axis', Operate the machine in handle control federate override', Operate the machine in handle control spindle speed rate override

Name
The student will be able to describe the maintenance schedule for Haas Series SL machines

Objective
Perform daily maintenance', Perform weekly maintenance', Perform monthly maintenance', Perform semi annually maintenance

Name
The student will be able to operate CNC lathe to complete industry based projects

Objective
Program the project per blueprint', Utilize basic program codes safety codes spindle codes RPM codes and feed rate codes', Utilize advanced codes M and G radius G70 G71 G02 and G03', Set tool lengths per the project requirements', Set part offsets per the project requirements', Apply CATIA concepts to design part', Utilize CATIA print in creation of part', Utilize problem solving techniques to correct inaccuracies in design

Name
Student will demonstrate safety in robot work cell and machining environment

Name
Student will identify/explain operation of teach pendant

Name
Student will demonstrate the ability to select and run the correct program for an assigned task.

Name
Student will perform routine maintenance associated with robotic machining equipment

Name
Student will demonstrate Tool calibration and Reference Point calibration

Name
The student will utilize a go/no go method of Quality Control to check the accuracy of the project.

Requirements

Simple Requirements

A minimum grade of 'C' in Course MMG156

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MMG156 - CNC Operations

MMG156 - CNC Operations

Overview

Department
Manufacturing

Course Description
Students will become acquainted with the history of Numerical Control (NC) and Computer Numerical Control (CNC) machines and will be introduced to a CNC machine used in the precision machining trades. They will gain practical experience in the application of "G" codes and "M" codes, writing CNC machine programs, and machine setup and operation.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to conduct job hazard analysis for CNC lathe and mill

Name
The student will be able to create handwritten CNC programs using G and M codes

Name
The student will be able to perform software communications between PC and CNC equipment

Name
The student will be able to enter CNC Program into control

Name
The student will be able to enter programs in MDI (manual data input)

Name
The student will be able to edit CNC programs

Name
The student will be able to perform sequence search to restart or edit programs

Name
The student will be able to execute CNC program sequences from zero or point of reference

Name
The student will be able to execute emergency stop and restart procedures

Name
The student will be able to interrupt automatic cycle mode manually to stop potential damage to part and/or machine

Name
The student will be able to orient machine axis with holding devices

Name
The student will be able to thread interior and exterior surfaces

Name
The student will be able to determine spindle speed and feed rate

Name
The student will be able to perform facing operations to rough or finish surfaces

Name
The student will be able to perform turning operations to rough or finish a surface

Name
The student will be able to adjust tool offsets

Name
The student will be able to verify CNC programs prior to executing program sequence

Name
The student will be able to bore cylindrical surfaces on CNC equipment

Name
The student will be able to power up and power down CNC machines

Name
The student will be able to plan CNC machining operations

Name
The student will be able to adjust cutter compensation to maintain accuracy of cuts

Name
The student will be able to ream holes to specification with CNC lathes and mills

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

A minimum grade of 'C' in Course MMG113

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MMG113 - Print Reading

A minimum grade of 'C' in Course MMG116

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MMG116 - Quality Control & Inspection

Enrolled in Course MMG131

Type
Prerequisite

Enroll in the following Courses:
- MMG131 - Metallurgy

MMG160 - CNC Milling I

Overview

Department
Manufacturing

Course Description
Students will gain practical experience in setting up and performing basic operations on CNC Milling machines.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Students will graphically preview tool paths.

Name
Students will demonstrate safe use of equipment.

Name
Students will demonstrate proper setup and use of tools and fixtures.

Name
Students will operate a CNC mill to process parts within specifications.

Name
Students will manually perform operations to make linear, angular and circular moves.

Name
Students will perform and document first part inspection.

Name
Students will identify when and how to change cutting tools.

Name
Students will demonstrate proper lab maintenance including cleaning.

Requirements

Simple Requirements

A minimum grade of 'C' in Course MMG156

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MMG156 - CNC Operations

MMG164 - Advanced Machining Processes

Overview

Department
Manufacturing

Course Description
This advanced CNC machining course immerses students in the operation of collaborative, semi-automated multi-machine work cells, preparing them for high-performance roles in smart manufacturing environments. Learners will interface CNC machines with assistive technologies such as robotic tending systems, collaborative robots, and machine add-ons to execute complex, multi-process operations. Emphasis is placed on configuring tooling and workholding, troubleshooting automation systems, and coordinating tasks across multiple machines and technologies.
Students will produce precision parts with varied geometries using advanced CNC techniques and equipment, while working with materials beyond traditional aluminum—including steel, stainless steel, Inconel, and titanium. Integrated projects simulate real-world manufacturing workflows, requiring students to follow professional documentation, complete full-cycle operations, and apply inspection techniques using both standard and advanced metrology tools. The course also incorporates GD&T principles and cost-efficiency strategies to ensure quality and optimize production.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate safe and effective operation within a collaborative, semi-automated multi-machine CNC work cell.

Name
Interface CNC machines with automated and semi-automated assistive technologies, including collaborative robots, tending systems, and machine add-ons.

Name
. Apply machining knowledge and skills to solve complex manufacturing challenges involving advanced materials and multi-process operations.

Name
Identify and configure tooling and workholding setups appropriate for advanced and multi-machine CNC operations.

Name
Produce precision parts with varied geometries using advanced CNC machining techniques and equipment.

Name
Operate and troubleshoot assistive technologies in a CNC environment, including robotic and automated systems.

Name
Complete integrated projects that require coordination across multiple machines, technologies, and processes.

Name
. Demonstrate inspection techniques using standard machining measuring devices and advanced metrology equipment, and apply GD&T principles to determine part uniformity and quality acceptance.

Name
Complete an integrated project utilizing “real world” instructions in the form of shop travellers/set up sheets or similar produced items to include all operations from start to completed part including documentation compliance, full set up, inspection, and tear down operations.

Requirements

Simple Requirements

Students must be enrolled in MMG 173 at the same time.

Type
Corequisite

Complete ALL of the following Courses:
- MMG173 - G D & T for Machining

MMG170 - Mastercam Mill 2 Axis

Overview

Department
Manufacturing

Course Description
An introductory level course for Mastercam Software. This course will cover 3D modeling, 2D Machining, Gcode generation and the creation of set-up documentation.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Students will be able to create a 2D geometry using Mastercam software

Name
Students will be able to create tool paths using Mastercam software

Name
Students will be able to face, spot drill, and ream parts using Mastercam software

Name
Students will be able to apply Feature Based Machining methods in Mastercam software

Name
Students will be able to create pocket and contour toolpaths in Mastercam Software

Name
Students will be able to generateG-code tofacilitatemachining ofdrawings using Mastercam Software

Name
Students will be able to Import tooling in Mastercam Software

Name
Students will be able to Import Machine models in Mastercam Software

Name
Students will be able to merge tooling and part geometry into the Machine model in Mastercam Software

Name
Students will be able to graphically Verify clearance and possible collision with tools and machine components in Mastercam Software

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

MMG173 - G D & T for Machining

Overview

Department
Manufacturing

Course Description
The Geometric dimensioning and tolerance course is an in-depth study designed to develop a working knowledge in geometric dimensioning and tolerancing (GD&T) as it applies to Machining. It is delivered per the ASME Y14.5M, 1994 standard. This program has been presented and refined over the past 25 years and covers what personnel need to know in order to work in a Machining environment on a daily basis. The course includes emphasis on all the basics, such as the rules, measurement theory, the datum reference frame, form, orientation, profile and positional tolerancing. The program materials contain book exercises as well as hands on projects from projects that are student machined and then GD&T principles are applied for a real world experience.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Feature Control Frames :Students will Interpret Feature Control Frames and basic GD&T symbols

Name
Datums:Students will identify and apply datum references in basic machining setups

Name
Basic GD&T Dimensions:Students will understand and reference basic dimensions in relation to GD&T

Name
Position Tolerances:Students will apply position tolerances to machined features including material condition modifiers

Name
Form and Orientation Tolerances:Student will evaluate form and orientation tolerances including flatness, parallelism, and perpendicularity

Name
Round Features: Students will inspect round features using circularity and cylindricity tolerances

Requirements

Simple Requirements

A minimum grade of 'C' in Course MMG113

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MMG113 - Print Reading

MMG180 - Mastercam 4 & 5 Axis Mill

Overview

Department
Manufacturing

Course Description
This course introduces the methods used to create 4 and 5 Axis toolpaths for a CNC machining center using three dimensional solid models. Topics include 4 and 5 Axis machining of complex geometry.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to complete the following tasks for a variety of different 4 and 5 axis Machining Centers.

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

Objective
Open an existing file containing The solid geometry for the machine vise and Workpiece geometry for the part', Establish Stock Setup settings Stock size Create points to be used for Trim toolpath Material for the part Spindle RPM and Feed Rate', Generate milling toolpath consisting of Using the Planes Manager Using Views Tool Planes and Construction Planes Create Face and Pocket toolpaths', Inspect the toolpath using Mastercams Verify and Backplot by Launching the Verify function to machine the part on the screen Generating the NC code

MMG184 - Multi-Axis Milling

Overview

Department
Manufacturing

Course Description
This course will build on the concepts learned in the CNC Milling course and teach students how to set up and operate 4th and 5th axis milling machines. Students will understand the concept of rotational axes and be introduced to probing routines and automatic tool setters. Students will learn the application of the work coordinate system in the multi-axis environment and be introduced to more complex work holding options.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Student will set Work Coordinate System (WCS) for 4+ Axis Milling

Objective
Apply Cartesian coordinate system applied on a 4 Axis Mill CNC mill', Describe location of the work piece origin', Recognize probing routines for setting work offsets', Discuss manipulating the milling WCS', Explain Rotational Axes A B and C Axes', Describe Work Offsetting with Dynamic Work Offsets', Describe Tool Offsetting with Tool Center Point Control', Explain center of rotation vs Dynamic Work Offsets

Name
Students will demonstrate Multi-Axis Milling Toolpath skills

Objective
Describe positional 4th axis toolpaths drilling facing pocketing etc', Describe rotational wrapping 4th Axis toolpaths J slots surface milling side milling etc', Describe 32 positional toolpaths facing drilling milling surface milling etc', Describe full 5axis contouring toolpaths

Name
Students will enter Tool Geometry Offsets into CNC Machine

Objective
Explain using tool presetter for setting tool lengths', Practice using touchtrigger tool setter for setting tool lengths', Apply wear offsets to dial complex parts into tolerance', Describe toolBreakage detection programming

Name
Students will graphically preview tool paths.

Name
Students will demonstrate safe use of equipment

Name
Students will operate a CNC mill to process parts within specifications

Name
Students will manually perform operations to make linear, angular and circular moves.

Name
Students will demonstrate proper lab maintenance including cleaning.

Name
Students wil use reference frame appropriate to centers of rotation for the 4th and 5th axis

Name
Students will generate tool paths for 4th axis part (Positioning and Dynamic controls).

Name
Students will generate tool paths for 5th axis parts (Positioning and Dynamic controls).

Name
Students will apply proper methods for loading, and aligning 4th axis and 5th axis devices into the CNC machine tools.

Name
Students will apply proper methods for electrical and pneumatic connection required for the 4th axis and 5th axis devices.

Name
Students will adjust settings and parameters for operation of the 4th axis and 5th axis part

Name
Students will find origin points necessary to establish machine tool offsets for cutting parts.

Name
Students will update settings at controller required for mitigating tool to trunnion crashes.

Name
Students will apply needed code into programs to call for safe tool change positioning.

Name
Students will cut 4 and 5 axis parts to specification at the CNC vertical mills.

Requirements

Simple Requirements

A minimum grade of 'C' in Course MMG155

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- MMG155 - CNC Lathe

MNF110 - CNC Basics

Overview

Department
Manufacturing

Course Description
Students will acquire knowledge of Computer Numerical Control (CNC) machines and will be introduced to CNC machines used in the precision machining trades. They will gain practical experience in the use of CNC Mills/ Lathes through machine setup and operation.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to conduct job hazard analysis for CNC lathe and mill

Name
The student will be able to perform software communications between PC and CNC equipment

Name
The student will be able to enter CNC Program into control

Name
The student will be able to enter programs in MDI (manual data input)

Name
The student will be able to execute CNC program sequences from zero or point of reference

Name
The student will be able to execute emergency stop and restart procedures

Name
The student will be able to interrupt automatic cycle mode manually to stop potential damage to part and/or machine

Name
The student will be able to orient machine axis with holding devices

Name
The student will be able to determine spindle speed and feed rate

Name
The student will be able to perform turning operations to rough or finish a surface

Name
The student will be able to adjust tool offsets

Name
The student will be able to verify CNC programs prior to executing program sequence

Name
The student will be able to power up and power down CNC machines

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

MNF113 - Blueprint Basics For Manufacturing

Overview

Department
Manufacturing

Course Description
This course is an introduction to reading and interpreting blueprints. Topics include blueprint views, lines, dimensions and tolerances and blueprint symbols. Working in an interactive online environment students learn a systematic approach to reading blueprints.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the basics concepts associated with blueprints

Objective
Define blueprint engineering drawing blueprint line blueprint symbol', Describe the blueprint cycle', Describe the history of blueprints', Describe the language of blueprints', Identify the variety of symbols used on blueprints including aircraft welding architecture machining fasteners electrical hydraulic and geometric locations', Explain why blueprints are standardized', Identify the common standardization organizations ISO and ASME', Identify the common sizes of blueprints

Name
The student will be able to utilize a production drawing in the shop

Objective
Describe the types of production drawings detail installation and assembly', Describe the elements of detail assembly and installation drawing', Identify what is and is not an assembly', Discuss the common elements of production drawing border title block revision block picture area parts list

Name
The student will be able identify terminology common to blueprints and explain their relationships

Objective
List the basic shapes used on blueprints point and lines surfaces planes angles', Identify line types used on blueprints', Identify the angle types used on blueprints', Explain the relationships that exist between two or more lines surfaces planes angles perpendicular lines right angles parallel lines acute angle obtuse angle complimentary angle supplementary angle', Measure an angle', Identify types of circles and terminology associated with them including concentric eccentric circumference diameter and radius', Explain the relationships that exist between two or more circles concentric circles eccentric circles arc tangent chord straight arc arch between radii', Identify common angels and arcs including straight angle right angle acute angle obtuse angle complimentary angle Supplementary angle arc between two radii', Measure a circle

Name
The student will be able to compare and contrast the elements of blueprint views

Objective
Explain how blueprints are drawn', Describe pictorial drawings perspective view isometric view oblique view and orthographic drawings', Compare and contrast the differences between perspective isometric and orthographic drawings', Describe orthographic projection including its principles and views', Identify the most common orthographic views top front and right side', Interpret an orthographic projection', Compare and contrast first and third angle projection', Identify auxiliary views including primary secondary and tertiary', Identify additional views including enlarged sectional partial and rotated

Name
The student will be able to interpret blueprint lines

Objective
Describe blueprint line standards including object hidden center dimension extension leader break section phantom stitch cutting plane and viewing plane', Identify the standards of line precedence', Interpret a product based upon a line drawing', Interpret hidden features on a blueprint drawing', Identify other views of a product on the blueprint drawing

Name
The student will be able to identify dimension and tolerance on blueprints and its application in manufacturing

Objective
Identify the different types of dimensions dimension of size and dimension of position', Describe the components of dimensions extension lines dimension lines and dimension', Identify dimension of angles', Define tolerance and its role', Describe methods of displaying tolerance on a blueprint with dimension separate note title block', Identify the different types of tolerance and their role plus and minus maximum and minimum maximum minimum', Explain the purpose of dimension lines and extension lines', Identify different dimensioning methods used in product drawings including chain and baseline or datum dimensioning arcs and radius typical dimensions and rivet location dimensions

Name
The student will be able to interpret common G D & T symbols on a blueprint

Objective
Identify the role of symbols on a blueprint', Define GDT', Define the product datum and its role including primary secondary and tertiary datums', Describe how GD T symbols are displayed', Identify types of GDT symbols including characteristic and modifying', Identify the categories of characteristic symbols including individual part individual and related and related only

Name
The student will be able to interpret common symbols on a blueprint

Objective
Identify the role of aircraft symbols on a blueprint', Identify common symbols including center line flag note directional indicator K or coordinating hole engineered tooling station indicators limited release

MNF114 - Work Ethics

Overview

Department
Manufacturing

Course Description
This course focuses on applying ethical principles in the manufacturing industry, preparing students to navigate the ethical challenges they will encounter in their professional careers. Emphasizing professionalism, reliability, teamwork, and decision-making, students will explore how these values impact workplace dynamics, productivity, and safety. Through case studies, discussions, and practical exercises, students will develop the skills to navigate ethical dilemmas and positively contribute to a diverse and dynamic manufacturing environment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate professionalism in various workplace scenarios, including communication, reliability, attention to detail, and adherence to company policies.

Name
Analyze ethical dilemmas in manufacturing, including conflicts of interest and safety violations, using critical thinking to assess possible solutions. Propose solutions that uphold industry standards and demonstrate integrity.

Name
Demonstrate adaptability and proactive problem-solving when faced with ethical challenges, including managing change and addressing unexpected workplace issues

Name
Collaborate effectively with team members in an inclusive environment, demonstrating ethical behavior in teamwork and decision-making processes.

Name
Reflect on the impact of ethical behavior on workplace culture, productivity, and personal responsibility within a manufacturing context

Name
Apply ethical principles to ensure workplace safety, health, and quality of work by following protocols, preventing common hazards, demonstrating emergency preparedness, while maintaining high production standards.

MNF115 - Forklift Operations

Overview

Department
Manufacturing

Course Description
This course is designed to train entry level workers in the correct use of a forklift to unload, move, stack, and load materials for shipping and distribution.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss applicable regulations (federal, state/provincial and relevant standards)

Name
The student will be able to review company policies

Name
The student will be able to discuss Due Diligence

Name
The student will be able to review Criminal Negligence and consequences to employers, trainers, supervisors and employees

Name
The student will be able to review site-specific safety concerns

Name
The student will be able to review Operator Training Guide

Name
The student will be able to review Equipment Features, Stability, Operating Procedures, Parking and Fueling/Charging Procedures

MNF120 - Manufacturing Processes & Production I

Overview

Department
Manufacturing

Course Description
This course provides the introduction in a three part series of instruction which is designed to provide students with a broad and basic understanding of manufacturing processes and production principles. In this course, students will explore a variety of topics that offer not only an understanding of manufacturing as an industry but also manufacturing as a career pathway. Using federal and nationally recognized standards, this coursework focuses on topics pertinent to manufacturing operation and production including the major components of manufacturing, the types of manufacturing processes, the key elements of production planning, industry specific opportunities in manufacturing and career field specific opportunities in manufacturing.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to execute basic applications ofProduction Equipment Operation

Objective
Explain machinery operation set up and testing', Describe emergency shutdown of production machines', Describe common types of mechanisms used in machines', Describe ways in which force and torque are used in machine operations', Explain impact of friction on machine operationandmethods', Explain use of cams', Define ways in which machines use pulley and gear drives', Define basic machine tooling', Describe basic casting molding and stamping processes', Describe computer numerically controlled CNC equipment', Describe Human Machine Interface HMI', Describe lasers in relationship to production equipment

Name
The student will be able to set up and verify equipment for the production process

Objective
Ensure setup meets process requirements and product specifications', Ensure setup meets ergonomic and other relevant health safety and environmental standards

Name
The student will demonstrate a basic understanding of production, material requirements and product specifications

Objective
Ensure communication reflects knowledge of production requirements levels and product specifications', Ensure communication reflects knowledge of material specifications and delivery issues and schedules', Ensure communication demonstrates knowledge of customer and business production needs', Describe various materials used in production', Describe Advanced Materials', Ensure communication is clear and relevant to productionand products', Track and document communications as appropriate

Name
The student will be able to prepare final product for shipping or distribution

Objective
Ensure packaging materials meet packaging and shipping specifications including proper labeling and safety requirements', Describe barcodes and their use', Ensure completed documentation of customer packaging and shipping instructions accompany product to next destination', Communicate product availability to the proper partiesin a timely manner', Check product and all relevant information such as quantitydestinationand packaging instruction against the work order', Store or stage product for shipping', Follow all laws and regulationswith regard tolabelingpackagingand transport Follow material handling procedures to prevent product damage

Name
Identify the major components of the production process

Name
Understand the various processes used in manufacturing

Name
Identify the key elements of production and production planning

Name
Understand the types of careers and career ladder available in manufacturing

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

A minimum grade of 'C' in Course AVC135

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC135 - Hand Tools

A minimum grade of 'C' in Course MCD106

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MCD106 - Precision Measuring

A minimum grade of 'C' in Course MMG113

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MMG113 - Print Reading

MNF125 - Maintenance Training

Overview

Department
Manufacturing

Course Description
In this course the student will learn how to monitor production equipment for both routine and preventive maintenance. The use of OEE (Overall Equipment Efficiency) is introduced; Targeting each fix in a production system under a ‘zero fails’ mentality. Monitoring includes, analysis of equipment performance, Autonomous Maintenance (AM), and practicing planned stops for CIL’s (Clean, Inspect, Lube) and Preventative Maintenance (PM) by recording, evaluating and categorizing failure through the visualization of data.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to use preventive maintenance methods to perform routine production equipment check/repairs

Name
The student will be able to monitor production equipment indicators to ensure operating properly

Name
The student will be able to perform housekeeping to maintain production schedules

Name
The student will be able to identify potential maintenance issues with basic production systems

Name
The student will be able to identify potential electrical system issues which will require maintenance personnel to correct

Name
The student will be able toidentifypotential pneumatic system issues which will require maintenance personnel to correct

Name
The student will be able to identify potential hydraulic system issues which will require maintenance personnel to correct

Name
The student will be able to identify potential machine automation system issues which will require maintenance personnel to correct

Name
The student will be able to identify potential lubrication processes issues which will require maintenance personnel to correct

Name
The student will be able to identify potential bearings and coupling issues which will require maintenance personnel to correct

Name
The student will be able to identify potential belt and chain drives issues which will require maintenance personnel to correct

MNF130 - Manufacturing Processes & Production II

Overview

Department
Manufacturing

Course Description
In this course students continue their study of current manufacturing processes & production concepts. During the course the Federally-endorsed and national-endorsed standards required in industry and production are explored. The emphasis is placed on Just-In-Time (JIT) manufacturing principles, communication skills, an overview of Cause and Effect of equipment failure and how to apply the 8 Pillars of Total Productive Maintenance (TPM) methodology.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student shall be able to identify and distinguish key differences in types of production equipment and processes in the manufacturing industry.

Name
The student will be able to demonstrate and verify the proper setup and operating procedures for production equipment in a production process environment, including any equipment that alters the form, fit, or function of a production part.

Name
The student will be able to document production compliance with customer requirements

Name
The student will demonstrate proper Production Equipment Operations

Name
The student will be able to identify all operational requirements for completion of customer requirements for production parts.

Name
The student will demonstrate through laboratory production runs, all required operational processes and methods.

Requirements

Simple Requirements

A minimum grade of 'C' in Course MNF120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MNF120 - Manufacturing Processes & Production I

MNF135 - Electrical Concepts

Overview

Department
Manufacturing

Course Description
In this course students will be introduced to basic electrical theory as it relates to the manufacturing environment. Students will be able to demonstrate knowledge of circuit diagrams and applications of safe electrical practices.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate and describe the fundamentals of electricity

Name
The student will be able to describe and demonstrate electrical system components and their operations including both input and output devices

Name
The student will be able to define/describe and demonstrate voltage/current/continuity and resistance measurement

Name
The student shall be able to describe and discuss both Series and Parallel Circuits

Name
The student shall be able to discuss electrical principals formulas and laws and utilize those to calculate and define power and voltage requirements in multiple applications

Name
The student will be able to describe, discuss and demonstrate electromagnetism applications, inductance, and capacitance

Name
The student shall be able to define and describe combination circuitry, lighting circuits, voltage dividing applications and basic troubleshooting applications

MNF140 - Basic PLC's

Overview

Department
Manufacturing

Course Description
This course introduces operational theory, systems terminology, PLC installations, and programming procedures for programmable logic controls. Emphasis is placed on PLC programming, connections, installations, and start-up procedures. Topics include: PLC hardware and software, PLC functions and terminology, PLC installation and set up, PLC programming basics, relay logic instructions, timers and counters, connecting field devices to I/O cards, and PLC safety procedures.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to install PLC hardware and software

Objective
Identify and discuss functions of all PLC components', Discuss and install DOS and windows versions software

Name
The student will be able to discuss functions and terminology associate with PLC

Objective
Discuss functions of the PLC and its role in industry', Discuss common terminology used in PLC applications

Name
The student will be able to complete a PLC installation and setup

Objective
Completely install a PLC processor power supply and IO cards', Load software and setup the PLC for operation

Name
The student will be able to perform basic PLC programming

Objective
Discuss the processor memory organization', Discuss the program scan', Discuss PLC programming languages and bit patterns', Discuss programming instructions and addressing', Execute a ladder logic rung and address inputs and outputs

Name
The student will be able to execute relay logic instructions

Objective
Discuss and execute examine on examine off output energize latch and unlatch', Write and execute a ladder logic rung using these instructions

Name
The student will be able to execute timer and counter functions

Objective
Discuss and execute timer on timer off retentive timers and timer reset', Discuss and execute counter up counter down and counter reset

Name
The student will be able to connect field devices to I/O cards

Objective
Install switches and other control devices to input cards and address the terminals', Install relays indicator lights solenoids and motor starters to output cards and address the terminals', Write program files using relay instructions edit program file download to processor go online and execute

Name
The student will be able to perform PLC safety procedures

Objective
Discuss techniques for discrete IO signal communication', Discuss the hazards of forcing inputsoutputs', Discuss hazards of leaky inputs and outputs', Check for leaky triacs SCRs and transistors', Discuss safe methods of installing power and control cable', Install power and control cables

MNF145 - Fluid

Overview

Department
Manufacturing

Course Description
In this course students will learn the concepts relating to hydraulic systems. Students will be able to identify fluid movement types and processes and demonstrate knowledge of fluid-based transmission systems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the concepts associated with hydraulic theory

Objective
Define the terms force weight mass work and pressure', Explain the term hydraulics', Explain the term hydraulic power transmission', Describe conservation of energy as it applies to a hydraulic system', State the laws of physics that relate to hydraulic applications', Explain how force weight mass and pressure are used in the operation of hydraulic devices', Use formulas to compute solutions for single variable problems relating to hydraulic systems where force weight mass pressure and work are the unknowns', Identify the advantages of hydraulic power when compared to other methods of power transmission

Name
The student will be able to discuss concepts associated with suction Side of Pumps

Objective
Discuss cavitation in a hydraulic system', Discuss pseudocavitation in a hydraulic system', Discuss the effects of atmospheric pressure on the suction side of the pump

Name
The student will be able to explain concepts associated with actuators

Objective
Check for symptoms of binding pistons rods', Align pistons rods of hydraulic cylinders', Discuss purpose of servoproportional valves', Explain the use of SPV in systems', Explain troubleshooting procedures', Identify commonly used types of actuators', Describe the operation of commonly used types of actuators', Verify air motor

Name
The student will be able to read hydraulic schematics

Objective
Identify symbols used to represent components in hydraulic systems', Identify the purpose of a hydraulic system using circuit diagrams', Draw a hydraulic schematic using symbols to show a complete hydraulic system', Be able to read and interpret hydraulic schematics

Name
The student will be able to discuss concepts associated with hydraulic fluids and reservoirs

Objective
Explain how hydraulic oil is manufactured', Identify types of hydraulic fluids and their characteristics', Explain viscosity ratings', Select hydraulic fluid appropriate to type of seals use in the system

Name
The student will be able to identify pumping industry standards

Objective
Identify the various pumps used in industry', Refer to proper section of ASME codes for information on code requirement for industrial pumps

Name
The student will be able to explain basic principles of piping operations

Objective
Discuss gear vane and piston pump principles of operation', Discuss the applications of various pumps used in industry

MNF147 - Introduction to Kitting

Overview

Department
Manufacturing

Course Description
The Advanced Production Assembly Kitting course is designed to provide participants with a comprehensive understanding of the principles, practices, and techniques involved in efficient and effective production assembly kitting. Participants will delve into the entire kitting process, from planning and inventory management to quality control and optimization, equipping them with the skills to streamline assembly operations and enhance overall productivity.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
45

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Understand the concept of assembly kitting and its role in streamlining manufacturing processes.

Name
Identify the components of a Bill of Materials (BOM) and comprehend its significance in kitting operations.

Name
Plan and organize efficient kitting processes based on demand forecasts and production schedules.

Name
Execute accurate component picking and grouping techniques to ensure error-free assemblies.

Name
Implement quality control measures to detect and prevent errors in kitting operations.

Name
Evaluate different material handling methods and select the appropriate approach for kitting processes.

Name
Apply visual management techniques to enhance component identification and reduce errors.

Name
Recognize the principles of lean manufacturing and their application in kitting for waste reduction.

Name
Analyze kitting process efficiency, identify bottlenecks, and propose improvements.

Name
Demonstrate an understanding of the importance of continuous improvement in assembly kitting operations.

MNF150 - Automation in Manufacturing

Overview

Department
Manufacturing

Course Description
This course in “Automation in Manufacturing” is designed with the primary focus on the design and development of automated systems in manufacturing. The course introduces various automated systems being used in the manufacturing industry (Industry 4.0).

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Students will discuss the importance of automation in the manufacturing industry

Name
Students will design an automated system using the the common building blocks of an automated systems and working principle

Name
Student will fabricate and/or select the various components of an automated system

Objective
Identify specifications of the various elements', Use design data books and catalogues

Name
students will demonstrate skills associated with the various sensors required in a typical automated system for manufacturing

Objective
Identify the construction techniques used in the operation of sensors', Identify the common principles of operation associated with sensors

Name
Students will apply knowledge of microprocessor technology (signal conditioning, data acquisition, microprocessors micro controllers configurations and workings as it applies automation in the manufacturing sector.

Name
Students will learn and apply knowledge of electrical drives (types, selection criteria, construction and operating principles) as it applies to automation in the manufacturing sector.

Name
Students will learn and apply knowledge of mechanisms (ball screws, linear motion bearings, cams, systems controlled by camshafts) as it applies to automation in the manufacturing sector.

Name
Students will learn and apply knowledge of mechanisms (electronic cams, indexing mechanisms, tool magazines, and transfer systems) as it applies to automation in the manufacturing sector.

Name
Students will learn and apply knowledge of hydraulic systems (hydraulic power pack, pumps valves) as it applies to automation in the manufacturing sector.

Name
Students will learn and apply knowledge of hydraulic systems (designing of hydraulic circuits) as it applies to automation in the manufacturing sector.

Name
Students will learn and apply knowledge of pneumatic systems (configurations, compressors, valves, distribution, conditioning) as it applies to automation in the manufacturing sector.

MNF155 - Digital Electronics

Overview

Department
Manufacturing

Course Description
This course is designed to provide students with the concepts and terminology utilized in digital electronics. The student will be exposed to the most basic concepts of digital electronics to a wide variety of the fundamentals for circuits used in today's switching circuits. Once an understanding of the numbering system is achieved the course proceeds to basic logic circuits.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to work with various numeration systems

Objective
Define the terms number and symbol', Explain common systems of numeration', Explain the differences between decimal and binary numeration', Define octal and hexadecimal numeration', Perform conversions of octal and hexadecimal numbers to decimal format', Perform conversions of decimal numbers to octal and hexadecimal format

Name
The student will be able to perform basic binary arithmetic

Objective
State the difference between a number and a numbering system', Perform binary addition of up to 8 bits', Create negative numbers given a positive number', Perform binary subtraction of up to 8 bits', Define arithmetic overflow', Group a 24 bit binary sequence into words and bytes

Name
The student will be able to understand basic logic gates

Objective
Define the term logic gate', Define operation of the NOT gate', Define operation of the buffer gate', State the truth table for the AND gate', State the truth table for the NAND gate', State the truth table for the OR gater', State the truth table for the NOR gate', State the truth table for the XOR gate', Define the operation of a negative gate', Define the characteristics of TTL and CMOS gate systems', Define gate universality', Identify the voltage ranges required by TTL and CMOS logic gates', Define the term noise margin

Name
The student will be able to understand switch applications

Objective
Identify the types of switches', State at least one typical use for each type of switch', Explain the characteristics of at least three contact designs', Explain the switch normal state and the makebreak sequence', Explain contact bounce', Explain at least two ways of reducing the effects of contact bounce

Name
The student will be able to relay applications

Objective
Label the parts of an electromagnetic relay', Explain the operation of an electromagnetic relay', Explain the difference between a relay and a contactor', Explain the operation of time delay relay', Explain the use of protective relays', Explain the construction of a solid state relay', Draw a circuit using a solid state relay

Name
The student will be able to understand combinational logic

Objective
Explain the operation of the half adder', Explain the operation of the full adder', Explain the operation of the decoder', Explain the operation of the encoder', Explain the operation of the multiplexer', Explain the operation of the demultiplexer

Name
The student will be able to understand multivibrators

Objective
Explain the requirement for feedback in memory circuits', Explain the operation of the SR latch', Explain the operation of the D latch', Explain the operation of the FlipFlop', Explain the operation of the JK FlipFlop', Explain the operation of the monostable multivibrator

Name
The student will be able to understand counters

Objective
Explain the requirement for memory in counter circuits', Explain the binary count sequence', Explain the difference between synchronous and asynchronous operation', Explain the modulus of a counter

Name
The student will be able to understand shift registers

Objective
Explain the requirement for feedback in shift register circuits', Explain the operation of the serialinserialout shift register', Explain the operation of the parallelinserialout shift register', Explain the operation of the serialinparallelout shift register', Explain the operation of the universal shift register', Explain the operation of the ring counter

Name
The student will be able to understand digital-analog conversion

Objective
Define digitaltoanalog and analogtodigital conversion', Explain the operation of the binary weighted input DAC', Explain the operation of the flash or parallel ADC', Explain the operation of the digital ramp ADC', Explain the operation of the successive approximation ADC', Explain the operation of the tracking ADC', Define the Nyquist frequency of an ADC', Explain aliasing error

Name
The student will be able to understand basic digital communications

Objective
Define the term digital communications system', Explain a network connection', Define the term digital bus', Explain the difference between singleended and differential transmission', Explain the basic concept of fiber optic transmission', Define the term pulse stretching', Explain the differneces between the three network topologies', Define the term network protocol

Name
The student will be able to demonstrate the ability to apply digital electronic concepts to a project.

Requirements

Simple Requirements

A minimum grade of 'C' in Course MNF135

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MNF135 - Electrical Concepts

MNF157 - Lean/Six Sigma

Overview

Department
Manufacturing

Course Description
The Lean/Six Sigma White Belt Certification Course at WSU Tech is designed to equip students with fundamental knowledge and skills in Lean and Six Sigma methodologies. This course provides a comprehensive introduction to process improvement, waste reduction, and data-driven decision-making principles. Students will develop a strong foundation in problem-solving techniques, statistical analysis, and collaborative teamwork essential for success in today's competitive industries.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate Understanding of Lean/Six Sigma Principles: Students will be able to articulate the fundamental concepts and principles of Lean and Six Sigma methodologies, including the identification of waste, variation, and the application of continuous improvement.

Name
Apply Problem-Solving Tools: Students will proficiently use problem-solving tools such as root cause analysis, process mapping, and Pareto analysis to identify and address issues within a given process.

Name
Utilize Basic Statistical Analysis: Students will be able to apply basic statistical methods to analyze data, identify trends, and make informed decisions to improve processes.

Name
Demonstrate Team Collaboration: Students will engage in collaborative team activities, demonstrating effective communication and teamwork skills while working towards process improvement goals.

Name
Identify and Eliminate Waste: Students will be able to identify various forms of waste in a process and implement strategies to eliminate or reduce waste, improving overall process efficiency.

Name
Understand Process Mapping: Students will create and interpret process maps to visualize and communicate the flow of a process, enabling them to identify opportunities for improvement.

Name
Implement 5S Principles: Students will apply the 5S principles (Sort, Set in order, Shine, Standardize, Sustain) to organize and optimize workspaces for efficiency and effectiveness.

Name
Conduct Lean/Six Sigma Projects: Students will develop and execute a small-scale Lean/Six Sigma project, demonstrating their ability to apply the learned concepts to real-world scenarios.

Name
Evaluate and Monitor Process Performance: Students will establish key performance indicators (KPIs) for processes and continuously monitor and evaluate their performance, making data-driven decisions for improvement.

Name
Demonstrate White Belt Certification Competency: By the end of the course, students will be prepared to pass a White Belt certification exam, showcasing their understanding and application of Lean/Six Sigma principles in a professional setting.

MNF160 - Manufacturing Processes & Production III

Overview

Department
Manufacturing

Course Description
In this course students further enhance their understanding of manufacturing process and production including those identified as Industry 4.0 skills. During the course the Federally-endorsed and national-endorsed standards required in industry and production are explored. The emphasis is placed on Just-In-Time (JIT) manufacturing principles, communication skills, an overview of Cause and Effect of equipment failure and how to apply the 8 Pillars of Total Productive Maintenance (TPM) methodology.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Students will identify and Navigate HMI menus on a Skill Boss Tabletop Simulator.

Name
Students will identify the working pieces of a Skill Boss Tabletop Simulator.

Name
Students will demonstrate the proper procedure of powering up and shutdown of the Skill Boss Simulator

Name
Utilizing the Skill Boss Simulator, students shall demonstrate the ability to operate the system in both manual and automatic mode.

Name
Students will identify production data utilizing the HMI system of the Skill Boss Simulator

Name
Students will identify and reset alarms associated with and perform restarts of the Skill Boss Simulator

Name
The students will perform a production cycle time test

Name
Students will demonstrate effective use of Equipment manuals to locate information

Name
Students will demonstrate the proper method of stroke position adjustments of pneumatic actuators.

Name
Students will manipulate the speed settings of a Variable Frequency Drive and make adjustments to optimize Cycle Times.

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC102

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC102 - Precision Instruments

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

A minimum grade of 'C' in Course AVC135

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC135 - Hand Tools

A minimum grade of 'C' in Course MMG113

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MMG113 - Print Reading

A minimum grade of 'C' in Course MNF130

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MNF130 - Manufacturing Processes & Production II

MNF163 - Production Assembly

Overview

Department
Manufacturing

Course Description
This course presents a systematic approach to production assembly operations in manufacturing. Students receive instruction in the fundamentals of assembly skills used throughout the modern manufacturing sector. Skill development includes torque wrenches, fittings, installing, operating, and maintaining o-rings and lip seals, assembling hoses and couplings, and routing hoses using clamps, brackets, and clips. In addition, the course includes the identification of fittings and handling of steel and plastic tubing.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2023

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The students will define, describe and demonstrate torque concepts including tool identification, usage, calculations, safety, storage, and handling of torque related wrenches and tooling.

Name
Students will Identify and describe click-type torque wrench applications, and operations.

Name
The student will describe, inspect, and use pneumatic pulse tool torque equipment to assemble a threaded fastener

Name
Students will identify and describe o-ring seal operations, handling, installation and maintenance in an assembly environment

Name
The student will be able to identify, describe, and install lip seals in an assembly operation.

Name
Students will describe, identify, and install straight thread oring and grease zerk fittings

Name
Students describe, identify, and install hydraulic hoses, and o-ring face seals given standard work instructions

Name
Students will identify, describe, differentiate, and install hose clamps, brackets, clips, and hose protection devices in an assembly operation.

Name
Students identify, describe, and install steel tubing, couplings, and plastic tubing using hose barb fittings.

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

MNF165 - Automated Supply Chain

Overview

Department
Manufacturing

Course Description
Students will acquire knowledge of supply chain automation to leverage digital technologies such as artificial intelligence (AI), machine learning (ML), optical character recognition (OCR), and robotics to lower the operational cost of delivering a product or service with primary emphasis on warehouse automation, predictive analytics, Internet of Things, and Cloud Logistics.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to learn different automated methods of coordinating delivery of goods, services, and information up and down internal/external networks of a company to accomplish operational objectives.

Name
The student will be able to distinguish between different tools/methods used in supply-chain automation.

Name
The student will be able to utilize various supply-chain automation tools via computer applications.

Name
The student will be able to analyze supply-chain automation methods performance.

Name
The student will be able to identify different supply-chain operational needs and match automation methods necessary.

Name
The student will be able to understand current trends in areas where supply-chain automation methods used most.

Name
The student will be able to apply supply-chain automation methods in areas that are most common in industry.

Name
The student will be able to identify top operational barriers for supply-chain automation.

Name
The student will be able to develop improvement methods to minimize/ eliminate supply-chain automation obstacles.

Name
The student will be able to identify supply-chain automation performance challenges.

Name
The student will be able to determine supply-chain automation ReturnOnInvestment (ROI) measurement.

Name
The student will be able to troubleshoot and suggest solutions to increase supply-chain performance.

Name
The student will be able to develop methods to increase supply-chain automation ROI.

MNF170 - Drones and Data Analysis

Overview

Department
Manufacturing

Course Description
This course will provide an introduction into the world of Unmanned Aerial Vehicles (UAVs) and the systems which support UAVs. Students will gain the knowledge and skills to become a drone certified pilot while learning how data collected during UAV operations is analyzed and operationalized in the manufacturing sector.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Students will become knowledgeable of sUAS uses and integration into commercial uses

Name
Students will be able to recall the origins of the governing body that regulates international aviation standardization, and how US aviation regulations integrate with the international system

Name
Students will be able to recall how aircraft are registered, airfields are identified and international time is used in aviation

Name
Students will recall the values associated with being a professional aviator

Name
Students will recall the principles of flight for fixed and rotary aircraft CrossFlight Knowledge LO-6 Students will recall the FAA forecasted trends for Remote Pilots and UA for the 2020-2040 time frame

Name
Student will become knowledgeable in the general regulatory requirements of 14 CFR part 107.

Name
Student will become knowledgeable of the operating rules of 14 CFR part 107, the registration rules of 14 CFR parts 47 and 48, and other associated operating requirement

Name
Student will become knowledgeable in the requirements associated with remote pilot certification with an sUAS rating.

Name
Student will become knowledgeable of the FAA waiver policy and requirements.

Name
Student will become knowledgeable in airspace classification.

Name
Student will become knowledgeable of airspace operational requirements.

Name
Student will become knowledgeable in the loading and performance of an sUAS.

Name
Student will become knowledgeable in radio communication procedures.

Name
Student will become knowledgeable in airport operations.

Name
Student will become knowledgeable in aeronautical decision-making.

Name
Student will become knowledgeable in the physiological factors affecting remote pilot performance.

Name
Student will become knowledgeable in sources of weather information.

Name
Student will become knowledgeable of the effects of weather on performance.

Name
Student will become knowledgeable in sUAS emergency procedures.

Name
Student will become knowledgeable in sUAS maintenance and inspection procedures.

Name
Students will be able to apply for an airspace waiver through the FAA Drone Zone website under the provisions of 14 CFR Part 107.41

Name
Students will be able to request access to controlled airspace using the Low Altitude Authorization Notification Capability (LAANC) system 14 CFR Part 107.41

Name
Students will be able to apply for operational waiver under the provisions of 14 CFR 107.20 through the FAA Drone Zone website.

Name
Students will be able to request authorization to fly in a geofenced airspace area

Name
Students will be able to determine which UAS rules and regulations to operate under based on the organization's purpose.

Name
Students will be able to request access to controlled airspace using an airspace authorization through the FAA Drone Zone website under 14 CFR Part 107.41

Name
Students will be able to conduct field operations safely and effectively

Name
Students will be able to plan, and conduct safe and effective autonomous flight missions

Name
Students will be able to deliver sUAS mission data as planned

Name
Students will be able to operate safely and effectively as a flight team member (RPIC, VO or PMC)

Name
Student will be able to effectively apply FAA Part 107 regulations to flight operations

Name
Students will be able to identify hazards, assess mission risks and apply risk mitigation techniques to safely and effectively conduct field operations

Name
Student will be able to plan and conduct basic flight operations using a sUAS

Name
Student will be able to plan and conduct safe advanced flight maneuvers

Name
Student will be able to recognize and understand useful information within datasets

Name
Student will be able to develop a working skillset using data analysis software

Name
Student will be able to create charts, graphs and visuals to analyze data and identify relationships

Name
Student will be able to understand the story in the data and how to communicate it to others

Name
Student will be able to leverage data analytics in their chosen field of study

MNF175 - Manufacturing Technology Applied Learning Experience

Overview

Department
Manufacturing

Course Description
The applied learning experience represents an educational strategy linking the classroom with the acquisition of knowledge in the workplace. Through workplace participation, direct observation, reflection and evaluation, students gain an insight into the internship site's work, mission, and audience, how these relate to their academic study, as well as the organization's position in the broader industry or field. Students will produce a critical reflection on their internship experience demonstrating how they have addressed specific learning goals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
3

Other Hours

Other Hours
Min:
135

Course Learning Outcomes

Learning Outcomes

Name
Applied your knowledge, skills, experience to a work environment

Name
Acquired new learning through challenging and meaningful activities

Name
Reflected on the content and process of the learning experience

Name
Advocated for your own learning in alignment with internship goals

Name
Demonstrated professional skills in the workplace

Name
Built and maintained positive professional relationships

Name
Demonstrated awareness of community and/or organizational issues

Name
Identified, clarified and/or confirmed professional direction as it relates to your academic studies and future career path

Name
Developed self-understanding, self-discipline, maturity and confidence

Name
Developed strong networking/mentoring relationships

MNT120 - Understanding Mental Illness

Overview

Department
Nursing

Course Description
This course introduces the concepts of mental health and mental illness. It focuses on the causes, symptoms, and treatment of mental illness, including an overview of diagnostic criteria of the major mental illnesses. The role of resilience in the prevention of and recovery from mental illness is explored along with individual stress response. It also includes discussion of basic observation skills, communication skills, and reporting responsibilities for the mental health technician.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate an understanding of major mental health disorders such as anxiety disorders, mood disorders (e.g., depression, bipolar disorder), psychotic disorders (e.g., schizophrenia), personality disorders, and substance use disorders.

Name
Identify and Integrate knowledge of diagnostic criteria outlined in diagnostic manuals such as the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) or the International Classification of Diseases (ICD-10). Students will understand how mental health disorders are classified and diagnosed.

Name
Analyze biological, psychological, and environmental factors that contribute to the development and maintenance of mental health disorders. This includes genetic predispositions, brain chemistry, life experiences, trauma, and stress.

Name
Recognize common symptoms associated with different mental health disorders and understand the process of assessing and screening for mental illness. This includes understanding the importance of clinical interviews, psychological assessments, and screening tools.

Name
Explore various treatment modalities used in mental health care, including psychotherapy (e.g., cognitive-behavioral therapy, psychodynamic therapy), psychopharmacology (medication treatments), and alternative therapies (e.g., mindfulness-based interventions, art therapy). Students will understand the principles behind each approach and their efficacy in managing different mental health conditions.

Name
Examine societal attitudes, stereotypes, and stigma associated with mental illness. Students will develop strategies to promote mental health awareness, reduce stigma, and advocate for mental health resources and support services.

Name
Recognize the influence of cultural, social, and diversity factors on mental health experiences, help-seeking behaviors, and treatment outcomes. Student will understand the importance of culturally competent and inclusive approaches in mental health care.

Name
Aware of ethical principles and legal considerations relevant to mental health practice, including confidentiality, informed consent, mandatory reporting, and patient rights.

Name
Develop critical thinking skills to evaluate media portrayals, public discourse, and popular misconceptions about mental illness. Students will cultivate empathy and understanding towards individuals living with mental health challenges.

Name
Learn strategies for self-care, stress management, and promoting mental wellness both personally and within their communities.

Requirements

Simple Requirements

Enrolled in Course PSY101

Type
Prerequisite

Enroll in the following Courses:
- PSY101 - General Psychology

Enrolled in Course MNT140

Type
Prerequisite

Enroll in the following Courses:
- MNT140 - Technical Health Skills I

Enrolled in Course MNT130

Type
Prerequisite

Enroll in the following Courses:
- MNT130 - Behavioral Science

MNT130 - Behavioral Science

Overview

Department
Nursing

Course Description
This course emphasizes the role of social, economic, and cultural factors in the development of mental illness. It includes a focus on group and family dynamics and their relationship to mental illness and their role in treatment and rehabilitation. It also emphasizes the effects of serious and persistent mental illness on daily functioning, interpersonal relationships, and quality of life.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Discuss the importance of recognizing client attributes, considering their diverse backgrounds, preferences, and values (culture, development, reproduction).

Name
Describe the nurse's role in identifying and supporting physiologic and psychosocial needs of clients (mood and affect; sensory perception; hygiene; activity and exercise; infection control; elimination; nutrition; comfort/pain).

Name
Discuss the nurse's role in implementing strategies to promote an environment that is safe for the client, self, and others

Name
Demonstrate basic nursing skills using proper techniques and measures to promote safe, quality, client-centered care.

Name
Apply the various elements of the nursing process to clinical decision-making.

Requirements

Simple Requirements

Enrolled in Course PSY101

Type
Prerequisite

Enroll in the following Courses:
- PSY101 - General Psychology

Enrolled in Course MNT120

Type
Prerequisite

Enroll in the following Courses:
- MNT120 - Understanding Mental Illness

Enrolled in Course MNT140

Type
Prerequisite

Enroll in the following Courses:
- MNT140 - Technical Health Skills I

MNT140 - Technical Health Skills I

Overview

Department
Nursing

Course Description
This course provides an introduction to basic nursing skills with emphasis on basic concepts of health maintenance and promotion. It provides skill development in using comfort and safety measures such as bed making, personal hygiene, activities of daily living (ADL), infection prevention, and vital signs. Basic principles of nutrition, hydration, and elimination are emphasized. The LMHT's role in emergency procedures such as fire and disaster, CPR, First Aid, and assisting with bringing emergency oxygen and suctioning equipment are included. Supervised skills labs and clinical assists the student in acquiring and integrating the basic health concepts.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Other Hours

Other Hours
Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Perform a basic health assessment of clients across the lifespan to identify deviations from normal.

Name
Participate as a member of the inter-professional healthcare team in the provision of safe, quality care.

Name
Demonstrate clinical decision-making when participating in the provision of care.

Name
Apply knowledge of pharmacology, pathophysiology, and nutrition in the provision of client care.

Name
Use verbal and nonverbal communication that promotes caring, therapeutic relationships with clients and their families, as well as professional relationships with members of the healthcare team.

Name
Report environmental hazards and client safety concerns and participate in activities that promote quality improvement.

Name
Measure and interpret vital signs such as temperature, pulse, respiratory rate, blood pressure, and oxygen saturation.

Name
Understand the significance of vital signs in assessing patient health status and response to treatment.

Name
ollow standard precautions, including hand hygiene, personal protective equipment (PPE) use, and proper disposal of contaminated materials.

Name
Implement infection control protocols to prevent healthcare-associated infections (HAIs) and promote patient safety.

Name
ssist patients with activities of daily living (ADLs) such as bathing, grooming, oral care, toileting, and positioning.

Name
Provide comfort measures and promote a safe and clean environment for patients.

Name
Assist patients with mobility and ambulation, including using assistive devices, transferring patients safely, and preventing falls.

Name
mplement measures to prevent complications related to immobility, such as pressure ulcers and muscle atrophy.

Name
Communicate effectively with patients, families, and healthcare team members to ensure coordinated care and patient safety.

Name
Recognize signs of medical emergencies and initiate appropriate emergency responses, including basic life support (BLS) interventions and activating rapid response teams

Name
Adhere to ethical principles, legal standards, and professional codes of conduct in nursing practice.

Requirements

Simple Requirements

Enrolled in Course PSY101

Type
Prerequisite

Enroll in the following Courses:
- PSY101 - General Psychology

Enrolled in Course MNT130

Type
Prerequisite

Enroll in the following Courses:
- MNT130 - Behavioral Science

Enrolled in Course MNT120

Type
Prerequisite

Enroll in the following Courses:
- MNT120 - Understanding Mental Illness

MNT170 - Pharmacology & Drug Administration

Overview

Department
Nursing

Course Description
This course focuses on the basic concepts of drug administration and pharmacological effects of drugs. Action, use, dosage ranges, routes of administration, side effects, contraindications and nursing implications are emphasized, including skills needed for safe and accurate drug administration. Routes of administration include oral, inhalation, topical, nasal/eye/ear instillation, vaginal, rectal, intramuscular, subcutaneous, and intradermal.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
8

Contact Hours

Contact Hours Min:
165

Billing Hours

Billing Hours Min:
8

Lecture Hours

Lecture Hours Min:
75

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Apply principles of pharmacology, pharmacokinetics, and pharmacodynamics to medication therapy.

Name
Recognize selected major classifications of medications, common medications within each classification, their side effects, and contraindications.

Name
Discuss nursing implications and concepts of safety when performing medication administration.

Name
Recognize that each client's unique physiology and body system function will influence the pharmacokinetics and pharmacodynamics of medication therapy.

Name
Discuss the legal and ethical implications/aspects of medication administration.

Name
dentify basic pathophysiologic conditions and correlate the pharmacotherapeutic interventions utilized in client care.

Name
Apply standard mathematical principles to accurately calculate dosages of prescribed pharmacologic agents

Name
Use healthcare information systems and client care technology to manage client care, mitigate error, and communicate relevant client information with members of the healthcare team.

Requirements

Simple Requirements

A minimum grade of 'C' in Course MNT130

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MNT130 - Behavioral Science

A minimum grade of 'C' in Course PSY120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- PSY120 - Developmental Psychology

Enrolled in Course MNT190

Type
Prerequisite

Enroll in the following Courses:
- MNT190 - Therapeutic Communication

MNT180 - Technical Health Skills II

Overview

Department
Nursing

Course Description
This course serves to provide and reinforce the technical nursing skills essential for the role of the Mental Health Technician with an emphasis on infection control, safety, and documentation. It also includes the advance skills related to ostomy care, catheterization care, oxygen, suctioning, and care of clients receiving intravenous infusion therapy. Supervised skills labs assist the student in learning and practicing the skills and supervised clinical provide opportunities to apply those skills. The role of the Mental Health Technician is emphasized.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Other Hours

Other Hours
Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Perform a comprehensive health assessment of clients across the lifespan to identify deviations from normal.

Name
Develop individualized, evidence-based plans of care that include cultural, spiritual, and developmentally appropriate interventions and health promotion recommendations for clients across the lifespan.

Name
Collaborate with members of the inter-professional healthcare team while acting as a client advocate in the provision of safe, quality care.

Name
Demonstrate clinical judgment when providing direct client care to clients with health alterations.

Name
Integrate knowledge of pharmacology, pathophysiology, nutrition, and established evidence-based practices when caring for a client's health alterations.

Name
Use verbal and nonverbal communication that promotes caring, therapeutic relationships with clients and families, as well as professional relationships with members of the healthcare team.

Name
Use health information systems and client care technologies in an effective and secure manner when assessing and monitoring clients.

Name
Apply evidence-based knowledge in the provision of care to clients with health alterations.

Name
Use organizational, time management, priority-setting, and decision-making skills in the provision of care to clients with health alterations.

Name
Evaluate strategies used to provide a safe environment for clients, self, and others while supporting quality improvement initiatives.

Name
Adhere to ethical, legal, and professional standards in the provision of care to clients with health alterations.

Requirements

Simple Requirements

A minimum grade of 'C' in Course MNT140

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MNT140 - Technical Health Skills I

Enrolled in Course MNT200

Type
Prerequisite

Enroll in the following Courses:
- MNT200 - Psychiatric Interventions

Enrolled in Course MNT170

Type
Prerequisite

Enroll in the following Courses:
- MNT170 - Pharmacology & Drug Administration

MNT190 - Therapeutic Communication

Overview

Department
Nursing

Course Description
This course aims to enhance participants' ability to communicate effectively, empathetically, and ethically in therapeutic settings, fostering positive relationships and improving outcomes for individuals receiving support and care. Includes training in de-escalation techniques and management of aggressive behavior and certification in MOAB.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate empathy towards clients or patients by understanding and acknowledging their feelings, thoughts, and experiences without judgment.

Name
Develop active listening skills, including techniques such as paraphrasing, summarizing, and reflecting feelings, to show clients that they are being heard and understood.

Name
Learn how to build rapport and establish a trusting relationship with clients or patients, creating a safe and supportive environment for therapeutic interactions.

Name
Utilize both verbal and nonverbal communication effectively, including body language, tone of voice, and choice of words, to convey empathy, respect, and understanding.

Name
Understand and respect cultural, social, and individual differences in communication styles, values, beliefs, and practices, to provide culturally competent care.

Name
Develop skills to manage their own emotions and reactions during challenging or emotional interactions, maintaining professionalism and a therapeutic focus.

Name
Identify communication barriers, resolve conflicts, and problem-solve collaboratively with clients or within interdisciplinary teams.

Name
Understand the importance of maintaining professional boundaries, confidentiality, and ethical standards in therapeutic communication.

Name
Give and receive constructive feedback on their communication skills, engage in self-reflection, and continuously strive for improvement.

Name
Demonstrate skills in accurately documenting communication and interactions as part of clinical or professional practice.

Requirements

Simple Requirements

A minimum grade of 'C' in Course MNT130

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MNT130 - Behavioral Science

A minimum grade of 'C' in Course PSY120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PSY120 - Developmental Psychology

Enrolled in Course MNT170

Type
Prerequisite

Enroll in the following Courses:
- MNT170 - Pharmacology & Drug Administration

MNT200 - Psychiatric Interventions

Overview

Department
Nursing

Course Description
This course introduces the basic concepts of psychiatric/mental health and the student's role in working with clients in the mental health setting. Concepts include principles of basic communication and coping skills, safety measures in working with clients in the mental health setting, deviations of mental and social health, correlations of symptoms with clinical syndromes, integration of mental disorders with therapeutic nursing principles, treatment, and rehabilitation interventions, and the clients' responses to medication. This course focuses on the development of therapeutic communication skills. The clinical component includes supervised clinical instruction in applying the concepts in a variety of treatment programs. Clinical instruction also includes application of previously acquired technical skills demonstrating knowledge and performance of simple nursing principles, safe drug administration, and the mental health technician's role in the treatment and rehabilitation of clients with both mental and physical illness.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
8

Contact Hours

Contact Hours
Min:
210

Billing Hours

Billing Hours
Min:
8

Lecture Hours

Lecture Hours
Min:
75

Other Hours

Other Hours
Min:
135

Course Learning Outcomes

Learning Outcomes

Name
Integrate principles of group process and teamwork into the operation of the inter-professional healthcare team.

Name
Apply leadership skills and empowerment strategies when managing the care of clients, families, groups, communities, and populations.

Name
Examine the ethical and legal principles of nursing practices and their roles in protecting client rights.

Name
Explore the characteristics of the profession of nursing; the norms, values, attitudes, and behaviors essential to the role; and how professional identity is developed.

Name
Analyze quality improvement and the nurse's role in identifying and acting to improve client outcomes.

Name
Integrate evidence-based knowledge in the management of care to clients with multisystem alterations in health.

Name
Evaluate the efficacy of health-related education that has been provided to clients, families, and groups.

Name
Use organizational, time-management, and priority-setting skills when managing a caseload of clients and making clinical judgments about their care.

Name
Evaluate strategies used to provide a safe environment for clients, self, and others while supporting quality improvement initiatives.

Requirements

Name
Adhere to ethical, legal, and professional standards while managing the care of clients with multisystem alterations in health.

Simple Requirements

A minimum grade of 'C' in Course MNT120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MNT120 - Understanding Mental Illness

Enrolled in Course MNT180

Type
Prerequisite

Enroll in the following Courses:
- MNT180 - Technical Health Skills II

A minimum grade of 'C' in Course PSY120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PSY120 - Developmental Psychology

A minimum grade of 'C' in Course MNT130

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MNT130 - Behavioral Science

MTH030 - Elementary Algebra

Overview

Department
General Education

Course Description
In this course students will learn to interpret mathematical symbols and notation, recognize and use properties of real numbers, recognize and perform basic operations on polynomials, solve linear and quadratic equations and graph linear equations. This course does not count toward AS, AA, AGS or AAS degrees.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2015

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

A minimum test score of '41' on Test ASNS

OR

Any of the following requirements

A minimum test score of '000' on Test CPAL

OR

Any of the following requirements

A minimum test score of '23' on Test ASIA

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

OR

Any of the following requirements

A minimum test score of '070' on Test ACEA

OR

Any of the following requirements

A minimum test score of '16' on Test A02

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- MTH020 - Math Fundamentals (Inactive)

OR

Any of the following requirements

A minimum test score of '044' on Test CPPA

MTH107 - Contemporary Math with Corequisite

Overview

Department
General Education

Course Description
This course is designed to provide a deep understanding of mathematical concepts and their real-world applications in today's society. Through a collection of mathematical topics and applications, students will explore how contemporary mathematical thinking is used in decision-making processes across various fields. The course emphasizes practical problem-solving, critical thinking, and mathematical literacy, equipping students with the skills needed to tackle everyday challenges and succeed in their future careers. Topics may include financial mathematics, probability, statistics, voting systems, and graph theory, all of which illustrate the vital role mathematics plays in modern life. The corequisite component offers targeted support, ensuring that students strengthen prerequisite skills while mastering new concepts. By the end of the course, students will gain confidence in using mathematical reasoning to analyze and solve real-world problems, enhancing their ability to make informed decisions both personally and professionally.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
75

Course Learning Outcomes

Learning Outcomes

Name
Students will learn strategies and techniques that will help them be successful in a self-accelerated, online learning environment

Objective
Time Management Coping with Stress and Anxiety Effective Note Taking Preparing for and Taking Exams Students will demonstrate the ability to effectively utilize various tools and resources to support their learning and problem-solving in the course.

Name
Demonstrate Numeracy and Arithmetic

Objective
• Basic arithmetic: Ability to perform operations with whole numbers, fractions, and decimals (addition, subtraction, multiplication, division). • Number sense: Understanding the size of numbers, place value, and how numbers relate to one another. • Rounding and estimation: Ability to round numbers and estimate reasonable answers in practical situations

Name
Understanding of Percentages, Ratios, and Proportions

Objective
• Working with percentages: Understanding how to calculate percentages, percentage increases/decreases, and apply them in contexts like discounts, taxes, and interest rates. • Ratios and proportions: Ability to solve problems involving ratios (e.g., miles per gallon, price per unit) and use proportional reasoning

Name
Demonstrate basic Algebraic Skills

Objective
Solving linear equations: Ability to solve for unknowns in simple linear equations. Manipulating algebraic expressions: Understanding and simplifying expressions involving variables. Understanding of functions: Basic knowledge of functions and their representations, including interpreting graphs and tables.

Name
Demonstrate logical Reasoning and Critical Thinking

Objective
• Problem-solving strategies: Ability to approach problems methodically, break them down into steps, and reason logically through solutions. • Recognizing patterns: Identifying trends or patterns in data or sequences. • Understanding arguments: Using deductive and inductive reasoning to assess the validity of arguments and avoid common logical fallacies.

Name
Demonstrate statistical and Probability Literacy

Objective
• Basic descriptive statistics: Understanding mean, median, mode, range, and how to interpret these in real-world contexts. Reading and interpreting data: Ability to read graphs, charts, and tables and draw conclusions from them. Probability concepts: Understanding basic probability, including simple events, combinations, and the likelihood of outcomes in everyday situations.

Name
Mathematical Communication

Objective
Understanding and interpreting word problems: Translating real-world situations into mathematical terms, and vice versa. Justifying answers: Ability to explain and justify mathematical reasoning both verbally and in writing.

Name
Technology Skills

Objective
Basic calculator skills: Knowing how to perform operations on scientific or graphing calculators.

Name
Apply critical and logical thinking skills to various applications

Name
Apply estimation ,measurement,and an understanding of numbers to various applications

Name
Use and evaluate statistics for decision making

Name
Demonstrate basic concepts of probability and risk

Name
Apply mathematical methods to personal finance

Name
Apply mathematics to the study of real-world situations

MTH108 - Contemporary Math

Overview

Department
General Education

Course Description
This course is a designed to provide a deep understanding of mathematical concepts and their real-world applications for today's society. It is a collection of applications of mathematics illustrating how contemporary mathematical thinking is used in the decision-making process. The course focuses on practical problem-solving, critical thinking, and mathematical literacy that you can use in your everyday life and future career.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Apply critical and logical thinking skills to various applications

Name
Apply estimation ,measurement, and an understanding of numbers to various applications

Name
Use and evaluate statistics for decision making

Name
Demonstrate basic concepts of probability and risk

Name
Apply mathematical methods to personal finance

Name
Apply mathematics to the study of real-world situations

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

A minimum test score of '19' on Test A02

OR

A minimum test score of '510' on Test S02

OR

A minimum test score of '255' on Test NGQR

OR

A minimum test score of '030' on Test ALKS

MTH110 - College Algebra with Corequisite

Overview

Department
General Education

Course Description
This course is designed to develop students' understanding of fundamental algebraic concepts while providing additional support through a corequisite learning model. The primary focus is on key topics such as Equations and Inequalities; Functions and Graphs; Polynomial and Rational Functions; Exponential and Logarithmic Functions; Systems of Equations and Inequalities; Matrices and Determinants. The corequisite component integrates just-in-time support to reinforce essential prerequisite skills, ensuring students gain the confidence and knowledge to successfully master college-level algebra. This approach is ideal for students needing extra guidance while working through the standard curriculum, offering real-time remediation and contextualized practice. The learning outcomes and competencies detailed in this outline meet, or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Project for this course, as approved by the Kansas Board of Regents (Transfers as MAT 1010).

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
75

Course Learning Outcomes

Learning Outcomes

Name
Students will learn strategies and techniques that will help them be successful in a self-accelerated, online learning environment

Objective
• Time Management • Coping with Stress and Anxiety • Effective Note Taking • Preparing for and Taking Exams • Students will demonstrate the ability to effectively utilize various tools and resources to support their learning and problem-solving in the course.

Name
Numerical Operations Mastery: Students will demonstrate fluency with arithmetic operations (addition, subtraction, multiplication, division) and work comfortably with fractions, decimals, and percentages

Name
Algebraic Foundations: Students will solve and simplify basic algebraic expressions and equations, including linear equations, while reinforcing understanding of variables, constants, and coefficients.

Name
Proportional Reasoning: Students will apply ratios, proportions, and percentages to solve real-world problems.

Name
Basic Graphing: Students will interpret and plot points on the Cartesian plane and understand the relationship between algebraic equations and their graphical representation.

Name
Analysis and Graphing of Functions and Equations

Objective
Use functional notation Recognize and distinguish between functions and relations (equations) Use concepts of symmetry, intercepts, left- and right-hand behavior, asymptotes, and transformations to sketch the graph of various types of functions (constant, linear, quadratic, absolute value, piecewise-defined, square foot, cubic, polynomial, rational, exponential, and logarithmic) or relations (circle) given in description Determine the domain and range of a function Write the equation that describes a function (for types given above) or circle given its description Use graphs of functions for analysis Find arithmetic combinations and composites of functions Find the inverse of a function

Name
Solutions of Equations and Inequalities

Objective
Solve equations listed in the third bullet above, i.e., literal equations, quadratic equations by factoring and the quadratic formula, equations involving rational expressions, equations involving radicals, and equations involving absolute value expressions, along with equations involving exponential or logarithmic functions Solve inequalities of the following types: linear (in one and two variables), polynomial, rational, absolute value Solve systems of inequalities by graphing Apply equations from the first bullet in this core outcome to real-world situations, including but not limited to depreciation, growth and decay, and max/min problems Examine and analyze data, make predictions/ interpretations, and do basic modeling Solve systems of equations by various methods, including matrices

MTH112 - College Algebra

Overview

Department
General Education

Course Description
This course will enable the student to use and interpret the mathematical symbols and notation relating to functions. The student will analyze the graphs of various mathematical functions with the assistance of a graphing utility, including polynomial, rational, root, absolute value, logarithmic and exponential functions, and solve related equations and inequalities, including systems of equations and inequalities. The student will use both graphical analysis and equation solving in the context of word problems. Topics include: Equations and Inequalities; Functions and Graphs; Polynomial and Rational Functions; Exponential and Logarithmic Functions; Systems of Equations and Inequalities; Matrices and Determinants. The learning outcomes and competencies detailed in this outline meet, or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Project for this course, as approved by the Kansas Board of Regents (Transfers as MAT 1010).

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Use Functional notation, including finding arithmetic combinations and compositions of functions.

Name
Recognize and distinguish between functions and relations (equations)

Name
Use concepts of symmetry, intercepts, left- and right-hand behavior, asymptotes, and transformations to sketch the graph of various types of functions (constant, linear, quadratic, absolute value, piecewise-defined, square root, cubic, polynomial, rational, exponential, and logarithmic) or relations (circle) given in description

Name
Determine the domain and range of relations and functions

Name
Write the equation that describes a function (for types given above in 3a) or circle given its description

Name
Use graphs of functions for analysis

Name
Find the inverse of a function

Name
Solve equations including literal equations, linear equations, quadratic equations by factoring and the quadratic formula, higher-order polynomial equations, equations involving rational expressions, equations involving radicals, and equations involving absolute value expressions, along with equations involving exponential or logarithmic functions

Name
Solve inequalities of the following types: linear (in one and two variables), polynomial, rational, absolute value

Name
Solve systems of inequalities by graphing

Name
Apply equations from 1s in this core outcome to real-world situations, such as depreciation, growth and decay, and max/min problems

Name
Examine and analyze data, make predictions/interpretations, and do basic modeling

Name
Solve systems of equations by various methods, including matrices

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

A minimum test score of '22' on Test A02

OR

A minimum test score of '540' on Test S02

OR

A minimum test score of '263' on Test NGQR

OR

A minimum test score of '046' on Test ALKS

MTH113 - Trigonometry

Overview

Department
General Education

Course Description
This course will enable the student to identify and manipulate trigonometric functions, solve triangles, use and prove identities, solve trigonometric equations, use and apply vectors to real-life models, and use complex numbers and polar coordinates. Topics include: Angles and the Trigonometric Functions; Graphs of the Trigonometric Functions; Inverse Trigonometric Functions; Trigonometric Identities; Laws of Sines and Cosines; Vectors; Complex Numbers, Polar Coordinates and Parametric Equations. The learning outcomes and competencies detailed in this outline, meet or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Project for this course, as approved by the Kansas Board of Regents (Transfers as MAT 1030)

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Define the trigonometric functions using both a right triangle and the unit circle

Objective
Right Triangle Trigonometry - recognize and use fundamental identities', Trigonometric Functions of Any Angle - use the definitions of trigonometric functions of any angle', Trigonometric Functions The Unit Circle - use a unit circle to define trigonometric functions of real numbers', Right Triangle Trigonometry - recognize and use fundamental identities', Trigonometric Functions of Any Angle - use the definitions of trigonometric functions of any angle', Trigonometric Functions The Unit Circle - use a unit circle to define trigonometric functions of real numbers

Name
Define and interpret radian measurement. Recognize and apply circular functions as real-valued functions

Objective
Angles and Radian Measure', Trigonometric Functions of Any Angle', Trigonometric Functions The Unit Circle - use a unit circle to define trigonometric functions of real numbers and recognize the domain and range of sine and cosine functions

Name
Solve for unknown sides/angles within right triangles and know trigonometric function values for special angles (multiples of /6 and /4)

Objective
Right Triangle Trigonometry - Use right triangles to evaluate trigonometric functions and to solve applied problems find function values for 306454 and 603', Trigonometric Functions of Any Angle - find and use reference angles to evaluate trigonometric functions', Trigonometric Functions The Unit Circle - use even and odd trigonometric functions and use periodic properties

Name
Analyze the graphs of the six basic trigonometric functions and their arithmetic combinations using the concepts of period, phase shift, amplitude, and displacement

Objective
Graphs of Sine and Cosine Functions - understand the graphs of ysinx and ycosx and their variations use vertical shifts of sine and cosine curves graph the sum of two trigonometric functions and model periodic behavior', Graphs of Other Trigonometric Functions - understand the graphs of ytanxycotxycscx and ysecx and graph their variations

Name
Derive/verify trigonometric identities, including but not limited to double angle, half angle, angle sum, and angle difference identities

Objective
Verifying Trigonometric Identities', Sum and Difference Formulas', DoubleAngle PowerReducing and HalfAngle Formulas', ProducttoSum and SumtoProduct Formulas

Name
Define, graph, and apply inverse trigonometric functions

Objective
Inverse Trigonometric Functions - understand graph and use the inverse sine cosine and tangent functions evaluate inverse trigonometric functions and find exact values of composite functions with inverse trigonometric functions', Applications of Trigonometric Functions - solve applications using inverse trigonometric functions

Name
Solve equations involving trigonometric functions

Objective
Verifying Trigonometric Identities - use identities to solve trigonometric equations', DoubleAngle PowerReducing and HalfAngle Formulas - use identities to solve trigonometric equations', Trigonometric Equations - find all solutions of a trigonometric equation solve equations with multiple angles solve trigonometric equations quadratic in form and use factoring to separate different functions in trigonometric equations

Name
Find solutions of oblique triangles using the Law of Cosines or Law of Sines

Objective
The Law of Sines - use the Law of Sines to solve oblique triangles', The Law of Cosines - use the Law of Cosines to solve oblique triangles

Name
Solve applied problems including but not limited to vectors

Objective
The Law of Sines - solve applied problems using the Law of Sines', The Law of Cosines - solve applied problems using the Law of Cosines', Vectors - solve applied problems involving vectors', The Dot Product - find the dot product of two vectors find the angle between two vectors find the projection of a vector onto another vector and compute work

Name
Derive the trigonometric from of complex numbers and perform calculations with them including products and quotients

Objective
Polar Coordinates - plot points in the polar coordinate system and convert a point between rectangular and polar coordinates', Parametric Equations - use point plotting to graph plane curves described by parametric equations', Graphs of Polar Equations - use point plotting and symmetry to graph polar equations', Complex Numbers - add subtract multiply and divide complex numbers perform operations with square roots of negative numbers', Complex Numbers in Polar Form - write complex numbers in polar form find products and quotients of complex numbers in polar form and find powers of complex numbers in polar form and find roots of complex numbers in polar form

Name
Translate between rectangular and polar coordinates and graph within the polar coordinate system

Objective
Polar Coordinates - plot points in the polar coordinate system and convert a point between rectangular and polar coordinates', Graphs of Polar Equations - use point plotting and symmetry to graph polar equations', Parametric Equations - use point plotting to graph plane curves described by parametric equations

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Earn a minimum grade (UG) of C in the following:
- MTH111 - College Algebra with Review (Inactive)

OR

Earn a minimum grade (UG) of C in the following:
- MTH112 - College Algebra

OR

A minimum test score of '23' on Test A02

OR

A minimum test score of '270' on Test NGQR

OR

A minimum test score of '237' on Test NGAA

OR

A minimum test score of '64' on Test ACAR

MTH115 - Pre-Calculus Mathematics

Overview

Department
General Education

Course Description
This course will enable the student to develop and apply models using linear, polynomial, rational, logarithmic, exponential, and trigonometric functions. The successful student will be able to identify and manipulate functions, solve equations, prove trigonometric identities, solve triangles, and use polar coordinates. Topics include: Equations and Inequalities; Functions and Graphs; Polynomial and Rational Functions; Exponential and Logarithmic Functions; Systems of Equations and Inequalities; Matrices and Determinants; Angles and the Trigonometric Functions; Graphs of the Trigonometric Functions; Inverse Trigonometric Functions; Trigonometric Identities; Laws of Sines and Cosines; Vectors; Complex Numbers, Polar Coordinates and Parametric Equations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
75

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to calculate number systems and equations of one variable

Objective
The Real Number System', The Arithmetic of Algebraic Expressions', Properties of Exponents', Scientific Notation and Geometric Problems Using Exponents', Properties of Radicals', Rational Number Exponents', Polynomials and Factoring', The Complex Number System', Linear Equations and Inequalities in One Variable', Quadratic Equations in One Variable', Higher Degree Polynomial Equations', Rational Expressions and Equations', Radical Equations

Name
The student will be able to calculate equation and inequalities

Objective
The Cartesian Coordinate System', Linear Equations in Two Variables', Forms of Linear Equations', Parallel and Perpendicular Lines', Linear Inequalities in Two Variables', Introduction to Circles

Name
The student will be able to utilize Relations, Functions and their Graphs

Objective
Relations and Functions', Linear and Quadratic Functions', Applications of Quadratic Functions', Common Functions', Variation and MultiVariable Functions', Transformations of Functions', Combining Functions', Inverses of Functions

Name
The student will be able to calculate polynomial functions

Objective
Introduction to Polynomial Equations and Graphs', Polynomial Division and the Division Algorithm', Locating Real Zeros of Polynomials', The Fundamental Theorem of Algebra', Rational Functions and Rational Inequalities

Name
The student will be able to solve exponential and logarithmic functions

Objective
Exponential functions and their graphs', Logarithmic functions and their graphs', Properties of logarithms', Solving exponential and logarithmic equations', Exponential and logarithmic models

Name
The student will be able to utilize trigonometric functions

Objective
Radian and Degree Measure of Angles', Trigonometric Functions of Acute Angles', Trigonometric Functions of any Angle', Graphs of Trigonometric Functions', Inverse Trigonometric Functions

Name
The student will be able to utilize trigonometric functions and equations

Objective
Using fundamental identities', Sum and Difference Identities', Product - Sum Identities', Trigonometric Equations', Using fundamental identities

Name
The student will be able to solve basic trigonometry functions

Objective
Law of Sines and Cosines', Areas of Triangles', Polar Coordinates and Polar Equations', Parametric Equations', Trigonometric Form of Complex Numbers', Operations with Complex Numbers', Vectors in the Cartesian Plane', The Dot Product and its Uses

Name
The student will be able to utilize systems of equations

Objective
Solving Systems by Substitution and Elimination', Matrix Notation and Gaussian Elimination', Determinants and Cramers Rule

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

A minimum test score of '64' on Test ACCA

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- MTH105 - PACER Mathematics III (Inactive)

OR

Any of the following requirements

A minimum test score of '48' on Test ASCA

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- MTH101 - Intermediate Algebra (Inactive)

OR

Any of the following requirements

A minimum test score of '000' on Test CPTR

OR

Any of the following requirements

A minimum test score of '046' on Test CPCA

OR

Any of the following requirements

A minimum test score of '23' on Test A02

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- MTH102 - Intermediate Algebra with Review (Inactive)

MTH119 - Elementary Statistics with Corequisite

Overview

Department

General Education

Course Description

This course introduces students to the fundamental concepts of statistics, with a focus on data collection, analysis, interpretation, and decision-making. It covers essential topics such as appropriate sampling techniques, organizing and summarizing data with graphs and tables, calculating descriptive statistics, and identifying common misuses of statistics. Students will also learn to assess risk using probability concepts and perform statistical inference through confidence intervals and hypothesis testing, enabling them to make informed decisions about means and proportions. Topics covered include Data Collection, Organizing and Summarizing Data, Numerically Summarizing Data, Describing the Relation between Two Variables, Probability, Discrete Probability Distributions, The Normal Probability Distribution, Sampling Distributions, Estimating the Value of a Parameter, Hypothesis Tests Regarding a Parameter, and Inferences on Two Samples. The corequisite component offers additional support to ensure that students develop the foundational skills needed for success in elementary statistics. By the end of the course, students will be able to apply statistical methods in various real-world scenarios, enhancing their problem-solving abilities and critical thinking skills.

Academic Level (Course Level)

Undergraduate

Effective Start Term

Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
75

Course Learning Outcomes

Learning Outcomes

Name
Students will learn strategies and techniques that will help them be successful in a self-accelerated, online learning environment

Objective
Time Management Coping with Stress and Anxiety Effective Note Taking Preparing for and Taking Exams Students will demonstrate the ability to effectively utilize various tools and resources to support their learning and problem-solving in the course.

Name
Numerical Operations Mastery: Students will demonstrate fluency with arithmetic operations and work comfortably with fractions, decimals, and percentages, which are essential for calculating measures such as mean, median, and proportions.

Name
Data Interpretation: Students will understand how to read and interpret numerical data, including basic charts, tables, and graphical representations.

Name
Proportional Reasoning: Students will use ratios, percentages, and proportional reasoning to interpret data, calculate probabilities, and understand statistical concepts like relative frequency.

Name
Basic Graphing and Data Visualization: Students will plot data points on graphs such as histograms, bar graphs, and scatterplots, and interpret the visual meaning of these graphs.

Name
Problem Solving with Word Problems: Students will apply arithmetic and introductory statistics skills to analyze and solve word problems involving real-world data, probability, and statistical measures.

Name
Create graphical and numerical descriptions of quantitative and qualitative data

Objective
Organizing Qualitative Data Organizing Quantitative Data: The Popular Displays Additional Displays of Quantitative Data Graphical Misrepresentations of Data

Name
Calculate probabilities and percentiles related to a general normal distribution

Objective
Probability Rules The Addition rule and Complements Independence and the Multiplication rule Conditional Probability and the general Multiplication Rule Counting Techniques

Name
Distinguish differences in data analysis and interpretation between observational data and date from designed experiments

Objective
Introduction to the Practice of Statistics Observational Studies and Experiments Simple random Sampling Other Effective Sampling Methods Bias in Sampling The Design of Experiments

Name
Calculate and interpret a confident interval for a single parameter, using both large and small samples

Objective
Scatter Diagrams and Correlation Least-Squares Regression Diagnostics on the Least-Squares Regression Line Contingency Tables and Association

Name
Perform and interpret a test of hypotheses for a single parameter, using both large and small samples

Objective
The Language of Hypothesis Testing Hypothesis Tests for a Population Proportion Hypothesis Tests for a Population Mean Hypothesis Tests for a Population Standard Deviation

Name
Perform and interpret statistical inference on the different of two parameters

Objective
Inference about Two Population Proportions Inference about Two Means: Dependent Samples Inference about Two Means: Independent Samples Inference about Two Population Standard Deviations

Name
Fit and interpret a simple linear regression model, including correlation and scatterplots

Objective
Scatter Diagrams and Correlation Least-Squares Regression Diagnostics on the Least-Squares Regression Line Contingency Tables and Association

MTH120 - Elementary Statistics

Overview

Department
General Education

Course Description
This course will enable the student to collect data by appropriate sampling techniques, summarize data with graphs and tables, calculate descriptive statistics, identify misuses of statistics, assess risk using concepts of probability, estimate and make decisions about means and proportions through the use of confidence intervals and hypothesis testing, and perform linear regression. Topics include: Data Collection; Organizing and Summarizing Data; Numerically Summarizing Data; Describing the Relation between Two Variables; Probability; Discrete Probability Distributions; The Normal Probability Distribution; Sampling Distributions; Estimating the Value of a Parameter; Hypothesis Tests Regarding A Parameter, and Inferences on Two Samples. The learning outcomes and competencies detailed in this outline meet, or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Project for this course, as approved by the Kansas Board of Regents (Transfers as MAT 1020).

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Create graphical and numerical descriptions of quantitative and qualitative data

Objective
Organizing Qualitative Data, Organizing Quantitative Data: The Popular Displays ,Additional Displays of Quantitative Data, Graphical Misrepresentations of Data

Name
Calculate probabilities and percentiles related to a general normal distribution

Objective
Probability Rules, The Addition rule and Complements, Independence and the Multiplication rule, Conditional Probability and the general Multiplication Rule, Counting Techniques

Name
Distinguish differences in data analysis and interpretation between observational data and date from designed experiments

Objective
Introduction to the Practice of Statistics Observational Studies and Experiments, Simple random Sampling, Other Effective Sampling Method, Bias in Sampling, The Design of Experiments

Name
Calculate and interpret a confident interval for a single parameter, using both large and small samples

Objective
Scatter Diagrams and Correlation, Least-Squares Regression, Diagnostics on the Least-Squares Regression Line, Contingency Tables and Association

Name
Perform and interpret a test of hypotheses for a single parameter, using both large and small samples

Objective
The Language of Hypothesis Testing ,Hypothesis Tests for a Population Proportion, Hypothesis Tests for a Population Mean, Hypothesis Tests for a Population Standard Deviation

Name
Perform and interpret statistical inference on the different of two parameters

Objective
Inference about Two Population Proportions, Inference about Two Means: Dependent Samples, Inference about Two Means: Independent Samples,Inference about Two Population Standard Deviations

Name
Fit and interpret a simple linear regression model, including correlation and scatterplots

Objective
Scatter Diagrams and Correlation, Least-Squares Regression, Diagnostics on the Least-Squares Regression Line,Contingency Tables and Association

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

A minimum test score of '19' on Test A02

OR

A minimum test score of '510' on Test S02

OR

A minimum test score of '255' on Test NGQR

OR

A minimum test score of '030' on Test ALKS

MTH125 - Calculus I

Overview

Department
General Education

Course Description
This course will enable the students to solve problems involving limits, derivatives and some types of definite and indefinite integrals both analytically and graphically, and use them in physical applications. The learning outcomes and competencies detailed in this outline meet, or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Project for this course, as approved by the Kansas Board of Regents (Transfers as MAT 2010).

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
75

Course Learning Outcomes

Learning Outcomes

Name
Using Limits - Evaluation of Limits

Objective
Evaluate the limit of a function at a point both algebraically and graphically', Evaluate the limit of a function at infinity both algebraically and graphically', Use the definition of a limit to verify a value for the limit of a function

Name
Using Limits - Use of Limits

Objective
Use the limit to determine the continuity of a function', Apply the IntermediateValue Theorem', Use the limit to determine differentiability of a function

Name
Using Limits - Finding Derivatives

Objective
Use the limiting process to find the derivative of a function

Name
Using Derivatives - Curve Sketching

Objective
Find derivatives involving powers exponents and sums', Find derivatives involving products and quotients', Find derivatives involving the chain rule', Find derivatives involving exponential logarithmic and trigonometric functions', Find derivatives involving implicit differentiation

Name
Using Derivatives - Applications of Derivatives

Objective
Use the first derivative to find critical points', Apply the MeanValue theorem for derivatives', Determine the behavior of a function using the first derivative', Use the second derivative to find inflection points', Determine the concavity of a function using second derivative', Sketch the graph of the function using information gathered from the first and second derivatives Interpret graphs of functions

Name
Finding Integrals

Objective
Find area using Riemann sums and integrals', Express the limit of a Riemann sum as a definite integral', Evaluate the definite integral using geometry', Integrate algebraic exponential and trigonometric functions', Evaluate definite integrals using the Fundamental theorem of Calculus', Apply the MeanValue Theorem for integrals', Integrate indefinite integrals', Intergrade using substitution', Approximate integrals using Simpsons rule and the Trapezoidal Rule

Fulfill ANY of the following requirements:

Fulfill ALL of the following requirements:

Earn a minimum grade (UG) of C in the following:
- MTH112 - College Algebra

AND

Earn a minimum grade (UG) of C in the following:
- MTH113 - Trigonometry

OR

Earn a minimum grade (UG) of C in the following:
- MTH115 - Pre-Calculus Mathematics

OR

A minimum test score of '25' on Test A02

OR

A minimum test score of '046' on Test CPTR

OR

A minimum test score of '48' on Test ASCA

OR

A minimum test score of '103' on Test ACCA

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

MTH150 - Calculus II

Overview

Department
General Education

Course Description
This course will enable the student to understand applications and methods of integration, improper integrals, convergence and divergence of infinite series, graphs of conic sections, the polar coordinate system, parametric equations, and linear algebra.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
75

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to find the area between two curves, the volume and surface area of solid of revolution, and the length of an arc

Objective
Determine the necessary interval of integration and find the area between two curves bonded by two defined functions', Determine the necessary interval of integration and find the volume of a solid revolution bounded by defined functions using the disc method when the axis of revolution is the same as the axis of integration', Determine the necessary interval of integration and find the volume of a solid revolution bounded by defined functions using the shell method when the axis of revolution and the axis of integration are opposites', Determine the necessary interval of integration and find the length of the arc for a defined function', Determine the necessary interval of integration and find the surface area for a solid of revolution bounded by a defined function

Name
The student will be able to calculate certain physical applications of work, moments, centers of mass and centroids, fluid pressure, and fluid force

Objective
Calculate work done in compressing a spring moving an object emptying a tank of liquid lifting a mass and expanding a gas', Explain the difference between the center of mass and the centroid', Find the mass center of mass and first moments in onedimensional and twodimensional systems', Find the centroid of a plane region', Find the fluid force on a submerged sheet', Find the fluid force on a vertical surface

Name
The student will be able to find the antiderivatives of standard elementary functions

Objective
Review basic rules of integration', Find antiderivatives using integration by parts', Use algebraic substitutions to integrate trigonometric function and trigonometric substitutions to integrate algebraic functions', Find antiderivatives using partial fraction decomposition', Find antiderivatives using tables of integrals and appropriate substitutions as needed

Name
The student will be able to find limits of indeterminate forms and analyze improper integrals

Objective
Identify limits with indeterminate forms', Apply LHopitals rule to determine limits for the forms 00 and ', Manipulate other indeterminate forms so that LHopitals rule can be used', Explain the difference between the convergence and divergence of an integral', Determine whetherornot an integral with an unbounded interval of integration converges and if so evaluate it', Determine whetherornot an integral over an interval with discontinuities converges and if so evaluate it

Name
The student will be able to determine the properties of sequences and series

Objective
Determine if a sequence bounded monotonic and convergent', Writes series in sigma notation', Find partial sums of series', Identify geometric and pseries and determine whetherornot they are convergent', Use technology to find partial sums', Test various series for convergence using the comparison integral ratio and root tests as appropriate', Test power series for properties of convergence', Use Taylor and Maclaurin series to approximate various function values

Name
The student will be able to use conic sections, parametric equations, and polar coordinates to analyze and solve problems

Objective
Rewrite equations of the form Ax Bxy Cy Dx Ey F 0 in the standard form of a circle parabola ellipse or hyperbola as appropriate', Find the center vertices foci asymptotes directrixes latus rectum and eccentricity of a conic as appropriate', Identify and analyze degenerate conics', Convert equations from rectangular to parametric form and vice versa', Apply familiar formulas and techniques to applications in parametric form', Convert equations from rectangular to polar form and vice versa', Graph polar equations

Name
The student will be able to perform elementary operations on vectors two-dimensional and three-dimensional vectors and sketch graphic representations of lines and surfaces in three-space

Objective
Find the directions and magnitude of twodimensional and threedimensional vectors', Sketch graphic representations of twospace and threespace vectors', Make applications of vectors to force and navigation problems', Find results and scalar dot and cross products', Find the equations of a line in 3space', Identify and sketch cylinders and quadric surfaces in three dimensions', Convert from rectangular to cylindrical coordinates and vice versa

Requirements

Simple Requirements

A minimum grade of 'C' in Course MTH125

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MTH125 - Calculus I

MUS110 - Music Appreciation

Overview

Department
General Education

Course Description
This course is designed for non-music majors. A background in music is not necessary for enrollment. Emphasis is placed on the development of competence in listening to music through the study of the sources, mediums, elements of music, musical forms, composers, and periods of music.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Face-to-Face

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Identify and describe the elements of melody, harmony, pitch, rhythm, timbre, texture, form, and dynamics.

Objective
Demonstrate a basic vocabulary of musical terms in relation to pitch durationtimbre and volume and be able to apply them to a listening example', Aurally discriminate sample selections from each historical era and identify theirrepresentative characteristics', Describe the constructive elements of the sonataallegro form and the sonatacycle

Name
Identify the expressive qualities of the elements of music through listening experiences.

Objective
Differentiate aurally between representatives of the different families of instruments', Aurally discriminate sample selections from each historical era and identify their representative characteristics

Name
Describe the general characteristics of musical genres and the relationship to their cultural/historical settings.

Objective
Describe the musical developments of the Middle Ages Renaissance BaroqueClassical Romantic and 20th Century eras with regard to religious cultural artistic and technological developments', Aurally discriminate sample selections from each historical era and identify theirrepresentative characteristics', Demonstrate a basic knowledge of the categories characteristics andrepresentative instruments in each of the families of musical instruments from theMiddle Ages to present day', Describe the relationships between instrumental development and cultural religious historical and technological developments

Name
Demonstrate knowledge of musical artists, composers, and compositions related to the context of the course.

Objective
List major music forms vocal and instrumental and representative composersfrom each historical era', Aurally discriminate sample selections by composers and compositions fromeach historical era

Name
Critically evaluate the role of music in their lives.

Objective
Describe the genres of music they experience in their day to day experiences', Evaluate a musical performance they either attend or analyze from video orsound recording

NDT100 - Penetrant Inspection

Overview

Department
Aviation

Course Description
In this course students will master the competencies associated with Liquid Penetrant testing at Level I and Level II. This course adheres to the standards developed by the American Society for Nondestructive Testing (ASNT). Laboratory work will parallel lecture materials from the classroom.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply all appropriate safety processes and procedures

Objective
Identify safety processes associated with liquid penetrant testing', Apply safety processes associated with liquid penetrant testing

Name
The student will be able to apply National Aerospace Standard (NAS410) to processes and procedures used in liquid penetrant testing

Objective
Identify National Aerospace Standard NAS410', Identify the role of NAS410 in relation to aerospace industry and NDT', Identify terminology associated with NAS410', Identify the NDT methods listed as common in NAS410', List the responsibilities identified by NAS410 associated with various NDT certification levels', List the qualifications identified by NAS410 associated with various NDT certification levels', Identify the training hours identified by NAS410 associated with various NDT methods and certification levels', Identify the experience hours identified by NAS410 associated with various NDT methods and certification levels', List the vision requirements identified by NAS410', List the examination requirements identified by NAS410 associated with various NDT certification levels', Identify how NAS410 affects liquid penetrant method of NDT', Apply NAS410 standards to liquid penetrant NDT processes and procedures

Name
The student will be able to compare and contrast various types of liquid penetrant testing

Objective
Discuss history of liquid penetrant inspection as an NDT method', Discuss the purpose of liquid penetrant testing', Identify the basic principles of liquid penetrant testing', List the types of liquid penetrant testing', Compare and contrast the types of liquid penetrant testing', Identify the methods of personnel qualifications in relation to liquid penetrant testing', Discuss unique aspects of applying liquid penetrant testing methods to the aviation industry

Name
The student will be able to demonstrate liquid penetrant processing techniques using aviation based projects and scenarios

Objective
Identify the process to prepare parts for liquid penetrant testing', Identify lighting requirements for liquid penetrant testing', Identify application process of penetrants to parts', Identify removal process', Identify the developer application and drying process', Demonstrate effective procedures for application of liquid penetrant', Identify process for inspection and evaluation of part subjected to liquid penetrant', Demonstrate effective inspection and evaluation process using liquid penetrant', Identify post cleaning processes', Apply post cleaning processes

Name
The student will be able to demonstrate various penetrant testing methods using aviation based projects and scenarios

Objective
Identify standards methods for penetrant testing including ASTM and ASME ASTME E 1208 1209 and 210', Identify the characteristics for each standard', Demonstrate each method

Name
The student will be able to utilize equipment and materials associated with liquid penetrant testing

Objective
Identify equipment (testing units) associated with liquid penetrant', Identify light required for testing equipment', Identify light meters for testing equipment', Identified materials utilized in liquid penetrant testing', Utilize equipment and materials associated with liquid penetrant testing

Name
The student will be able to select appropriate test for aviation based projects and scenarios

Objective
Identify the limitations of each method', Identify the advantages of each method', Compare and contrast the various methods in order to select method appropriate for situation

Name
The student will be able to demonstrate the ability to perform liquid penetrant testing with multiple variables in aviation based scenario

Objective
Identify discontinuities inherent in various materials', Identify the reasons for indications', Identify the appearance of indications', Identify amount of time the indications will take to appear', Identify the persistence of the indications', Identify the effects of temperature and lighting white to UV on the indications', Identify the effects of metal smearing operations on the indications', Demonstrate indications from time persistence temperature lighting metal smearing', Identify the preferred sequence of penetrant inspection', Identify the methods for preparing parts for penetrant inspection', Demonstrate methods for preparing parts for penetrant inspection', Identify the factors which affect indications including type of penetrant used prior processing and techniques used', Identify indications from cracks including those occurring during solidification processing and service', Demonstrate indications from cracks', Identify indications resulting from porosity', Demonstrate indications resulting from porosity', Identify indications resulting from material forms including forgings castings plates welds extrusions', Demonstrate indications resulting from various material forms', Identify true indicators', List false indicators', List relevant indications', List non relevant indications', Identify methods for process control including controlling variables in the process and testing and maintenance of materials

NDT101 - Magnetic Particle Testing

Overview

Department
Aviation

Course Description
In this course students will master the competencies associated with the Magnetic Particle Testing method at Level I and Level II. This course adheres to the standards developed by the American Society for Nondestructive Testing (ASNT). Laboratory work will parallel lecture materials from the classroom.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
40

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
40

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to describe the principles of magnets and magnetic fields

Objective
Describe the theory of magnetic fields', Identify the Earths magnetic field', Identify magnetic fields around magnetized materials', Describe the theory of magnetism', Identify magnetic poles', Describe the Law of Magnetism and its relationship to NDT', Identify materials influenced by magnetic fields', Define the terms Ferromagnetic and Paramagnetic and their relationship to NDT', Identify the magnetic characteristics of nonferrous materials', Identify the terminology associated with magnetic particle testing', Describe the principles of magnets and magnetic fields

Name
The student will be able to describe the characteristics of magnetic fields

Objective
Identify a bar magnet', Identify a ring magnet', Describe the characteristics of magnetic fields

Name
The student will be able to describe the effect of discontinuities of materials

Objective
Identify surface cracks', Identify scratches', Identify subsurface defects', Describe the effect of discontinuities of materials

Name
The student will be able to explain how magnetization by means of electric current effects a circular field

Objective
Identify a circular field', Identify field around a straight conductor', Define a righthand rule', Identify field in parts through which current flows including long solid cylindrical regular parts irregularly shaped parts tubular parts and parts containing machine holes slots etc', Describe methods of inducing current flow in parts including contact plates and prods', Identify discontinuities commonly discovered by circular fields', Define a longitudinal field', Identify field produced by current flow in a coil', Identify field direction in currentcarrying coil', Identify field strength in currentcarrying coil', Identify discontinuities commonly discovered by longitudinal fields', Describe the advantages of longitudinal magnetization', Define the disadvantages of longitudinal magnetization', Explain how magnetization by means of electric current effects a circular field

Name
The student will be able to select the proper method of magnetization

Objective
Identify alloy shape and condition of part', Identify the type of magnetizing current', Identify the direction of a magnetic field', Describe the sequence of operations', Identify the value of flux density', Select the proper method magnetization using aviation based industry scenarios

Name
The student will be able to define inspection materials

Objective
Identify wet particles', Identify dry particles', Define inspection materials

Name
The student will be able to define the principles of demagnetization

Objective
Identify residual magnetism', Define reasons for requiring demagnetization', Identify longitudinal and circular residual fields', Identify basic principles of demagnetization', Describe retentivity and coercive force', Define the methods of demagnetization', Define the principles of demagnetization

Name
The student will be able to select magnetic particle testing equipment appropriately using aviation based industry scenarios

Objective
Identify equipment selection considerations', Define the type of magnetizing current', Identify the location and nature of the test', Identify test materials used', Identify the purpose of the test', Identify the area inspected', Identify manual inspection equipment', Identify medium and heavyduty equipment', Identify stationary equipment', Identify mechanized inspection equipment', Identify semiautomatic inspection equipment', Identify singlepurpose semiautomatic equipment', Identify multipurpose semiautomatic equipment', Identify full automatic equipment', Select magnetic particle testing equipment appropriate for aviation based industry scenarios

Name
The student will be able to identify types of discontinuities detected by magnetic particle testing

Objective
Identify inclusions', Identify blowholes', Identify porosity', Identify flakes', Identify cracks', Identify pipes', Identify laminations', Identify laps', Identify forging bursts', Identify voids', Identify types of discontinuities detected by magnetic particle testing

Name
The student will be able to describe Magnetic Particle Test Indications and Interpretations

Objective
Identify indications of nonmetallic inclusions', Identify indications of surface seams', Identify indications of cracks', Identify indications of laminations', Identify indications of laps', Identify indications of bursts and flakes', Identify indications of porosity', Identify nonrelevant indications', Describe Magnetic Particle Test Indications and Interpretations

Name
The student will be able to describe the principles for magnetic particle testing

Objective
Describe the theory for magnetic particle testing', Identify flux patterns', Identify frequency and voltage factors', Identify current calculations', Identify surface flux strength', Identify subsurface effects', Identify magnets and magnetism', Define distance factors versus strength of flux', Identify internal and external flux patterns', Identify phenomenon action at the discontinuity', Identify heat effects on magnetism', Identify material hardness versus magnetic retention', Describe the principles for magnetic particle testing

Name
The student will be able to describe flux fields

Objective
Identify direct current', Describe depth of penetration factors', Identify the source of current', Identify direct pulsating current', Describe its similarity to direct current', Describe advantages', Identify typical fields', Identify alternating current', Describe cyclic effects', Describe surface strength characteristics', Describe safety precautions', Describe voltage and current factors', Identify source of current

Name
The student will be able to describe the effects of discontinuities on materials

Objective
Identify design factors including mechanical properties and part use', Describe relationship to loadcarrying ability', Describe the effects of discontinuities on materials

Name
The student will be able to describe magnetization by means of electric current

Objective
Identify circular techniques', Complete current calculations', Identify depthfactor considerations', Identify precautions B safety and overheating', Describe contact prods and yokes including the requirements for prods and yokes and the currentcarrying capabilities', Identify discontinuities commonly detected', Identify longitudinal techniques', Identify the principles of induced flux fields', Identify geometry of part to be inspected', Identify shapes and sizes of coils', Describe the use of coils and cables including their strength of field current directional flow versus flux field and shapes sizes and current capacities', Complete longitudinal current calculations including formulas types of current required', Identify current demand', Identify discontinuities commonly detected', Describe magnetization by means of electric current

Name
The student will be able to select the proper method of magnetization using aviation based industry scenarios

Objective
Identify the alloy shape and condition of part', Identify the type of magnetizing current', Identify the direction of magnetic field', Identify the sequence of operations', Describe the value of flux density', Select the proper method of magnetization using aviation based industry scenarios

Name
The student will be able to describe demagnetization procedures

Objective
Identify the need for demagnetization of parts', Identify current frequency and field orientation', Identify heat factors and precautions', Identify the need for collapsing flux fields', Describe demagnetization procedures

Name
The student will be able select the correct equipment

Objective
Identify portable type equipment', Describe the reason for portable equipment', Describe the capabilities of portable equipment', Describe the similarity to stationary equipment', Identify stationary type equipment', Describe the capability of handling large and heavy parts', Describe the flexibility in use', Describe the need for stationary equipment', Describe the use of accessories and attachments', Identify automatic type equipment', Describe the requirements for automation', Describe sequential operations', Describe the control and operational factors', Describe the alarm and rejection mechanisms', Identify liquids and powders', Describe the liquid requirements as a particle vehicle', Describe the safety precautions', Describe the temperature needs', Identify the powder and paste contents', Describe the missing procedures', Describe the need for accurate proportions', Identify black light type', Describe black light and fluorescence', Describe visible light and black light comparisons', Describe the requirements in the testing cycle', Describe techniques in use', Identify lightsensitive instruments', Describe the need for instrumentation', Describe light characteristics', Select the correct equipment

Name
The student will be able to describe the different types of discontinuities

Objective
Identify discontinuities in castings', Identify discontinuities in ingots', Identify discontinuities in wrought sections and parts', Identify discontinuities in welds', Describe the different types of discontinuities

Name
The student will be able to describe evaluation techniques

Objective
Identify the standards', Describe the need for standards and references', Identify what standards can provide including comparison of known with unknown specification and certification requirements and comparison techniquesbenchmarks', Describe specifications and certifications', Identify the elements of defect appraisal evaluation technique including history of part the manufacturing process the possible causes of defect the use of part the acceptance and rejection criteria the use of tolerances and evaluation techniques

Name
The student will be able describe how quality control of equipment and processes is important

Objective
Identify proper magnetic particles and bath liquid', Identify bath concentration including settling test', Describe other bathstrength tests', Describe tests for black light intensity', Describe how quality control of equipment and processes is important

Name
The student will be able to apply all appropriate safety processes and procedures

Objective
Identify safety processes associated with liquid Radiographic Testing Method I', Apply safety processes associated with liquid Radiographic Testing Method I

Name
The student will be able to apply all appropriate NAS410 processes and procedures

Objective
Identify how NAS410 affects Radiographic Testing Method I', Apply NAS410 standards to Radiographic Testing Method I processes and procedures

Requirements

Simple Requirements

A minimum grade of 'C' in Course NDT106

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- NDT106 - Formulations and Calculations

NDT102 - Radiation Safety

Overview

Department
Aviation

Course Description
In this course students will master the competencies associated with Radiation Safety. This course adheres to the standards developed by the American Society for Nondestructive Testing (ASNT), Nuclear Regulatory Commission, and the State of Kansas. Laboratory work will parallel lecture materials from the classroom.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify proper personal monitoring devices

Objective
Identify why personal monitoring badges are required equipment', Identify reading of pocket dosimeters', Identify recording of daily dosimeter readings', Identify Offscale dosimeter - action required', Describe permissible exposure limits

Name
The student will be able to use survey instruments properly in aviation based industry scenarios

Objective
Identify types of radiation instruments', Read and interpret meter indications', Identify calibration frequency', Identify calibration expiration - action', Identify battery check importance', Utilize survey instruments in aviation based industry scenarios

Name
The student will be able to perform leak testing of sealed radioactive sources

Objective
Identify requirements for leak testing', Identify the purpose of leak testing', Perform the leak testing of sealed radioactive sources using aviation based industry scenario

Name
The student will be able to complete radiation survey report

Objective
Identify the requirements for completion', Identify the report format', Complete a radiation survey report using aviation based industry scenarios

Name
The student will be able to utilize radiographic work practices effectively

Objective
Identify the establishment of restricted areas', Identify the posting and surveillance of restricted areas', Identify the use of time distance and shielding to reduce personnel radiation exposure', Identify applicable regulatory requirements for surveys posting and control of radiation and highradiation areas', Utilize radiographic work practices in aviation based industry scenario

Name
The student will be able to utilize exposure devices effectively using aviation based industry scenario

Objective
Identify daily inspection and maintenance', Identify radiation exposure limits for gamma ray exposure devices', Identify labeling', Utilize collimators to reduce personnel exposure', Utilize source changers for gamma ray sources

Name
The student will be able to follow emergency procedures

Objective
Identify emergency procedures for vehicle accidents with radioactive sealed sources', Identify fire involving sealed sources', Identify source out - failure to return to safe shielded conditions', Identify emergency call list', Follow all emergency procedures

Name
The student will be able to identify storage and shipment procedures for exposed devices and sources

Objective
Identify vehicle storage', Identify storage vault - permanent', Identify shipping instructions - sources', Identify receiving instructions - radioactive material

Name
The student will be able to identify state and federal regulations

Objective
Identify Nuclear Regulatory Commission NRC and agreement states authority', Identify license reciprocity', Identify radioactive materials license requirements for industrial radiography', Identify qualification requirements for radiography personnel', Identify regulations for the control of radiation state or NRC as applicable', Identify Department of Transportation regulations for radiographicsource shipment', Identify regulatory requirements for Xray machines state and federal as applicable

Name
The student will be able to describe the basic radiographic material requirements

Objective
Describe the history and discovery of radioactive materials', Describe the definition of industrial radiography', Identify why radiation protection is used', Complete basic math review exponents', Complete basic math review square root

Name
The student will be able to describe the fundamental properties of matter

Objective
Identify elements and atoms', Identify molecules and compounds', Identify atomic particles - properties of protons electrons and neutrons', Identify atomic structure', Identify atomic number and weight', Identify isotope versus radioisotope', Describe the fundamental properties of matter

Name
The student will be able to identify radioactive materials

Objective
Identify production for neutron activation and nuclear fission', Identify stable versus unstable radioactive atoms', Identify curie - the unit of activity', Identify halflife of radioactive materials', Identify plotting of radioactive decay', Identify specific activity - curiesgram

Name
The student will be able to identify types of radiation

Objective
Identify particulate radiation - properties alpha beta neutron', Identify electromagnetic radiation - Xray gamma ray', Identify Xray production', Identify gamma ray production', Identify gamma ray energy', Identify energy characteristics of common radioisotope sources', Identify energy characteristics of Xray machines

Name
The student will be able to identify the different interactions of radiation with matter

Objective
Identify ionization', Identify radiation interaction with matter including photoelectric effect Compton scattering and pair production', Identify unit of radiation exposure - the roentgen', Identify emissivity of commonly used radiographic sources', Identify emissivity of Xray exposure devices', Identify attenuation of electromagnetic radiation - shielding', Identify halfvalue layers tenthvalue layers', Identify inverse square law

Name
The student will be to describe the biological effects of radiation

Objective
Identify natural background radiation', Identify unit of radiation dose - rem', Identify difference between radiation and contamination', Identify allowable personnel exposure limits and the banking concept', Identify theory of allowable dose', Identify radiation damage - repair concept', Identify symptoms of radiation injury', Identify acute radiation exposure and somatic injury', Identify personnel monitoring for tracking exposure', Identify organ radio sensitivity', Describe the biological effects of radiation

Name
The student will be able to demonstrate how to detect radiation exposure in aviation based industry scenario

Objective
Identify pocket dosimeter', Identify the difference between dose and dose rate', Identify survey instruments including GigerMller tube ionization chambers and scintillation chambers counters', Identify film badge - radiation detector', Identify TLDs thermo luminescent dosimeters', Identify calibration', Demonstrate how to detect radiation exposure in aviation based industry scenario

Name
The student will be able to demonstrate how to use exposure devices and identify radiation sources in aviation based industry scenario

Objective
Identify radioisotope sources', Identify sealedsource design and fabrication', Identify gamma ray sources', Identify beta and bremsstrahlung sources', Identify neutron sources', Identify radioisotope exposure device characteristics', Identify electronic radiation sources - 500 keV and less low energy', Identify generator - high voltage rectifiers', Identify Xray tube design and fabrication', Identify Xray control circuits', Identify accelerating potential', Identify target material and configuration', Identify heat dissipation', Identify duty cycle', Identify beam filtration', Identify electronic radiation sources - medium and high energy', Identify resonance transformer', Identify Van de Graaff accelerator', Identify linac', Identify roentgen output', Identify equipment design and fabrication', Identify beam filtration', Identify fluoroscopic radiation sources', Identify direct viewing screens', Identify image amplification', Identify special Xray tube considerations and duty cycle', Identify screen unsharpness', Identify screen conversion efficiency', Demonstrate how to use exposure devices using aviation based industry scenario', Demonstrate how to identify radiation sources using exposure devices

Name
The student will be able to describe special radiographic sources and techniques

Objective
Identify flash radiography', Identify stereo radiography', Identify inmotion radiography', Identify autoradiography', Describe special radiographic sources and techniques

Name
The student will be able to utilize radiographic techniques correctly in aviation based industry scenario

Objective
Identify process of radiography', Identify types of electromagnetic radiation sources', Identify electromagnetic spectrum', Identify penetrating ability or quality of Xrays and gamma rays', Identify spectrum of Xray tube source', Identify spectrum of gamma radioisotope source', Identify Xray tube - change of mA or kVp effect on quality and intensity', Utilize radiographic techniques correctly

Name
The student will be able to define the basic principles of radiography

Objective
Identify geometric exposure principles', Identify shadow formation and distortion', Identify shadow enlargement calculation', Identify shadow sharpness', Identify geometric unsharpness', Identify finding discontinuity depth', Identify radiographic screens', Identify lead intensifying screens', Identify fluorescent intensifying screens', Identify intensifying factors', Identify importance of screentofilm contact', Identify importance of screen cleanliness and care', Identify techniques for cleaning screens', Identify radiographic cassettes', Identify composition of industrial radiographic film', Identify the heel effect with Xray tubes', Define the basic principles of radiography

Name
The student will be able to identify radiographs and interpret the data

Objective
Identify formation of the latent image on film', Identify inherent unsharpness', Identify arithmetic of radiographic exposure including mill amperage - distancetime relationship reciprocity law photographic density Xray exposure charts - material thickness kV and exposure gamma ray exposure chart inverse square law considerations and calculation of exposure time for gamma ray and Xray sources', Identify characteristic Hurter and Driffield HD curve', Identify film speed and class descriptions', Identify selection of film for particular purpose', Interpret the data from Radiograph

Name
The student will be able to define radiographic image quality

Objective
Identify radiographic sensitivity', Identify radiographic contrast', Identify film contrast', Identify subject contrast', Identify definition', Identify film graininess and screen mottle effects', Identify pentameters or image quality indicators', Define radiographic image quality

Name
The student will be able to demonstrate how to load and handle film correctly

Objective
Identify safe light and darkroom practices', Identify loading bench and cleanliness', Identify opening of film boxes and packets', Identify loading of film and sealing cassettes', Identify handling techniques for green film', Identify elements of manual film processing', Demonstrate how to load and handle film correctly

Name
The student will be able to demonstrate exposure techniques for radiography effectively

Objective
Identify single wall radiography', Identify double wall radiography including viewing two walls simultaneously offset double wall exposure single wall viewing and elliptical techniques', Identify panoramic radiography', Identify use of multiple film loading', Identify specimen configuration', Demonstrate exposure techniques for radiography effectively using aviation based industry scenario

Name
The student will be able to demonstrate fluoroscopic techniques

Objective
Identify dark adaptation and eye sensitivity', Identify special scattered radiation techniques', Identify personnel protection', Identify sensitivity', Identify limitations', Identify direct screen viewing', Identify indirect and remote screen viewing', Demonstrate fluoroscopic techniques using aviation based industry scenario

Name
The student will be able to apply all appropriate safety processes and procedures

Objective
Identify safety processes associated with liquid Radiographic Testing Method I', Apply safety processed associated with liquid Radiographic Testing Method I'

Name
The student will be able to apply all appropriate NAS410 processes and procedures

Objective
Identify how NAS410 affects Radiographic Testing Method I', Apply NAS410 standards to Radiographic Testing Method I processes and procedures

Requirements

Simple Requirements

A minimum grade of 'C' in Course NDT106

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- NDT106 - Formulations and Calculations

NDT103 - Radiographic Testing Level II

Overview

Department
Aviation

Course Description
In this course students will master the competencies associated with Radiographic Testing at Level II. This course adheres to the standards developed by the American Society for Nondestructive Testing (ASNT). Laboratory work will parallel lecture materials from the classroom.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate basic radiographic principles

Objective
Identify interaction of radiation with matter', Identify exposure calculations', Identify geometric exposure principles', Identify radiographicimage quality parameters', Demonstrate basic radiographic principles using aviation based industry scenarios

Name
The student will be able to demonstrate darkroom facilities, and techniques, and processing

Objective
Identify facilities and equipment', Identify automatic film processor versus manual processing', Identify safe lights', Identify viewer lights', Identify loading bench', Identify miscellaneous equipment', Identify film loading', Identify general rules for handling unprocessed film', Identify types of film packaging', Identify cassette loading techniques for sheet and roll', Identify protection or radiographic film in storage', Identify processing of film - manual', Identify developer and replenishment', Identify stop bath', Identify fixer and replenishment', Identify washing', Identify prevention of water spots', Identify drying', Identify automatic film processing', Identify film filing and storage', Identify retentionlife measurements', Identify longterm storage', Identify filing and separation techniques', Identify unsatisfactory radiographs - causes and cures', Identify high film density', Identify insufficient film density', Identify high contrast', Identify low contrast', Identify poor definition', Identify fog', Identify light leaks', Identify artifacts', Identify film density', Identify stepwedge comparison film', Identify densitometers', Demonstrate darkroom facilities and techniques and processing

Name
The student will be able to describe indications, discontinuities and defects

Objective
Identify indications', Identify discontinuities including inherent processing and service', Identify defects', Describe indications discontinuities and defects

Name
The student will be able to describe manufacturing processes and associated discontinuities

Objective
Identify casting processes and associated discontinuities', Identify ingots blooms and billets', Identify sand casting', Identify centrifugal casting', Identify investment casting', Identify wrought processes and associated discontinuities', Identify forgings', Identify rolled products', Identify extruded products', Identify welding processes and associated discontinuities', Identify submerged arc welding SAW', Identify shielded metal arc welding SMAW', Identify gas metal arc welding GMAW', Identify flux corded arc welding FCAW', Identify gas tungsten arc welding GTAW', Identify resistance welding', Identify special welding processes - electron beam electoslag electro gas etc', Describe manufacturing processes and associated discontinuities

Name
The student will be able to demonstrate radiological safety principles using aviation based industry scenarios

Objective
Identify controlling personnel exposure', Identify time distance shielding concepts', Identify ALARA as low as reasonably achievable concept', Identify radiationdetection equipment', Identify exposuredevice operating characteristics', Demonstrate radiological safety principles using aviation based industry scenarios

Name
The student will be able to demonstrate radiographic viewing techniques with aviation based industry scenarios

Objective
Identify filmilluminator requirements', Identify background lighting', Identify multiplecomposite viewing', Identify penetrameter placement', Identify personnel dark adaptation and visual acuity', Identify film identification', Identify location markers', Identify filmdensity measurement', Identify film artifacts', Demonstrate radiographic viewing techniques using aviation based industry scenarios

Name
The student will be able to utilize application techniques effectively in aviation based industry scenarios

Objective
Identify multiplefilm techniques', Identify thickness variation parameters', Identify film speed', Identify film latitude', Identify enlargement and projection', Identify geometrical relationships', Identify geometrical unsharpness including penetrameter sensitivity sourcetofilm distance and focalspot size', Identify triangulation methods for discontinuity location', Identify localized magnification', Identify film handling techniques', Utilize application techniques effectively

Name
The student will be able to evaluate castings effectively in aviation based industry scenarios

Objective
Identify casting method review', Identify casting discontinuities', Identify origin and typical orientation of discontinuities', Identify radiographic appearance', Identify casting codesstandards - applicable acceptance criteria', Identity reference radiographs', Evaluate castings effectively using aviation based industry scenarios

Name
The student will be able to evaluate weldments effectively in aviation based industry scenarios

Objective
Identify welding method review', Identify welding discontinuities', Identify origin and typical orientation of discontinuities', Identify radiographic appearance', Identify welding codesstandards - applicable acceptance criteria', Identity reference radiographs', Evaluate weldments effectively using aviation based industry scenarios

Name
The student will be able to describe standards, codes and procedures for radiography

Objective
Identify ASTM E94E142', Identify acceptable radiographic techniques and setups', Identify applicable employer procedures', Identify procedure for radiograph parameter verification', Identify radiographic reports', Describe standards codes and procedures for radiography

Name
The student will be able to apply all appropriate safety processes and procedures

Objective
Identify safety processes associated with liquid Radiographic Testing Method II', Apply safety processed associated with liquid Radiographic Testing Method II

Name
The student will be able to apply all appropriate NAS410 processes and procedures

Objective
Identify how NAS410 affects Radiographic Testing Method II', Apply NAS410 standards to Radiographic Testing Method II processes and procedures

Requirements

Simple Requirements

A minimum grade of 'C' in course NDT102

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- NDT102 - Radiation Safety

A minimum grade of 'C' in course NDT106

Type
Prerequisite

Earn a minimum grad (UG) of C in the following:
- NDT106 - Formulations and Calculations

A minimum grade of 'C' in course NDT107

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- NDT107 - Radiographic Testing Level I

NDT106 - Formulations and Calculations

Overview

Department
Aviation

Course Description
Upon completion of this course, students will acquire a thorough comprehension of the formulas and calculations utilized in the realm of Magnetic Particle Inspections, Ultrasonic Inspections, Eddy Current Inspections and Radiography. Furthermore, they will be equipped with the skills necessary to effectively apply these formulas and calculations in practical situations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will gain a comprehensive understanding and be able to apply the formulas and calculations utilized in the field of Magnetic Particle Inspections.

Name
The student will gain a comprehensive understanding and be able to apply the formulas and calculations utilized in the field of Ultrasonic Inspections.

Name
The student will gain a comprehensive understanding and be able to apply the formulas and calculations utilized in the field of Eddy Current Inspections. The student will gain a comprehensive understanding and be able to apply the formulas and calculations utilized in the field of Radiography

NDT107 - Radiographic Testing Level I

Overview

Department
Aviation

Course Description
In this course students will master the competencies associated with Radiographic Testing at Level I. This course adheres to the standards developed by the American Society for Nondestructive Testing (ASNT). Laboratory work will parallel lecture materials from the classroom.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
40

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
40

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate basic radiographic principles

Objective
Identify basic properties of ionizing radiation', Identify unts and definitions', Identify radiation sources', Identify radiographic equipment', Identify radiation images filters and intensifying screens', Identify defect discernibility and image quality

Name
The student will be able to demonstrate a basic understanding of Digital/ Computed Radiography

Objective
Identify the digitization of radiographs process', Identify types of computer radiography', Identify types of digital radiography', Identify image quality of digital radiography - MTF and DOE', Compare radiographic film to CR and DR methods', Identify the selection process for CR and DR', Identify applications for CR an DR', Demonstrate the ability to select a CR or DR method for a given application

Name
The student will be able to load, edit, and adjust system preferences in the CR software

Objective
Identify System Preferences window', Identify and adjust advanced preferences', Identify default value', Identify low disk warning', Identify source exposure settings', Identify log file', Identify scanner type', Identify image queue directory', Identify window skinning', Identify language', Identify automation', Identify component information', Identify component ID', Identify component name', Identify calendar', Identify technique information', Select exposure and setup details', Identify scan interface', Select file preference', Select scanner type', Insert image plate', Demonstrate adding a new user', Input new user password', Select the properties appropriate to the new user

Name
The student will be able to identify and manipulate the software database

Objective
Identify studies', Open database', Select scan interface', Identify inspection mode', Identify scanner type', Identify study ID', Identify image management', Identify image queue', Identify component information', Identify image comments and serial numbers', Identify auto send option', Identify auto delete option', Identify query components', Identify Component ID or Name

Name
The student will be able to describe DICONDE compliance issues

Objective
Identify DICOM and DCONDE concept', Identify history of DICOMDICONDE', Identify DICONDE benefits', Identify DICONDE interoperability', Identify DICONDE work flow', Describe DICONDE compliant plateforms

Name
The student will be able to describe and manipulate the data selection process of a typical CR/DR system

Objective
Identify pictorial index', Identify worklist', Change wordlist views', Identify local views', Identify query studies', Identify viewing studies', Identify sort by column', Identify adding columns', Identify insert columns', Identify edit columns', Identify level', Identify modifying columns', Identify column properties', Identify edit column properties', Identify filters', Identify folders', Describe the data selection process

Name
The student will be able to identify CR/DR software tools and demonstrate the abilty to use software tools IAW instructions

Objective
Identify main tool bar', Identify wordlist pulldown menu', Identify local studies', Identify CDDVD', Identify unverified studies', Identify local components', Identify the today folder', Identify the unread folder', Identify the icons on the main tool bar', Identify the Info icon', Identify the new query icon', Identify the send icon', Identify the write studies icon', Identify the volume history icon', Identify the back icon', Identify the save date window', Identify the study status icon', Identify the view previous item icon', Identify the view next image icon', Identify the reset all images icon', Identify the flip horz icon', Identify the flip vert icon', Identify the rotate 90 left icon', Identify the rotate 90 right icon', Identify the zoom icon', Identify the zoom image to original size icon', Identify the invert current window level icon', Identify the windowlevel by ROI icon', Identify the create marker annotation icon', Identify the edit annotation text icon', Identify the calibrate icon', Identify the create distance annotation icon', Identify the create angle annotation icon', Identify the create text annotation icon', Identify the edit annotation text window', Identify the probe annotation icon', Identify the hide image annotation icon', Identify the set annotation to basicfull icon', Identify the show caliper icon', Identify the showhide pictorial index icon', Identify the showhide report icon', Identify the showhide data selector icon', Identify tooltabs', Demonstrate the ability to use software tools

Name
The student will be able to identify and demonstrate the use of CR/DR software viewports

Objective
Identify windowing/leveling (contrast and brightness), Identify Image enhancement', Identify Image presets', Identify filters', Identify advance filters', Identify annotating images', Identify measurements', Identify identification stamps', Identify masks', Identify comparator', Identify line profiles', Identify calibrating using line profiles', Identify Histograms', Identify image math', Identify image presets', Identify importing images', Identify exporting image reports', Identify layout creating', Identify assign hang criteria', Identify assign area properties', Identify hanging protocols', Identify general viewing modes', Identify fine tuning of hanging protocols', Identify automated hanging protocol', Identify default hanging protocols', Demonstrate modifying sorting and removing default hanging protocols', Demonstrate proper use of software viewports

Name
The student will be able to identify and create presentation states

Objective
Identify presentation states', Create a presentation state', Modify a presentation state', View a presentation state

Name
The student will be able to identify and create a structured report

Objective
Identify a structured report', Create a structured report', View a structured report

Name
The student will be able to identify and demonstrate the proper use of wall thickness measurement tool

Objective
Identify reference object calibration', Identify pipe data set calibration', Identify profiler window', Identify calibration methods', Identify simple max', Identify backprojection', Identify exporting measurement', Identify estimated depth measurement', Identify actual depth measurement', Identify reference wall thickness', Identify defect depth measurement tool', Identify area measurement tool', Identify the multifilm inspection tool', Demonstrate the proper use of the wall thickness measurement tool

Name
The student will be able to identify and demonstrate archiving functions of DR/CR software

Objective
Identify CD/DVD creation process', Identify mark study for archive', Identify write mark study for archive', Identify unmark study from archive', Identify archive index tool', Identity open archive study', Identify add volume', Identify lending out studies', Identify volumes tab', Identify volume returned', Identify lost volume', Identify querying for volumes or studies', Identify display for volumes of studies', Demonstrate archiving and retrieving studies and volumes

Name
The student will be able to expose image plates and process the plate and image using CR/DR equipment and software

Objective
Safely expose image plate to ionizing radiation', Install image plate cassette in CR system', Upload image', Erase image and retrieve image plate and cassette', Process image IAW given procedure', Report image finding', Archive image and report

Name
The student will be able to describe standards, codes and procedures for radiography

Objective
Identify ASTM E94, E142, E1032-06, E1254-08, E1416-04, E1734-04, E1742-08a, E1815-08', Identify acceptable radiographic techniques and setups', Identify applicable employer procedures', Identify procedure for radiograph parameter verification', Identify radiographic reports', Describe standards codes and procedures for radiography

Name
The student will be able to apply all appropriate safety processes and procedures

Objective
Identify safety processes associated with Computed Radiographic Imaging', Apply safety processed associated with Computed Radiographic Imaging

Requirements

Simple Requirements

A minimum grade of 'C' in Course NDT102

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- NDT102 - Radiation Safety

A minimum grade of 'C' in Course NDT106

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- NDT106 - Formulations and Calculations

NDT110 - Eddy Current Level I

Overview

Department
Aviation

Course Description
In this course students will master the competencies associated with electromagnetic (Eddy Current) testing at Level I. This course adheres to the standards developed by the American Society for Nondestructive Testing (ASNT). Laboratory work will parallel lecture materials from the classroom.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
40

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
40

Course Learning Outcomes

Learning Outcomes

Name
The student will be apply all appropriate safety processes and procedures

Objective
Identify safety processes associated with eddy current testing', Apply safety processes associated with eddy current testing

Name
The student will be apply all appropriate NAS410 processes and procedures

Objective
Identify how NAS410 affects eddy current method of NDT', Apply NAS410 standards to eddy current NDT processes and procedures

Name
The student will be able to discuss historical background associated with Eddy current testing

Objective
Define Eddy current testing', Describe history of eddy current testing', List the basic elements of eddy current testing', Discuss unique aspects of applying eddy current testing methods to the aviation industry

Name
The student will be able to discuss electromagnetic theory

Objective
Identify the generation of eddy currents by means of alternating current field', Discuss the effects of fields created by eddy currents impedance changes', Discuss the effects of changes of impedance on instrumentation', Identify travel in circular direction', Identify strongest on surface of test materials', Identify zero value at center of solid conductor placed in alternating magnetic field', Identify strength time relationship and orientation as functions of test system parameters an detect part characteristics', Identify properties of compressible fluids', Identify the small magnitude of current flow', Identify relationship of frequency and plane with current in coil', Identify effective permeability variations when induced in magnetic materials', Identify the effect of discontinuity orientation', Identify power losses', Discuss the impact of all the properties of eddy current as list above', Identify the terminology and units of flux leakage', Identify B - H curve', Identify magnetic properties', Identify magnetic field', Identify Hysteresis loop', Identify Magnetic permeability and the factors which effect it', Discuss the principles of magnetization as listed above in relation to flux leakage theory', Identify the various laws associated with magnetization b electromagnetism theory including Oersteds law and Faradys law', Discuss electromagnetic in relation to Magnetization B electromagnetism Theory and flux leakage theory', Identify residual', Identify active', Identify tangential leakage', Identify normal leakage fields

Name
The student will be able utilize readout mechanisms

Objective
Identify readout mechanisms utilized in eddy current testing including calibrated or uncalibrated meters null meter with dial indicator oscilloscope alarms lights numerical counters marking system sorting gates and tables cutoff saw or shears automation and feedback strip chart recorder', Utilize readout mechanisms utilized in eddy current testing including calibrated or uncalibrated meters null meter with dial indicator oscilloscope alarms lights numerical counters marking system sorting gates and tables cutoff saw or shears automation and feedback strip chart recorder

Name
The student will be able select appropriate eddy current sensing elements for a particular industry scenario

Objective
Identify types of probes including absolute and differential', Identify lift off for each type', Identify theory of operation for each type', Identify the applications for each type', Identify the limitations and advantages for each type', Identify the types of through encircling and annular coils including absolute and differential', Identify fill factor for each type', Identify the applications for each type', Identify the theory of operation for each type', Identify the limitations and advantages for each type', Identify the factors which impact selection of eddy current sensing elements including type of part type of discontinuity to be detected speed of test amount of testing required location of discontinuity', Demonstrate ability to select appropriate eddy current sensing elements based on scenario presented

Name
The student will be able to select appropriate flux leakage sensing elements for a particular industry scenario

Objective
Indentify principles of magnetic measurement techniques', Identify inductive coil sensor', Identify the theory of electromotive form emf induced in coil', Identify the various constructions and designs in coils', Identify the coil parameters which affect the flux leakage response', Identify the sensing coil systems and connections including single and multi elements probes', Identify semiconductor sensing elements including hall effect probes Magnetoresistors Magnetodiodes and Magnetotransistors', Identify the magnetic and electric characteristics of semiconductor sensing elements', Identify magnetic tape system', Identify magnetic powder', Identify magnetic resonance sensors', Demonstrate ability to select appropriate flux leakage sensing elements based on scenario presented

Requirements

Simple Requirements

A minimum grade of 'C' in Course NDT106

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- NDT106 - Formulations and Calculations

NDT111 - Eddy Current Level II

Overview

Department
Aviation

Course Description
In this course students will master the competencies associated with electromagnetic (Eddy Current) testing at Level II. This course adheres to the standards developed by the American Society for Nondestructive Testing (ASNT). Laboratory work will parallel lecture materials from the classroom.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be apply all appropriate safety processes and procedures

Objective
Identify safety processes associated with eddy current testing', Apply safety processes associated with eddy current testing

Name
The student will be apply all appropriate NAS410 processes and procedures

Objective
Identify how NAS410 affects eddy current method of NDT', Apply NAS410 standards to eddy current NDT processes and procedures

Name
The student will be able to discuss basic components of electromagnetic theory

Objective
Identify basic elements of eddy current theory', Identify the basic elements of flux leakage theory', Identify the types of eddy current sensing probes', Identify the types of flux leakage sensing probes

Name
The student will be able to demonstrate factors which affect coil impedance using aviation industry scenarios

Objective
Identify factors which affect coil impedance in test part including conductivity permeability mass and homogeneity', Identify factors which affect coil impedance in test system including frequency coupling field strength test coil and shape', Demonstrate factors which affect coil impedance using industry scenarios

Name
The student will be able demonstrate the factors which affect flux leakage fields using aviation industry scenarios

Objective
Identify factors which affect flux leakage fields including degree of magnetization defect geometry defect location defect orientation velocity factor and distance between adjacent defects', Demonstrate the factors which affect flux leakage fields including degree of magnetization defect geometry defect location defect orientation velocity factor and distance between adjacent defects

Name
The student will be able to demonstrate signal to noise ratio using aviation based industry scenario

Objective
Define signal to noise ratio', Discuss relationship of signal to noise ratio to eddy current testing', Discuss relationship of signal to noise ratio to flux leakage testing', Identify methods of improving signal to noise ratio', Demonstrate signal to noise ratio using aviation based industry scenario

Name
The student will be able to demonstrate ability to select test frequency in an aviation based scenario

Objective
Identify relationship of frequency to type of test', Identify considerations affecting choice of test including signal to noise ratio phase discrimination response speed and skin effect', Demonstrate selection of test frequency

Name
The student will be able to select method of magnetization for flux leakage testing

Objective
Identify magnetization characteristics for various magnetic materials', Identify magnetization by means of electric fields including circular fields longitudinal fields and value of flux density', Identify permanent magnet relationship and theory', Identify permanent magnet materials', Select proper magnetization method using aviation based industry scenario

Name
The student will be able to demonstrate couple using aviation based industry scenarios

Objective
Identify fill factor in through coil inspection', Identify lift off and compensation in probe coil inspection', Indentify flux leakage fill factor in flux leakage testing', Identify lift off in flux leakage testing', Demonstrate couple

Name
The student will be able to demonstrate field strength and selection

Objective
Identify permeability changes', Identify saturation', Discuss the effect of AC field strength on eddy current testing', Discuss the effect of field strength in flux leakage testing', Demonstrate field strength and selection using aviation based industry scenarios

Name
The student will be able to demonstrate field orientation for flux leakage testing

Objective
Identify circular field', Identify longitudinal field', Demonstrate field orientation for flux leakage testing

Name
The student will be able to apply instrument design considerations to industry based scenarios

Objective
Identify amplification', Identify phase detection', Identify differentiation of filtering

Name
The student will be able to apply eddy current testing methods to various aviation industry based scenarios

Objective
Apply flaw detection skills using eddy current methods', Apply flaw detection skills using flux leakage methods', Demonstrate sorting for properties related to conductivity B eddy current', Demonstrate sorting for properties related to permeability using eddy current methods', Demonstrate sorting for properties related to permeability using flux leakage methods', Demonstrate thickness evaluation B eddy current', Demonstrate measurement of magnetic characteristics values for eddy current methods', Demonstrate measurement of magnetic characteristics values for flux leakage methods

Requirements

Simple Requirements

A minimum grade of 'C' in Course NDT110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- NDT110 - Eddy Current Level I

A minimum grade of 'C' in Course NDT106

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- NDT106 - Formulations and Calculations

NDT112 - Ultrasonic Testing Method Level I

Overview

Department
Aviation

Course Description
In this course, students will master the competencies associated with Ultrasonic Testing Methods at Level I. This course adheres to the standards developed by the American Society for Nondestructive Testing (ASNT). Laboratory work will parallel lecture materials from the classroom.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
40

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
40

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate basic concepts associated with ultrasonic testing

Objective
Define of ultrasonic', Discuss the history of ultrasonic testing', List the applications of ultrasonic energy', Perform basic math functions associate with ultrasonic testing', Identify the responsibilities of levels of certification associated with Ultrasonic testing

Name
The student will be able to describe the role of basic principles of acoustics in ultrasonic testing

Objective
Identify nature of sound waves', Identify modes of soundwave generation', Identify velocity frequency and wavelength of sound waves', Identify attenuation of sound waves', Identify acoustic impedance', Identify reflection', Identify refraction and mode conversion', Identify Snells law and critical angles', Identify Fresnel and Fraunhofer effects', Describe the role of basic principles of acoustics in Ultrasonic testing

Name
The student will be able to utilize the equipment associated with Ultrasonic testing

Objective
Identify Electronics associated with basic pulse -echo instrumentation including time base pulsar receiver various monitor displays and control functions', Identify Calibration requirements including basic instrument calibration and calibration blocks types and use', Utilize basic pulseecho instrumentation A scan B scan C scan and computerized systems', Identify digital thickness instrumentation', Utilize digital thickness instrumentation', Identify Piezoelectric effect', Identify types of transducer elements', Identify types of frequency including transducer elements and thickness relationships', Identify near field and far field', Identify Beam spread', Identify construction materials and shapes', Identify types such as straight angle dual etc', Identify beamintensity characteristics', Identify sensitivity resolution and damping', Identify mechanical vibration into part', Identify other types of transducers laser UT EMAT etc', Utilize equipment associated with transducer', Identify the purpose and principles of couplants', Identify materials and their efficiency

Name
The student will be able to utilize testing methods associated with ultrasonic testing

Objective
Identify basic testing methods including contact immersion and air coupling

Name
The student will be able to compare and contrast immersion and contact methods of ultrasonic testing

Objective
Identify the elements of straight beam', Demonstrate straight beam testing techniques using aviation based scenarios', Identify elements of angel beam', Demonstrate angle beam testing techniques using aviation based scenarios', Identify the elements of surface wave and plate wave', Demonstrate surface wave and plate wave testing techniques using aviation based scenarios', Identify the elements of pulse echo', Demonstrate pulseecho transmission testing techniques using aviation based scenarios', Identify the elements of multiple transducer testing techniques', Demonstrate multiple transducer testing techniques using aviation based scenarios', Identify the elements of curved surface technique', Demonstrate curved surface testing techniques including flat entry surfaces and cylindrical and tubular shapes using aviation based scenarios', Identify the elements of transducers in water techniques', Demonstrate transducers in water', Identify the elements of water column wheels technique', Demonstrate water column wheels etc', Identify the elements of submerged test part technique', Demonstrate submerged test part', Identify the elements of sound beam path B transducer to part technique', Demonstrate soundbeam path B transducer to part', Identify the elements of focused transducers techniques', Demonstrate focused transducers', Identify the elements of curved surfaces techniques', Demonstrate curved surfaces', Identity the elements of plate waves techniques', Demonstrate plate waves', Demonstrate pulseecho and throughtransmission', Compare and contrast contact and immersion methods

Name
The student will be able to demonstrate concepts associated with calibration of equipment in ultrasonic testing

Objective
Identify the equipment including monitor displays including amplitude sweep recorders alarms automatic and semiautomatic systems electronic distanceamplitude correction transducers', Utilize the equipment', Identify variable effects', Identify transmission accuracy', Identify calibration requirements', Identify calibration reflectors', Demonstrate calibration of equipment', Identify comparison with reference blocks', Identify pulseecho variables', Identify reference for planned tests including straight beam angle beam etc', Identify transmission factors', Identify couplants', Identify materials', Demonstrate inspection skills associated with calibration

Name
The student will be able to demonstrate all concepts associated with Straight Beam Examination to Specific Procedures using aviation related scenarios

Objective
Identify selection of parameters', Identify test standards', Identify evaluation of results', Identify test reports', Demonstrate concepts associated with straight beam examination to specific procedures

Name
The student will be able to demonstrate all concepts associated with Angle Beam Examination to Specific Procedures

Objective
Identify selection of parameters', Identify test standards', Identify evaluation of results', Identify test reports', Demonstrate concepts associated with angle beam examination to specific procedures

Name
The student will be apply all appropriate safety processes and procedures

Objective
Identify safety processes associated with ultrasonic testing', Apply safety processes associated with ultrasonic testing

Requirements

Simple Requirements

A minimum grade of 'C' in Course NDT106

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- NDT106 - Formulations and Calculations

NDT113 - Ultrasonic Testing Method Level II

Overview

Department
Aviation

Course Description
In this course, students will master the competencies associated with Ultrasonic Testing Methods at Level II. This course adheres to the standards developed by the American Society for Nondestructive Testing (ASNT). Laboratory work will parallel lecture materials from the classroom.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the basic concepts of Ultrasonic Testing

Objective
Identify the principles of ultrasonics', Identify utilized in A scan B scan C scan and computerized systems', Identify testing techniques', Identify types of calibration including straight beam angle beam resonance and special applications

Name
The student will be able to demonstrate ultrasonic testing techniques on a variety of base material products using aviation scenarios

Objective
Identify process review', Identify types origin and typical orientation of discontinuities', Identify response of discontinuities to ultrasound', Identify applicable codesstandards', Demonstrate ultrasonic testing techniques to ingots materials', Identify rolling process', Identify types origin and typical orientation of discontinuities', Identify response of discontinuities to ultrasound', Identify applicable codestandards', Demonstrate ultrasonic testing techniques to plate and sheet materials', Identify rolling process', Identify types origin and typical orientation of discontinuities', Identify response of discontinuities to ultrasound', Identify applicable codestandards', Demonstrate ultrasonic testing techniques to bar and rod materials', Identify rolling process', Identify types origin and typical orientation of discontinuities', Identify response of discontinuities to ultrasound', Identify applicable codestandards', Demonstrate ultrasonic testing techniques to pipe and tubular product materials', Identify rolling process', Identify types origin and typical orientation of discontinuities', Identify response of discontinuities to ultrasound', Identify applicable codestandards', Demonstrate ultrasonic testing techniques with forgings product materials', Identify rolling process', Identify types origin and typical orientation of discontinuities', Identify response of discontinuities to ultrasound', Identify applicable codestandards', Demonstrate ultrasonic testing techniques with castings t materials', Identify rolling process', Identify types origin and typical orientation of discontinuities', Identify response of discontinuities to ultrasound', Identify applicable codestandards', Identify other product forms as applicable B rubber glass etc', Demonstrate ultrasonic testing techniques with composite materials

Name
The student will be able to demonstrate ultrasonic testing techniques on weldments using aviation scenarios

Objective
Identify welding processes', Identify weld geometries', Identify welding discontinuities', Identify origin and typical orientation of discontinuities', Identify response of discontinuities to ultrasound', Identify applicable codesstandards', Demonstrate ultrasonic testing techniques with weldments

Name
The student will be able to demonstrate ultrasonic testing techniques on bonded structures using aviation scenarios

Objective
Identify manufacturing processes', Identify types of discontinuities', Identify origin and typical orientation of discontinuities', Identify response of discontinuities to ultrasound', Identify applicable codesstandards', Demonstrate ultrasonic testing techniques with bonded structures

Name
The student will be able to demonstrate discontinuity detection using aviation based scenarios and projects

Objective
Identify the size type and location of discontinuities', Identify techniques used in detection', Demonstrate techniques used in detection', Identify wave characteristics', Identify material and velocity', Demonstrate all aspects of sensitivity to reflections', Identify standard reference comparisons', Identify history of part', Identify probability of type of discontinuity', Identify degrees of operator discrimination', Identify effects of ultrasonic frequency', Identify damping effects', Demonstrate all aspects of resolution', Identify various monitor displays and meter indications', Identify transducer movement versus display', Identify twodimensional testing techniques', Identify signal patterns', Determine discontinuity size using appropriate equipment and techniques', Identify various monitor displays', Identify amplitude and linear time', Demonstrate amplitude and linear time', Identify search technique', Demonstrate search technique', Demonstrate location of discontinuity using appropriate equipment and techniques

Requirements

Simple Requirements

A mimimum grade of 'C' in Course NDT106

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- NDT106 - Formulations and Calculations

A minimum grade of 'C' in Course NDT112

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- NDT112 - Ultrasonic Testing Method Level I

NDT114 - Visual Inspection

Overview

Department
Aviation

Course Description
In this course, students will master the competencies associated with Visual Inspection. This course adheres to the standards developed by the American Society for Nondestructive Testing (ASNT). Laboratory work will parallel lecture materials from the classroom.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss basic concepts of visual inspection method

Objective
Define visual testing', Identify the history of visual testing', Identify the overview of visual testing applications', Define standard terms and their meanings in the aviation industry

Name
The student will be able to identify the fundamental elements which play a role visual inspection

Objective
Identify vision', Identify lighting', Identify material attributes', Identify environmental factors', Identify visual perception', Identify direct and indirect methods

Name
The student will be able identify the equipment commonly used in visual inspections

Objective
Identify mirrors', Identify magnifiers', Identify borescopes and fiberscopes', Identify closed circuit television', Identify remote visual inspection systems', Identify light sources and special lighting', Identify gages welding go nogo etc templates scales micrometers calipers special tools etc', Identify automated systems', Identify computerenhanced systems

Name
The student will be able to identify elements of visual inspection on a variety of materials

Objective
Identify elements of visual inspection on mineral based material', Identify elements of visual inspection on metallic materials including welds', Identify elements of visual inspection on organic based materials', Identify elements of visual inspection on other materials commonly found in aviation industry including composites

Name
The student will be able to identify the selection process for visual testing to specific procedures

Objective
Identify inspection objectives and checkpoints', Identify sampling plans', Identify inspection patterns', Identify documented procedures', Identify test standardscalibration', Identify classification of indications per acceptance criteria', Identify reports and documentation

Name
The student will be able to identify common vision examination methods associated with the aviation industry

Objective
Identify the eye acuity required for visual inspection in aviation industry', Identify vision limitations allowed for visual inspection in aviation industry', Identify disorders allowed for visual inspection in aviation industry', Identify common vision examination methods associated with aviation industry

Name
The student will be able to discuss the lighting requirements for visual testing

Objective
Identify fundamentals of light required for visual testing', Identify lighting measurements required for visual testing', Identify recommended lighting levels required for visual testing', Identify lighting techniques for inspection', Demonstrate lighting techniques

Name
The student will be able to discuss the material attributes requirements for visual testing

Objective
Identify cleanliness', Identify color', Identify condition', Identify shape', Identify size', Identify temperature', Identify texture', Identify type

Name
The student will be able to discuss the environmental and physiological factors which play a role in visual testing

Objective
Identify atmosphere', Identify cleanliness', Identify comfort', Identify distance', Identify elevation', Identify fatigue', Identify health', Identify humidity', Identify mental attitude', Identify position', Identify safety', Identify temperature

Name
The student will be able to role of visual perception in visual testing

Objective
Identify what your eyes see', Identify what your mind sees', Identify what others perceive', Identify what the designer engineer etc wants you to see', Identify the role perception plays in the NDT visual testing', Compare and contrast the various perception seen by you your mind designers engineers

Name
The student will be able to operate the equipment associated with visual testing in the aviation industry

Objective
Identify automated systems', Identify borescopes', Identify closed circuit television', Identify computer based systems', Identify fiberscopes', Identify gages micrometers calipers templates scales etc', Identify imaging systems', Identify light sources and special lighting', Identify magnifiers', Identify mirrors', Identify special optical systems', Identify standard lighting', Identify remote visual inspection systems', Demonstrate the use of all the equipment in aviation based scenarios

Name
The student will be able to demonstrate visual inspection techniques on a variety of materials from an aviation perspective

Objective
Demonstrate a visual inspection on mineral based material', Demonstrate a visual inspection on metallic materials including welds', Demonstrate a visual inspection on organic based materials', Demonstrate a visual inspection on other materials and including composites

Name
The student will be able to evaluate results of visual test on subjective and objective basis

Objective
Identify subjective basis qualitative in visual testing', Identify objective basis quantitative in visual testing', Demonstrate both subjective and objective visual testing', Evaluate results per acceptance criteria

Name
The student will be able to document subjective and objective methods

Objective
Identify subjective method', Identify objective method', Identify recording methods

NDT117 - Assembly Overview for NDT

Overview

Department
Aviation

Course Description
This course is designed to provide the NDT student with the basic overview of aircraft assembly including both composite and sheetmetal assembly and inspection techniques.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify processes used during assembly of aircraft

Objective
Identify aviation assembly processes and procedures', Identify assembly tools and equipment', Identify levels of quality control in various aircraft types and areas

Name
The student will be able to identify safety procedures in assembly areas

Objective
Review sheet metal lab safety concepts', Review composite lab safety concepts

Name
The student will be able identify sheet metal assembly skills

Objective
Identify sheet metal materials', Compare and contrast sheet metal with other aviation materials', Identify tolerance in sheet metal', Inspect sheet metal partsassemblies for conformity to engineering drawings specs and tolerance

Name
The student will be able to utilize industry specific tools and materials

Objective
Identify measurement tools', Utilize measurement tools', Effectively read measurement tools to the 10000th place', Apply measurement tool readings to fabrication of aircraft part', Identify fasteners used in aircraft', Identify rivet specifications', Select correct rivet based on engineering drawings', Identify most common materials used in aircraft manufacturing such as sheet metal', Identify elements of drill used in aircraft assembly', Identify elements of rivet gun used in aircraft assembly', Identify special fasteners used in aircraft assembly

Name
The student will be able to demonstrate drilling techniques

Objective
Identify the three parts to drill bit shank body and heel', Identify drill bit diameter', Determine drill bit diameter', Identify drill bit material', Utilize conversion chart', Determine drill bit length', Demonstrate chucking the bit', Demonstrate connecting air hose to drill motor', Demonstrate a drill start', Demonstrate drilling a perpendicular hole', Identify the term deburring', Demonstrate deburring techniques', Identify when rivet must be drilled out

Name
The student will be able to demonstrate riveting techniques

Objective
Identify rivets', Identify Rivet sets', Identify Retainer Spring', Utilize rivet gun', Identify term counter sinkflush rivets', Identify function of counter sinkflush rivet', Identify standards for counter sinkflush rivet', Identify fastener code symbol for counter sinkflush rivet on engineering drawing', Identify equipment used in counter sinkflush rivet', Install counter sunk rivet', Demonstrate driving the counter sunk rivet

Name
The student will be able to utilize special fasteners

Objective
Identify hi - lok fastener', Identify the function of hi - lok fastener', Identify the parts of hi - lok fastener', Identify cherrymax fastener', Identify the function of cherrymax fastener', Identify the parts of cherrymax fastener', Demonstrate cherrymax installation

Name
The student will be able to effectively inspect composite assemblies

Objective
Identify Composite materials', Define composites and advanced composites', Compare and contrast composites with other aviation materials', Identify tolerance in composite materials', Identify composite processes and procedures including layup bagging and debagging

Name
The student will be able to visually assess damage to assemblies

Objective
Identify damage assessment techniques', Identify visual techniques for assessment of damagedefects', Utilize appropriate procedures to document the damage

NDT123 - Advanced Ultrasonic Testing Methods

Overview

Department
Aviation

Course Description
This course will provide students with basic knowledge and skills to utilize specific ultrasonic testing techniques to include C-Scan, Phased Array, Bond Testing and Time of flight Diffraction in the manufacturing, aerospace, transportation, energy, and refinery environment. Students will learn to inspect and evaluate various materials including metallic welded components and composites. Students will understand the basic elements of each technique and will demonstrate this understanding through written and practical laboratory examinations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
60

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the basic concepts of time-of-flight diffraction testing

Objective
List the competencies for each outcome

Name
The student will be able to discuss the basic concepts of time-of-flight diffraction testing.

Name
The student will be able to discuss the basic concepts of shear wave ultrasonic testing.

Name
The student will be able to discuss basic concepts of composites bond testing.

Name
The student will be able to demonstrate ultrasonic testing techniques on a variety of base material products using aviation scenarios.

Name
The student will be able to demonstrate ultrasonic testing techniques on materials using aviation scenarios.

Requirements

Simple Requirements

A minimum grade of 'C' in Course NDT113

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- NDT113 - Ultrasonic Testing Method Level II

A minimum grade of 'C' in Course NDT106

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- NDT106 - Formulations and Calculations

OPM100 - Lean Sigma

Overview

Department
Professional Studies

Course Description
This course will teach students the basics of both Lean and Six Sigma and how these problem solving methodologies apply to manufacturing and service organizations. Students completing this course will be better prepared for real business world issues, and have the ability to apply these concepts and tools at a basic level.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Hybrid

Effective Start Term
Spring 2014

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to successfully understand what Lean Six Sigma is and where it came from

Objective
Preface', What is Lean Six Sigma

Name
The student will be able to understand lean concepts and tools

Objective
Lean demystified

Name
The student will be able to successfully use Excel to analyze data and prepare graphs

Objective
Excel power tools for Lean Six Sigma

Name
The student will be able to successfully use Six Sigma concepts and tools to solve basic problems and reduce defects

Objective
Reducing defects with Six Sigma

Name
The student will be able to successfully employ Six Sigma tools to reduce variation

Objective
Transactional Six Sigma', Reducing variation with Six Sigma

Name
The student will be able to successfully improve processes and keep a focus on customers

Objective
Sustaining improvement', Laserfocused process innovation

Name
The student will be able to successfully keep LSS alive and understand the basics of an MSA

Objective
Making Lean Six Sigma successful', Measurement system analysis

Name
The student will be able to successfully use design tools and understand basic concepts of advanced statistical tools

Objective
Design for Lean Six Sigma', Statistical tools for Lean Sigma

OPM105 - Operations Management for Organizational Success

Overview

Department
Professional Studies

Course Description
Operations Management introduces and applies the components of the continuous improvement philosophy and process to the operations of organizations. The study of dynamic management involvement and the use of continuous evaluation tools are reviewed and applied. These include applied management techniques and statistical measures of business processes.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the basic elements of operations management

Objective
Understand why Operations Management is a critical component of the successful management of a business', Understand and discuss the elements of the Resource Profit Model', Explain the two business outputs - Products and Services', Why Operations Management has such a familiarity with all aspects of the enterprise', Understand and describe the concepts of value and profitability', Understand and describe the effects Operations Management has on profitability', Explain the importance of customer relationships', Define the concept of a Supply Chain', Describe the role and importance of Supply Chain Strategy', Distinguish between capabilities and processes

Name
The student will be able to discuss the concept of quality and quality management in relation to operations management

Objective
Construct a process flow', Describe the strengths and weaknesses of processoriented productoriented and cellular layouts', Describe the Quality Function Deployment QFD process', Describe the relationship between cost and value', Describe why costs are important to Operations', Define the elements of product cost', State the contributions Shewhart Deming Juran and Crosby made to Quality Management', Describe why customer loyalty is important for profitability', Explain how the PDCA cycle is used to obtain continuous improvement', Describe how SixSigma is used to enhance quality

Name
The student will be able describe the elements of SCM in relation to operations management

Objective
Explain the function of the general purpose quality analysis tools', Explain how process control charts can help prevent defects from occurring', Describe how recovery applies to quality failure', Explain the effect time has on each profitability measure', Explain the common time reduction strategies', Describe the impact of feedback delay on quality', Explain the motivating forces behind the adoption of supply chain management', Explain the seven critical decision areas of SCM', Explain the Bullwhip Effect and its possible causes', Explain the current trends affecting SCM

Name
The student will be able to discuss the elements of resource planning

Objective
Describe the benefits of effective resource planning', Describe how lead times determine the planning horizon', Describe the different types of forecasting methods', Explain why businesses carry inventory', Describe the costs associated with inventory', Describe the contribution made by safety stock', Explain ABC analysis', Describe the concept of Logistics Networks', Explain the concept of postponement and how it can be used in supply chains

Name
The student will be able to discuss the impact of lean concepts on operation systems

Objective
Describe the overriding objective of lean systems', Describe the enterprise wide lean techniques and explain how each reduces inventory waste', Describe the competitive benefits of lean systems', Define capacity and distinguish it from capability', Describe the role individual resources and constraints play in determining system capacity', Describe how demand that varies from design capacity influences profitability', Define a constraint', Explain the five step focusing process of constraint management', Explain how systems can be protected from disruptions by using time buffers

Name
The student will be able to discuss additional common elements of operations management and their role.

Objective
Describe the impact facility decisions have on profitability and value', Identify common decision criteria for business location decisions', Use multifactor rating as a decision making tool', Describe how the workforce contributes to profitability', Describe why teams have become more important', Explain how expectations for employees are increasing

OPM110 - Introduction to Supply Chain Management

Overview

Department
Professional Studies

Course Description
Supply Chain Management introduces the building blocks of Supply Chain Strategy and the relationship with SC corporate strategy. Defines the elements of Supply Chain Management, including the importance of collaboration and partnering in a competitive business environment. Discusses the need for measures to manage the business and how the financial aspects are affected by SCM. Discusses outsourcing and why companies outsource to remain competitive.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the basic elements associated with supply chain management

Objective
Define supply chain management and identify how supply chain collaboration can improve performance', Discuss the extent to which supply chain strategies are being implemented', Define strategic management and discuss how supply chain management supports the development and execution of winning competitive strategy', Identify the four process steps involved in designing and implementing a supply chain strategy', Discuss how information has empowered customers raising the competitive bar for todays companies', Explain how customers define value', Explain why the end customer should be the focal point for the entire supply chain', Identify and describe the challenges created by functional thinking', Discuss the anatomy of a typical process Describe the flows that comprise a process', Describe the company as a series of interactive decisions made across functional boundaries and resource types

Name
The student will be able to discuss the vital processes which make up supply chain management

Objective
List the risks involved in new product process Explain how to mitigate these risks', Describe the marketing process and discuss its role in the new product process', Describe the finance process and discuss its role in the new product process', Discuss EVA profitability and cash flow as key financial metrics for organizations', Describe how purchasing production and logistics decisions work together to create customer value', Identify and describe the steps in the purchasing process', Identify the key decisionmaking elements of the logistics process', Discuss order fulfillment transportation and distribution strategies

Name
The student will be able discuss the elements of strategic cost management

Objective
Discuss the emergence of SCM as a strategic response to a changing competitive environment', Discuss how managers can use scanning and planning processes to define the rules of competition', Describe the forces driving change in todays market and their effect on decision making', Discuss the concept of SC design and its importance', Explain process mapping and describe mappings role in SC design', Describe several popular approaches to SC design', Explain why strategic cost management is important to company and SC success', Apply the tree elements of strategic cost management to an analysis within your organization', Describe the various types of price and cost analysis strategies applied today', Develop and explain a total cost of ownership analysis

Name
The student will be able to conduct strategic cost analysis based on scenario provided by instructor

Objective
Define outsourcing and discuss reasons why companies outsource', Describe the three phases to developing and execution an outsourcing strategy', Conduct a makeorbuy analysis to support an outsourcing decision', Identify and discuss the sources of SC complexity', Define SC rationalization', Define role shifting and explain how role shifting improves competitiveness

Name
The student will be able to benchmark performance measures common in industry

Objective
Identify the right type of relationship to build with SC members', Discuss the benefits of improved relations with both buyer and supplier perspectives', Discuss the role of power and trust in establishing effective SC relationships', Discuss how technology enables an informationsharing capability to support SC collaboration', Discuss the impact of the internet and ecommerce on supply chain management', Describe the role of measurement in shaping a companys culture and achieving results', Discuss the strengths and weaknesses of traditional measurement practices', Benchmark performance measures and leadingedge SC practices

Name
The student will be able to discuss role of empowerment and culture on supply chain management

Objective
Describe the characteristics of an SC manager', Explain how to cultivate a culture of empowerment', Explain the importance of investing in employees capabilities trough training', Explain why innovation is needed Discuss the perils of complacency and the characteristics of learning', Describe the features of a culture of innovation', Define collaborative SC innovation identify and discuss the role

OPM115 - Introduction to Project Management

Overview

Department
Professional Studies

Course Description
This course focuses on a holistic approach to project management. The content deals with planning, scheduling, organizing, and controlling projects—for example, product development, construction, information systems, new businesses, and special events. The course includes major topics of Strategy, Priorities, Organization, Project Tools, and Leadership. Primary class emphasis is on the project management process and tools. Project management is becoming more important in today’s world. Mastery of key tools and concepts could give you a significant competitive advantage in the marketplace.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Hybrid

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the basic elements associated with project management

Objective
Define the elements and conditions required that make up a project', Identify and discuss the four stages of a project life cycle', Identify the reasons why Project Management is important', Identify the four activities of the strategic management process', Discuss why a effective project management portfolio management system is required', Be able to prepare a project proposal', Discuss why project management structures are important', Describe and define organizational culture', Identify the implications of organizational culture in organizing projects

Name
The student will be able to construct a project network

Objective
Define the elements of a project scope checklist', Identify work breakdown structure', Construct a responsibility matrix', Develop a Communication plan', Identify elements influencing the quality of estimates', Differentiate between topdown vs bottomup estimating', Identify methods for estimating project times and cost', Identify different types of cost', Construct a project network', Define slack or float

Name
The student will be able discuss the common elements which impact project completion.

Objective
Understand the risk management process', Understand risk assessment', Discuss and apply contingency planning', Identify types of resource constraints', Apply resource allocation methods', Discuss the three most common problems encountered when managing multiproject resource schedules', Discuss the rationale for reducing project duration', Identify options for accelerating project completion', Discuss if cost not time is the issue for the project

Name
The student will be able to discuss the role employee and employee relations have in project management

Objective
Identify the differences between managing and leading a project', Identify the benefits of managing project stakeholders', Discuss the importance of social network building', Discuss the relationship of ethics and project management', Identify the qualities of an effective project manager', Discuss the fivestage team development model', Discuss managing conflict within the project', Discuss outsourcing project work', Identify bestpractices in outsourcing project work

Name
The student will be able to discuss the unique issues found in projects with international elements

Objective
Identify elements for international projects', Identify crosscultural considerations', Understand training for international projects', Identify project oversight elements', Evaluate career issues and paths

Name
The student will be able to discuss the role of audit in project management

Objective
Define the structure of a project monitoring information system', Discuss the ways to monitor time performance', Identify other control issues', Discuss the factors affecting audit depth and detail', Identify the conditions for audit closure', Identify the elements required for team evaluations

ORI001 - Student Orientation

Overview

Department
Orientation

Academic Level (Course Level)
Non-Credit

Effective Start Term
Fall 2016

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
0

Number Of Repeats:
2

ORI003 - Shocker Pathway Transition Information

Overview

Department
Orientation

Course Description
Transition checklist for Shocker Pathway students who are transitioning from WSU Tech to WSU. To be taken during the student's last semester at WSU Tech.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Fall 2018

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
0

ORI006 - Prospective Students

Overview

Department
Orientation

Academic Level (Course Level)
Non-Credit

Effective Start Term
Summer 2025

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
0

ORI008 - Foundations of College Success

Overview

Department
Orientation

Course Description
Designed to help students develop foundational skills for a successful academic career. The course covers Blackboard navigation, goal setting, time management, study techniques, and financial literacy skills. Students who test into a Pacer English or Math level are required to enroll in this class. The course does not count toward AS, AA, AGS, or AAS degrees and will not transfer for credit to other institutions.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Fall 2018

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
0

ORI015 - Practical Nurse Information Session

Overview

Department
Orientation

Course Description
To provide program admission information and expectations to prospective Practical Nurse students.

Academic Level (Course Level)
Non-Credit

Instructional Methods
Traditional

Effective Start Term
Fall 2015

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
2

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
2

ORI017 - Registered Nurse Information Session

Overview

Department
Orientation

Course Description
To provide program admission information and expectations to prospective Registered Nurse students.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Spring 2022

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
2

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
2

ORI019 - LPN to RN Information Session

Overview

Department
Orientation

Course Description
To provide program admission information and expectations to prospective LPN to Registered Nurse bridge students.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Spring 2023

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
2

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
2

ORI023 - MNT Info Session

Overview

Department
Orientation

Course Description
This information session provides prospective students with an overview of the Mental Health Technician (MNT) program at WSU Tech. Topics include program structure, admission requirements, clinical expectations, career opportunities, certification/licensure pathways, background check requirements, physical and immunization requirements, time commitment, and professional standards. Students will have the opportunity to ask questions regarding program progression, retention policies, and employment outlook in behavioral health settings.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
2

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
2

ORI030 - Surgical Technology Information Session

Overview

Department
Orientation

Course Description
To provide program admission information and expectations to prospective Surgical Technology students.

Academic Level (Course Level)
Non-Credit

Instructional Methods
Traditional

Effective Start Term
Fall 2019

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
4

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
4

ORI035 - Veterinary Technology Information Session

Overview

Department
Orientation

Course Description
To provide program admission information and expectations to prospective Veterinary Nursing students.

Academic Level (Course Level)
Non-Credit

Instructional Methods
Traditional

Effective Start Term
Fall 2019

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
4

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
4

ORI045 - Culinary Orientation

Overview

Department
Orientation

Course Description
Designed to familiarize incoming Culinary Arts students with program policies and procedures in order to make students more successful on the first day of class. Topics include uniform issuing, dress code, kitchen readiness, grading structure, mise en place and a tour of the NICHE facility.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Spring 2023

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
2

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
2

ORI050 - High School Orientation

Overview

Department
Orientation

Course Description
Course is designed to help students receive course specific content in yearlong dual credit courses.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Fall 2021

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
0

ORI051 - High School Block Alternative Fuels Orientation

Overview

Department
Orientation

Course Description
Course is designed to provide academic expectations and program information to high school Alternative Fuels Block students.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Fall 2022

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
0

ORI052 - High School Block Automotive Technology Orientation

Overview

Department
Orientation

Course Description
Course is designed to provide academic expectations and program information to high school Automotive Technology Block students.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Fall 2022

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
0

ORI053 - High School Block Aviation Maintenance Orientation

Overview

Department
Orientation

Course Description
Course is designed to provide academic expectations and program information to high school AMT Block students.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Fall 2022

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
0

ORI054 - High School Block Business Orientation

Overview

Department
Orientation

Course Description
Course is designed to provide academic expectations and program information to high school Business Block students.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Fall 2022

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
0

ORI055 - High School Block CATIA Orientation

Overview

Department
Orientation

Course Description
Course is designed to provide academic expectations and program information to high school CATIA Block students.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Fall 2022

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
0

ORI056 - High School Block Climate and Energy Control Orientation

Overview

Department
Orientation

Course Description
Course is designed to provide academic expectations and program information to high school Climate and Energy Control Block students.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Fall 2022

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
0

ORI057 - High School Block Construction Science Orientation

Overview

Department
Orientation

Course Description
Course is designed to provide academic expectations and program information to high school Construction Science Block students.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Fall 2022

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
0

ORI058 - High School Block Criminal Justice Orientation

Overview

Department
Orientation

Course Description
Course is designed to provide academic expectations and program information to high school Criminal Justice Block students.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Fall 2022

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
0

ORI059 - High School Block Healthcare Orientation

Overview

Department
Orientation

Course Description
Course is designed to provide academic expectations and program information to high school Healthcare Block students.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Fall 2022

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
0

ORI060 - High School Block Information Technology Orientation

Overview

Department
Orientation

Course Description
Course is designed to provide academic expectations and program information to high school Information Technology Block students.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Fall 2022

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
0

ORI061 - High School Block Interior Design Orientation

Overview

Department
Orientation

Course Description
Course is designed to provide academic expectations and program information to high school Interior Design Block students.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Fall 2022

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
0

ORI062 - High School Block Machining Orientation

Overview

Department
Orientation

Course Description
Course is designed to provide academic expectations and program information to high school Machining Block students.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Fall 2022

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
0

ORI063 - High School Block Manufacturing Orientation

Overview

Department
Orientation

Course Description
Course is designed to provide academic expectations and program information to high school Manufacturing Block students.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Fall 2022

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
0

ORI064 - High School Block Unmanned Aircraft Systems (Drones) Orientation

Overview

Department
Orientation

Course Description
Course is designed to provide academic expectations and program information to high school Unmanned Aircraft Systems (Drones) Block students.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Fall 2022

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
0

ORI065 - High School Block Welding Orientation

Overview

Department
Orientation

Course Description
Course is designed to provide academic expectations and program information to high school Welding Block students.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Fall 2022

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
0

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
0

ORI100 - On Deck at Tech

Overview

Department
Orientation

Course Description
New Student Orientation will provide students with information related to academic and campus resources as well as student support services that will help them acclimate to the college environment and get the most out of their college experience. This course helps students become familiar with the college's academic expectations, available student supports, and institutional processes prior to the first day of class to achieve success in the first semester and beyond. Students are also able to make connections with their peers and learn the different ways to engage across campus to maximize their college experience.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

PCT100 - EKG for Healthcare Providers

Overview

Department
Health Sciences

Course Description
Focuses on the specialized procedures associated with the cardiovascular system. Students will perform electrocardiograms. Course also serves as an introduction to basic dysrhythmias and the skills necessary to recognize normal from abnormal in an emergency. Specific attention is given to patient significance and possible early intervention for each dysrhythmias. EKG rhythm strips, and exercises are provided for student recognition and practice.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to practice within the role of the EKG Technician

Objective
Describe the career opportunities of an EKG technician and identify different facilities in which EKG technicians work', Identify the necessary skills and personal traits needed for an EKG technician', Describe the process for the EKG technician to become certified and know the importance of continuing education and recertification process in the EKG field', Demonstrate correct communication skills with other members of the healthcare team and patients', Understand the importance of following a facilitys policies procedures and going through their chain of command', Identify legal and ethical issues as they relate to the EKG Technician role', Discuss governing organizations and laws as they pertain to health care facilities

Name
The student will be able to demonstrate basic patient care skills related to the EKG Technician profession

Objective
Explain the importance of monitoring vital signs assessing and reporting pain and level of consciousness', Discuss the role of the EKG technician in infection prevention and control', List guidelines for measuring body temperature and observing skin condition', Define pulse respirations blood pressure and list guidelines for measuring these vital signs', Describe normal vital sign ranges for all patients including pediatrics', Perform the procedure for obtaining pulse oximetry readings respiration and blood pressure and identify normal ranges for each reading', Specify different patient body positions commonly used during EKG testing', Be able to describe the measuring components found on the electrocardiograph paper and identify the measurements of an EKG waveform on the EKG graph paper

Name
The student will be able to correlate cardiac rhythms to the Anatomy and Physiology of the heart

Objective
Discuss key concepts of anatomy and physiology and define anatomical terms', Identify and describe the parts of the cardiovascular system respiratory system nervous system and their functions', Classify the three layers of the heart describe the major vessels that enter and leave the heart including the coronary arteries', Identify and describe the chambers and valves of the heart and the movement of blood throughout the heart', Be able to trace and describe two circulatory paths pulmonary and systemic

Name
The student will be able to identify signs and symptoms for common cardiovascular diseases and disorders

Objective
Understand the differences between coronary artery ischemia myocardial infarction and cardiomyopathy', Classify congestive heart failure heart valve disease blood clots and possible complications and hypertension', identify medications used for different diseases and disorders

Name
The student will demonstrate knowledge on EKG Technology and its applications

Objective
Establish the basic electrical activity of the heart and how EKG machines record it', Discuss the portable EKG machine and the different types of EKGbased tests', Identify the different EKG leads and lead groups', Describe the electrode placement and the use of different leads', Demonstrate proper setup of the EKG machine and patient preparation

Name
The student will be able to perform a resting EKG with minimal electrical and somatic interference when using a 12-lead machine

Objective
Describe general guidelines for patient identification patient preparation and response to emergencies during EKG testing', Demonstrate the proper procedure for recording and reporting a 12lead EKG test', Discuss Holter and other ambulatory monitoring as well as monitoring for telemetry Grasp the importance of accurate recordkeeping and patient confidentiality', Grasp the importance of accurate recordkeeping and patient confidentiality

Name
The student will be able to determine the proper EKG Adaptations and Troubleshooting during an EKG reading

Objective
Discuss artifact and identify situations in which adjustments or adaptations would be required during EKG testing', Demonstrate solutions to different types of EKG artifact adaptations to electrode placement and patient positioning in special situations and for patients', Determine sources of information or problems for EKG machine troubleshooting and maintenance

Name
The Cardiac Conduction System and EKG Tracings

Objective
Explain the difference between the mechanical and electrical activity of the heart', Explain the electrical conduction system of the heart', Identify important intervals and segments on the EKG tracing and list normal measurements', Understand the measurement of time on the EKG tracing using small and large blocks', Preform the six steps used to analyze an EKG tracing', Discuss analyzing heart rhythms P wave PR interval QRS complex on an EKG tracing

Name
The student will be able to identify rhythms associated with the Sino-Atrial node, Atrial heart chamber, Junctional Node, Conduction Blockages, Ventricular heart chambers and recognizing and responding to the critical significance for each rhythm

Objective
Explain how EKG rhythms are named and discuss the importance of recognizing cardiac rhythms', Be able to analyze sinus rhythms atrial rhythms junctional rhythms ventricular rhythms heart block rhythms artificially paced rhythms', Discuss what each different rhythms mean for the patient', Recognize artificially paced rhythms on EKG tracings and discuss any possible complications with pacemakers', Discuss what signs or indications of injury would look like on the EKG tracing

Name
The student will be able to identify and respond appropriately to Emergency Situations

Objective
Recognize emergencies while preforming cardiac testing', Know the proper notification of supervisor and 911 in a medical emergency', Explain and demonstrate both the care of a conscious patient and the care of an unconscious patient experiencing a cardiac emergency', Describe cardiopulmonary resuscitation CPR and defibrillation using an automated external defibrillator AED', Discuss drugs that may be used in a cardiac emergency', illustrate the response to nonmedical emergencies

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

PCT110 - Phlebotomy and Laboratory Procedures

Overview

Department
Health Sciences

Course Description
This course addresses the role and function of the professional in the clinical laboratory setting. Topics include safety, Clinical Laboratory Improvement Act of 1988 (CLIA-88) government regulations and quality assurance in the laboratory. Students learn concepts and perform procedures in the different departments of the laboratory, including specimen collection and performance of CLIA-88 low- and/or moderate-complexity testing. Students demonstrate competencies in a wide variety of techniques used to collect, process, and test specimens.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the healthcare settings and the role of the phlebotomy technician

Objective
Discuss the healthcare system including common healthcare settings and personnel', Discuss the organization and function of clinical laboratories', Explain professionalism and the phlebotomy technicians role', Explain policies and procedures and steps of quality assurance and quality improvement in healthcare organizations', Describe certification recertification and continuing education for the phlebotomy technician', List appropriate ways to deal with stress and time management

Name
The student will be able to display knowledge of laws and ethics and demonstrate legal and ethical behavior

Objective
Define the terms law and ethics and list examples of legal and ethical behavior', Understand HIPAA and discuss ways to protect patients privacy including protected health information PHI', Discuss the Clinical Laboratory Improvement Amendments CLIA and laboratory certification in reference to patient safety and standards', Outline everyday legal considerations in health care including negligence abuse and consent', Explain the American Hospital Associations Patient Care Partnership and deliberate why patient rights are important

Name
The student will be able to demonstrate proper patient Communication and understanding of patient diversity

Objective
Understand communication the importance of both verbal and nonverbal communication identify barriers and different communication styles', Understand common medical terminology and abbreviations', Prepare proper patient care documentation

Name
The student will be able to explain and demonstrate proper use of infection prevention and infection control measures

Objective
Outline infection prevention including types of infections chain of custody and personal protective equipment PPE', Demonstrate proper hand hygiene and recognize when to wash hands', Explain TransmissionBased Precautions and standard precautions when working with patients', State the bloodborne pathogens and describe two major bloodborne diseases', Explain OSHAs Bloodborne Pathogens Standard and the Needlestick Safety and Prevention Act', List guidelines for handling equipment and specimens', State employer and employee responsibilities for infection prevention', List Safety Measures for Care Team Members and Patients', Discuss the importance of laboratory safety list lab safety hazards and identify OSHAs categories of common hazards List regulations related to safety practices in the laboratory and describe the Safety Data Sheet SDS

Name
The student will be able to demonstrate knowledge of each system in the human body with an emphasis on the circulatory system

Objective
Describe body systems', Define key anatomical terms pertaining to the phlebotomy technicians role', List common laboratory tests for each body system', Describe the composition of blood circulatory system and blood vessels', Identify structures and functions of the heart and cardiac conduction system', Explain the qualities of arterial venous and capillary blood', List the ABO blood group system and the Rh factor', Describe homeostasis and coagulation

Name
The student will be able to demonstrate proper specimen collection and handling requirements

Objective
Identify different types of specimens and common tests collected by phlebotomy technicians', Demonstrate and describe venipuncture procedures including Evacuated Tube System ETS Syringe and Butterfly methods of drawing blood', Demonstrate and describe capillary puncture', Describe the importance of avoiding errors during preanalytical and analytical specimen collection', List common blood specimen collection systems and identify equipment used for venipuncture and capillary puncture', Discuss blood specimens additives and describe the color coding of collection tubes', List and Demonstrate the order in which collection tubes must be filled order of draw', Describe importance of timing in blood collection terms STAT ASAP routine and timed draws', List the steps required to properly identify patients and specimens', Demonstrate safe collection of blood specimens using correct PPE', List preparations for maintaining the integrity of specimens during collection and transport', Describe guidelines for performing pointofcare tests', Distinguish common situations for which capillary puncture is required', Identify nonblood specimens collected for testing', Discuss types of urine specimens and how to collect a cleancatch urine specimen', Describe tests performed on stool and instructions for handling a stool specimen', Demonstrate how to obtain a throat culture and discuss other swabbing procedures', Describe guidelines for the collection and handling of other nonblood specimens', Demonstrate and describe mononucleosis testing', Demonstrate and describe cholesterol testing', Demonstrate and describe PTINR testing', Demonstrate and describe blood glucose testing', Demonstrate and describe hemoglobin and microhematocrit testing', Demonstrate and describe erythrocyte sedimentation rate ESR testing', Demonstrate and describe hCG testing pregnancy testing', Demonstrate and describe physical and chemical urinalysis Demonstrate and describe using a urine transfer device for culture and sensitivity testing CS

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

PCT130 - Patient Care Concepts and Technical Skills

Overview

Department
Health Sciences

Course Description
This course focuses on the primary knowledge and skills needed to become a patient care technician. Preparing graduates to work in all facets of healthcare through instruction of core healthcare topics and procedures. This course provides an overview of medical laws, ethics, communication, cultural consideration, working with diverse populations, patient rights, body structure and function, growth and development, medical terminology, and pharmacology. Technical skills teach safety, infection control, patient assessment, vital signs, charting and documentation, patient monitoring and reporting, patient hygiene, fluids and nutrition, elimination and respiration, and care of surgical patients. Plus, advanced skills for PCT's in specimen collection, electrocardiography interpretations, and special laboratory procedures.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Spring 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Students will be able to identify and display proper knowledge of legal and ethical issues affecting healthcare workers and their patients.

Objective
Display the basic concepts of the professional practice of medicine and the scope of practice of a Patient Care Technician', Display and recognize ethical behavior', Interact appropriately and professionally with other care team members patients and their families', Understand patients rights and what the Patient Care Partnership Patient Bill of Rights does for patient advocacy', Define key medically related legal terms such as tort intentional negligence malpractice defamation liable slander invasion of privacy fraud assault battery abandonment misdemeanor and felony', Understand types of civil and criminal actions implicated with patient consent and what can violate the standard of care provided', Display knowledge of advanced directives and other legal documents and their purpose living will do not resuscitate and durable power of attorney', Explain the purpose of the Health Insurance Portability and Accountability Act HIPAA protected health information PHI and punishments for breaking these laws', Understand what circumstances it is legal to release patient information and patient records

Name
Students will be able to demonstrate proper documentation and charting skills while establishing effective patient communication

Objective
Describe all parts of the medical record including electronic health record EHR documentation', Demonstrate an understanding of collecting patient narratives patient history SOAP notes POMR flow charts progress notes graphic sheet and subjectiveobjective information', Show effective communication and phone etiquette with diverse populations', Understand the importance of performing patient education and using the communication feedback loop when explaining medical information to patients

Name
Students will be able to demonstrate knowledge of anatomy and physiology and medical terminology relevant to their job as a Patient Care Technician.

Objective
Discuss overall body structure and function body systems emphasizing cardiac function the hearts conduction system and the circulatory system', Demonstrating knowledge of the urinary system', Identify and break down fundamental word elements used in medical terminology prefixes suffixes and root words', Be able to discuss cardiac and circulatory terminology with ease', Display knowledge of medical terms accompanying vital sign results respiration and temperature terminologies', Specify each type of body position and various examination positions', Demonstrate understanding of anatomical body directions', Articulate common medical abbreviations

Name
Students will be able to demonstrate an understanding of various safety and infection prevention situations and identify their role in emergency situations.

Objective
Display an understanding and correct response to safety situations such as fire electrical radiation shock first aid and external hemorrhage Complying with regulations regarding safety practices', Provide knowledge of how to fill out an incident report what information should be included and in what circumstances the account of events may be needed', Using appropriate practices as outlined in the OSHA Hazard Communication', Identifying policies and procedures for maintaining laboratory safety and biohazard materials', Discussing appropriate practices and uses of Material Safety Data Sheets MSDS or Safety Data Sheets SDS', Discuss the five stages of the infectious disease process the chain of infection and infection control procedures', Understand the importance of proper handwashing and appropriate personal protective equipment PPE for barrier protection', Classify the levels of transmissionbased precautions and understand the difference between OSHA standard precautions versus transmissionbased precautions', Demonstrating accepted practices for infection control isolation techniques and disease prevention', Specify different types of bloodborne pathogens diseases and organisms in healthcare settings', Define and discuss the term nosocomialhealthcareassociated infections Identify common types of nosocomial conditions', Articulate the difference between sanitization disinfection and sterilization', Classify medical asepsis clean technique and surgical asepsis understanding when each should be used', Display proper body mechanics to ensure the safety of all care team members', Demonstrate techniques used to ensure patient safety in outpatient and inpatient care settings

Name
Students will demonstrate proper patient care skills following industry standards and proper techniques.

Objective
Demonstrating knowledge of vital signs', Demonstrate proper reading of a patients height and weight measurements', Recognize the importance of following the patient care plan', Properly perform a pain assessment', Defining the different steps of patient examination', Properly setting up procedures positioning patients and assisting if instructed', Demonstrate knowledge of proper wound care and pressure ulcer care', Demonstrate proper care of surgical patients including rehabilitative and restorative care', Recognize special care considerations for women children older adults patients with mental health concerns patients with chronic conditions and endoflife care', Show familiarity with pharmacology basics Identifying names of medications describing routes of administration and parts of the prescription', Demonstrate knowledge of medications and their effects on patients', Demonstrate skills in introductory pharmacology calculations', Discuss patient personal hygiene protocol including grooming shaving nail and foot care changing clothes and overall patient wellbeing', Discuss and demonstrate proper electrocardiography procedure', Discuss and demonstrate proper phlebotomy procedures capillarydermal punctures and sputum collection', Identify and discuss proper patient care and safety procedures for patients with VADS and SITES', Discuss and demonstrate proper urine specimen collection', Demonstrate proper technique in discontinuing a catheter or IV line', Demonstrate knowledge of injectionsshots and proper needle selection for various types of injections', Demonstrate knowledge of patient preparation for various tests and special laboratory testing procedures', Describe the importance of fluids feedings and nutrition elimination and respiration', Classify different methods of enteral nutrition Discuss the safety and patient consideration for someone with a feeding tube

Requirements

Simple Requirements

A minimum grade of 'C' in Course PCT110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PCT110 - Phlebotomy and Laboratory Procedures

A minimum grade of 'C' in Course PCT100

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PCT100 - EKG for Healthcare Providers

A minimum grade of 'C' in Course GRA101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

A minimum grade of 'C' in Course ALH101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ALH101 - Medical Terminology

Enrolled in Course CPR001

Type
Prerequisite

Enroll in the following Courses:
- CPR001 - CPR For Healthcare Providers

PDV115 - Work Ethics

Overview

Department
Manufacturing

Course Description
This course focuses on applying ethical principles in the manufacturing industry, preparing students to navigate the ethical challenges they will encounter in their professional careers. Emphasizing professionalism, reliability, teamwork, and decision-making, students will explore how these values impact workplace dynamics, productivity, and safety. Through case studies, discussions, and practical exercises, students will develop the skills to navigate ethical dilemmas and positively contribute to a diverse and dynamic manufacturing environment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Spring 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate professionalism in various workplace scenarios, including communication, reliability, attention to detail, and adherence to company policies.

Name
Analyze ethical dilemmas in manufacturing, including conflicts of interest and safety violations, using critical thinking to assess possible solutions. Propose solutions that uphold industry standards and demonstrate integrity.

Name
Demonstrate adaptability and proactive problem-solving when faced with ethical challenges, including managing change and addressing unexpected workplace issues

Name
Collaborate effectively with team members in an inclusive environment, demonstrating ethical behavior in teamwork and decision-making processes.

Name
Reflect on the impact of ethical behavior on workplace culture, productivity, and personal responsibility within a manufacturing context

Name
Apply ethical principles to ensure workplace safety, health, and quality of work by following protocols, preventing common hazards, demonstrating emergency preparedness, while maintaining high production standards.

PED110 - Lifetime Fitness

Overview

Department
General Education

Course Description
Exposes students to facts about and experiences in dealing with motor, physical, physiological, psychological and nutritional aspects of the human being and the responsibility to maintain fitness during a life span.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

PED120 - Introduction to the Athletic Training Profession

Overview

Department
General Education

Course Description
This course covers introductory principles relating to the profession of athletic training. Students will study organizational and professional responsibilities, injury/illness prevention techniques, characteristics of sports injuries, immediate care, treatment/rehabilitation, and various sports injuries.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

PHL110 - Ethics

Overview

Department
General Education

Course Description
A practical approach to recognizing, understanding and solving ethical problems confronting individuals in today's society. Basic concepts of applied ethical theories in moral philosophy and reasoning are examined using critical thinking and responsible decision-making skills.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Recognize the significance of moral philosophy in a broader context

Name
Identify and explain basic ethical theories, terminology and concepts

Name
Identify and develop in writing philosophical analyses and arguments based on philosophical reasoning and provide cogent reasons in support of competing philosophical claims

Name
Recognize the difference between arguments and non-arguments

Name
Identify and explain the components of informal reasoning

Name
Identify and apply the basic concepts of logical discourse

Name
Recognize the basic concepts of propositional logic

PHL115 - Logic

Overview

Department
General Education

Course Description
This course deals with the uses of logical concepts and techniques to evaluate and criticize reasoning. Studies some elementary systems of formal logic. Arguments evaluated are drawn from such diverse fields as law, science, politics, religion, and advertising.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Recognize the difference between arguments and non-arguments

Name
Identify and explain the components of informal reasoning

Name
Identify and apply the basic concepts of logical discourse

Name
Recognize the basic concepts of propositional logic

PHR105 - Negotiations & Relationship Management

Overview

Department
Professional Studies

Course Description
This course is designed to help students understand the principles, strategies and tactics of effective negotiation and relationship management. Students will learn to identify and assess negotiation variables, develop an effective negotiation plan and implement various strategies and tactics to ethically resolve conflicts and interpersonal differences.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to describe the negotiation process and the role ethics plays in it

Objective
1.1. Describe the characteristics of a negotiation situation 1.2. Explain the difference in the terms “bargaining” and “negotiation” 1.3. Discuss the concepts of “value claiming” and “value creation” 1.4. Describe the concept of interdependence as it pertains to negotiations 1.5. Identify the two dilemmas all negotiators face 1.6. List the five strategies for conflict management. 1.7. Discuss the ethical quandaries involved in negotiations 1.8. Define ethics and its importance in negotiations 1.9. Describe how deception is used in negotiations

Name
Distributive Bargaining

Objective
2.1. Describe how the distributive bargaining process works 2.2. Discuss the four important tactical tasks for a negotiator in a distributive bargaining situation 2.3. Understand the positions taken during distributive bargaining 2.4. Identify typical hardball negotiation tactics and those strategies most effective in dealing with them 2.5. Discuss the distributive bargaining skills most applicable to integrative negotiations

Name
Integrative Bargaining

Objective
3.1. Describe how the integrative negotiation process works and the fundamental strategies associated with it. 3.2. Identify the key steps in the integrative negotiations process 3.3. List the factors that facilitate successful integrative negotiations 3.4. Discuss the barriers to effective integrative negotiation

Name
Negotiation Strategy & Planning

Objective
4.1. List the four important aspects important to an understanding of how goals affect negotiations 4.2. Identify the difference between strategy and tactics 4.3. List the stages and phases of negotiations 4.4. Discuss the key steps in the negotiation planning process

Name
Perception, Cognition & Emotion

Objective
5.1. Describe the perceptual process and the four types of perceptual distortions 5.2. List the type of frames involved in negotiations 5.3. Identify the 12 cognitive biases involved in negotiations

Name
Communication & Relationships

Objective
6.1. Describe what is communicated during negotiations 6.2. Identify the different types of communication styles used in negotiations 6.3. Discuss the ways communication can be improved in the negotiation process 6.4. Discuss the key elements associated with relationships in negotiations 6.5. Describe how to repair a relationship that has been damaged

Name
Power in Negotiations

Objective
7.1. Discuss why power is important to negotiators 7.2. Describe the two perspectives on power 7.3. List the five major types of power and the five sources of power 7.4. Discuss how to deal with others who have more power

Name
Special Topics in Negotiations/Best Practices in Negotiations

Objective
8.1. Discuss what makes international negotiations are different 8.2. Discuss the influence of culture on negotiations 8.3. List culturally responsive negotiation strategies 8.4. Describe multiparty negotiations and how to manage them

PHS001 - Physical Science Elective

Overview

Department
General Education

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
The Beginning of Time

Credits

Credit Hours

Credit Hours Min:
1

Credit Hours Max:
5

Credit Hours Operator:
TO

Billing Hours

Billing Hours Min:
1

Billing Hours Max:
5

Billing Hours Operator:
TO

PHS110 - Physical Science

Overview

Department
General Education

Course Description
A non-technical course intended for students who are majoring in fields other than science. The application of scientific knowledge to daily life activities is emphasized by examining the fundamental principles in physics, chemistry, geology, and astronomy utilizing the scientific method.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Explain the scientific method

Objective
Know the steps in the scientific method', Identify the scientific method at work in the development of the current model of our universe and in the development of the model of the atom', Understand the importance of mathematics and measurement in science', Distinguish between fact law theory and hypothesis', Appreciate the importance of honesty integrity and proper procedure in the reporting of scientific findings

Name
Describe the scope of the physical sciences.

Objective
Understand the origin and significance of the law of universal gravitation', Understand and apply the concepts of average and instantaneous speed', Understand and apply the concept of circular motion', Understand and apply the concepts of force and Newtons laws of motion', Understand and apply the Newtons law of gravitation', Identify examples of kinetic energy and potential energy and show how they relate to the law of conservation of energy', Give examples of substances with high and low specific heat capacities and relate behaviors of these substances to their respective specific heat capacities', Give examples of heat transfer through each of the three heat transfer mechanisms conduction convection and radiation', Explain the Greenhouse effect Include an understanding of the importance of the greenhouse effect to our environment and the role of thermal and environmental pollution in the potential development of global warning', Appreciate the problems involved in the generation of electricity by solar power', Apply concepts of heat and energy to weather especially to violent storms such as tornadoes and hurricanes', Identify the fundamental source of electricity', Identify the fundamental source of magnetism', Compare and contrast Newtons Law of Gravitation for masses with Coulombs Law for electric charges', List sources of potential difference voltage', Identify the unit of measurement for electrical quantities potential difference resistance current power electric charge', Appreciate the importance of the development of superconductors', Distinguish between series and parallel circuits Identify types of circuits found in household wiring Explain the need for circuit breakers or fuses', Explain how a magnet can be made and explain how a magnet can be weakened', Appreciate the importance of electromagnetic induction and briefly outline how electricity is produced', Distinguish between and give examples of transverse waves and longitudinal waves', Know the speed of sound at room temperature and the speed of light in a vacuum', Give examples of resonance', Explain the origin of the Doppler effect and give examples of how the Doppler effect is used in our society', Identify characteristic sections of the electromagnetic spectrum and list these sections in order of increasing energy', Describe modern technology that is based on the property of total internal reflection', Identify significant parts of the human eye and explain how light is processed by each part', Explain the significance of the photoelectric effect both in theory and in the design of practical devices', Explain the contribution of each of the following to the development of modern chemistry Democritus Aristotle Boyle Lavoisier Priestly Dalton Avogadro', Understand and apply the concept of conservation of mass', Distinguish between physical propertieschanges and chemical propertieschanges', Identify elements compounds and mixtures', Know characteristics of ionic covalent and metallic bonds', Describe the difference between homogeneous and heterogeneous mixtures and between homogeneous mixtures and suspensions

Name
Interpret scientific data to demonstrate basic problem solving.

Objective
Use appropriate vocabulary and develop skills involved in using math formulas graphs and figures for problem solving and unit conversions

Name
Explain everyday phenomena in terms of basic physical science concepts.

Objective
Understand the fundamental difference between alpha and beta rays and gamma rays', Explain the similarity and difference among isotopes of an element Support with an example', Appreciate the importance of the strong nuclear force', Understand the difference between natural and artificial transmutation', Briefly describe the carbon - 14 dating technique Give an example Explain any problems with this method', Appreciate the risks of radiation exposure from activities in our society and natural substances in our environment', List advantages and disadvantages of future development and use of nuclear fusion to produce electric power', List four natural phenomena that are constantly at work which change the surface of our planet', Draw a crosssection of the earth and label the various layers of the earths interior', Describe the difference between dipslip and strikeslip faults', Outline the theory of Continental Drift Include evidence that supports this theory', Outline the Theory of Plate Tectonics Include evidence that supports this theory', Define ring of fire and explain its origin', Appreciate how tectonic interactions have changed the earths surface', Explain why we see only one side of the moon', Understand the origins of lunar and solar eclipses', List the nine planets of our solar system in order of increasing distance from the sun Include the location of the asteroid belt', Know two or three distinguishing characteristics of each planet', Explain why different constellations appear in the night sky at different times of the year', Compare and contrast the life cycles of small stars and larger stars', Give an estimate of the number of galaxies present in our universe', Define The Big Bang List evidence that supports the Big Bank Theory

Name
Explain and critique sciences as presented in the media.

Objective
Using the concepts from physical science critically review media sources from the general public on science topics and controversies

Name
Perform measurements using physical apparatus

Objective
Physical Science Laboratory is an investigation of the basic concept of physics and chemistry with applications to earth and space science

Name
Analyze the collected data including appropriate treatment of errors and uncertainties

Objective
Carry out suitable calculations with quantitative data recognizing when data and calculations are within a reasonable range using

Name
Generate and communicate conclusions based on the data and analysis for experimental investigations

Objective
Physical Science Laboratory is an investigation of the basic concept of physics and chemistry with applications to earth and space science

PHS115 - Introductory Astronomy

Overview

Department
General Education

Course Description
Introduction to Astronomy topics include fundamental concepts (planetary, stellar, and lunar motion; gravitation; light and telescopes); solar system 1 (Earth, Moon, Mercury, Venus, and Mars); solar system 2 (Jupiter and satellites, Saturn and satellites, outer planets); stars (nature of stars, birth, evolution and death of stars, neutron stars, black holes); universe (galaxies, quasars, blazars, cosmology).

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explain the scientific method.

Objective
Know the steps in the scientific method', Distinguish between fact law theory and hypothesis

Name
The student will be able to interpret astronomical observations, demonstrate critical thinking and basic problem solving

Objective
Relate historic processes utilized to determine characteristics of light', Describe the StefanBoltzman characterization of blackbody radiation and color temperature', Characterize light particle and wave nature by the photoelectric effect and Plancks constant', Understand line spectra and how they are used to evaluate the chemical makeup of stars', Describe the production of photons from the atomic structure of chemical elements', Predict wavelengths of photons from the Bohr model', Understand the doppler effect on light and its use in motion detection', Relate the magnitude scale used to evaluate brightness of objects', Evaluate spectral distributions according to Weins displacement law', Utilize observational data and physical laws to theorize about stellar birth processes', Relate the utilization of the Einstein relation to determine lifetime of main sequence stars', Discuss and evaluate the concept of angular momentum as it relates to stellar motion', Relate observations at various wavelengths of the Galaxy to structural and physical characteristics', Discuss the nuclear magnetic resonance effect in imaging the hidden portions of the Galaxy

Name
The student will be able to explain astronomical phenomena in terms of appropriate scientific models.

Objective
Communicate important ideas from early Egyptian Greek and Ptolemaic astronomy', Describe ancient astronomical concepts', Relate stellar objects to constellations and names of constellations', Locate and follow the motions of stars on the celestial sphere', Relate seasonal changes in the sky to planetary and lunar motions', Develop a relationship between time keeping and astronomical motions', Evaluate early geocentric cosmogony in terms of planetary motion', Relate Copernican Heliocentric cosmogony to planetary motion', Describe conjunctions oppositions and elongation of planets', Relate the dismantling of early cosmogonies based on observations by Tycho Brahe', Utilize Keplers Laws to describe planetary motions that confirmed modern astronomy', Relate telescopic evidence from Galileo to heliocentric cosmogony', Describe the confirmation of Keplers Laws of Planetary motion by Newtons Laws', Evaluate gravitational forces between planetary bodies', Describe the gradual determination of the characteristics of our Galaxy and the location of earth within it', Relate observations at various wavelengths of the Galaxy to structural and physical characteristics', Discuss the nuclear magnetic resonance effect in imaging the hidden portions of the Galaxy', Describe Hubbles discovery of the expanding universe and the implications in cosmology', Evaluate galaxies based on the Hubble classification scheme', Discuss the use of standard candles in distance determination', Utilize the Hubble Law to rationalize the expansion of the universe', Discuss the groupings of the galaxies and the phenomena associated with galactic collisions', Discuss the theories for the creation of galaxies and determine which are supported by Hubble Telescope observations

Name
The student will be able to explain and critique science as presented in the media

Objective
Summarize current findings and discoveries of astronomy', Discriminate between scientific reporting and pseudosciencebased opinion writing', Justify the importance of having basic scientific literacy in modern society

Name
The student will be able to identify, locate and predict characteristics of celestial objects.

Objective
Detail the search and discovery of the asteroids', Relate the effects of Jovian planets on the path and motion of the asteroids', Define and describe asteroidal material that approaches the earth enters the atmosphere and strikes the ground', Describe the physical and chemical information found in asteroid materials and the resulting implications for the early solar system', Describe the physical and chemical characteristics of comets and the physical process involved as they near the sun', Remark on the probable creation of cometary matter', Describe the position rotation topology and features of the eight other planets', Identify the features of the planets and satellites from optical radar radio and spacecraft images', Describe the physical features of the planets and moons such as temperature albedo and atmosphere', Describe the presence of a magnetic field ring systems or other features of interest', Detail the spacecraft and results of visits by spacecraft to the planets and moons', Indicate difficulty of ground based observation for distant planets', Describe other spacecraft and land based observation methods used in the study of planets', Classify planets as terrestrial or Jovian by physical characteristics', Identify the physical and chemical makeup of the planet interior', Understand the spectroscopic determination of planetary chemistry', Evaluate the relative abundance of chemicals in solar system objects', Describe the fundamental theories of the creation and development of the solar system', Recognize the significance of extrasolar objects and modern cosmogony', Describe the topology of the moon in terms of maria major impact craters and topological terms', Relate the observation of the tides to gravitational forces', Describe the physical properties and position of the moon', Understand current and future exploration of the lunar surface', Describe dating of lunar materials and estimates of lunar age and probable creation dynamics', Define the physical characteristics of the sun including the solar atmosphere and observational terminology', Describe sunspots and the cyclic nature of the occurrences', Understand and describe the thermonuclear processes that generate solar energy', Relate the origins of chemicals within the star from nucleosynthesis and the bearing on the creation of planetary matter', Describe the theoretical implications of neutrinos and the detection of neutrinos on earth', Detail the search and discovery of the asteroids', Relate the effects of Jovian planets on the path and motion of the asteroids', Define and describe asteroidal material that approaches the earth enters the atmosphere and strikes the ground', Describe the physical and chemical information found in asteroid materials and the resulting implications for the early solar system', Describe the physical and chemical characteristics of comets and the physical process involved as they near the sun', Remark on the probable creation of cometary matter', Utilize observational data and physical laws to theorize about stellar birth processes', Relate stellar changes in the process of stellar birth', Relate super novea to the birth of stars Describe and determine the luminosity of stellar objects and understand the parallax method of distance measure', Relate the magnitude scale used to evaluate brightness of objects', Evaluate spectral distributions according to Weins displacement law', Describe the characteristics of a blackbody radiator and absorber', Describe the spectral emission lines from atomic electron orbital concepts', Define spectral types and differentiate between absorption and emission spectra', Define spectral types with respect to absorption lines for typical stars', Relate luminosity of stars to class type with the HertzsprungRussell diagram', Discuss the spectroscopic studies of difficult to resolve binary stars', Describe the historical and modern theoretical concepts of neutron stars and pulsars', Discuss and evaluate the concept of angular momentum as it relates to stellar motion', Describe the physical and astronomical properties of pulsars', Relate the evolution of and physical properties of pulsars from binary star systems Discuss the effect of the special theory of relativity on time and motion', Relate time dilation and length contraction to astronomy theory', Discuss the physical description of a black hole', Discuss the probable locations of black holes in the universe', Describe the core burning characteristics of Red Giant stars', Relate the utilization of the Einstein relation to determine lifetime of main sequence stars', Describe the helium burning process in Red Giants including chemical processes', Discuss the characteristics of cepheid mira and RR Lyrae variables', Discuss the two populations of stars metal rich and metal poor from the stellar spectra', Discuss the processes in low mass star destruction resulting in nebulae and white dwarf stars', Discuss the physical and chemical processes in high mass star destruction resulting in supernovae and

Name
The student will be able to effectively utilize the tools of observational astronomy

Objective
Relate the structure and function of refractive and reflective telescopes', Predict which type of telescope is best for an observation', Determine the angular resolution of a telescope', Describe the imaging process of CCD and spectrographic Astronomy', Give rational for radio telescope astronomy and advantages of orbital telescopes over the range of the electromagnetic spectrum', Differentiate between the two major types of optical telescopes', Identify the focal length objective and magnification power of a telescope', Explain different tools such as CCD Cameras Adaptive Optics Space Telescopes and Radio Astronomy are used to study the universe today

Name
The student will be able to generate and communicate conclusions based on data and analysis of observations

Objective
Make and record visual observations', Use computers when appropriate as data acquisition tools Handle and evaluate data in logical productive and meaningful ways', Carry out suitable calculations with quantitative data

PHS120 - General Physics I

Overview

Department
General Education

Course Description
Topics include mechanics — linear motion, rotational motion, force, work, energy, momentum and conservation principles; heat-temperature, ideal gas, eating as a form of energy, first law of thermodynamics, second law of thermodynamics and entropy; and wave motion — simple harmonic motion, elasticity and the wave equation. This class is designed for students who need five hours of physics without calculus.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
105

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to evaluate situations involving Physics I topics by choosing the appropriate conceptual frameworks.

Objective
Rationalize the behavior of physical systems with Newtons first law', Understand the concept of mass and inertia and apply these concepts to correct formulations of physical systems', Rationalize the behavior of physical systems based upon Newtons third law and solve applications and correct formulations with this concept', Rationalize the behavior of and solve correct formulation and applications of mechanical systems with the concepts of frictional forces and the coefficients of static and kinetic friction

Name
The student will be able to recall relevant physical models and to successfully apply these models using techniques of symbolic and numerical analysis in order to generate solutions to problems in Physics I topics.

Objective
Recognize manipulate and convert units of measure', Determine the correct number of significant digits in a solution', Use dimensional analysis to predict a correct formulation for a solution

Name
The student will be able to manipulate, and solve applications in linear motion with constant acceleration both numerically and graphically

Objective
Derive fundamental relationships for displacement velocity and acceleration', Solve applications involving displacement', Determine the average velocity of a particle', Graphically interpret the average velocity of particles', Determine the instantaneous velocity of a particle', Graphically interpret the instantaneous velocity of particles', Find the acceleration of a particle', Analyze particles in one dimensional motion with constant acceleration', Determine the behavior of freely falling bodies

Name
The student will be able to describe and analyze two dimensional motion with vector algebra

Objective
Add subtract multiply and divide vectors in two dimensions', Represent velocity and acceleration of a particle as vector components and resultants', Decompose vector resultants into components', Describe projectile motion as a function of time distance velocity vectors graphs', Derive fundamental equations of two dimensional motion from linear kinematic expressions', Solve application problems involving two dimension motion', Comprehend and correctly formulate functions relating work to mechanical motion to solve applications of physical systems', Comprehend and correctly formulate functions relating kinetic energy to mechanical motion and to solve applications of the mechanical systems', Comprehend and correctly formulate functions relation potential to mechanical motion to solve applications of physical systems', Rationalize the behavior of mechanical systems and energy of the systems by the Law of Conservation of Mechanical Energy', Correctly formulate and solve applications of conservative and nonconservative forces in mechanical systems', Understand correctly formulate and solve applications for harmonic motion with Hooks Law', Rationalize correctly formulate and solve applications by the WorkEnergy theorem', Comprehend correctly formulate and solve applications related to power', Solve applications of mechanical systems where work is done by varying force

Name
The student will be able to think critically by utilizing problem solving techniques to evaluate and analyze context rich, multi-step problems in Physics I topics, selecting relevant information, selecting an approach to solving the problem and carrying out the analysis needed to generate and communicate solution(s).

Objective
Comprehend and correctly formulate functions relating momentum to mechanical motion to solve applications of physical systems in motion', Comprehend and correctly formulate functions relating impulse to a particle and to solve applications of physical systems', Rationalize impulse and momentum of a particle by the law of Conservation of Momentum and solve applications of physical systems', Comprehend and correctly apply the concepts involved in collisions to physical systems', Comprehend and correctly formulate functions relating center of gravity and center of mass to mechanical motion to solve applications of physical systems

Name
The student will acquire knowledge and understanding of gravitation and circular motion.

Objective
Understand and solve applications of angular motion', Utilize the centripetal force concept in applications', Utilize Newtons law of gravitation in applications

Name
The student will acquire knowledge and understanding of rotational dynamics and equilibrium.

Objective
Solve applications involving torque and equilibrium', Determine the center of gravity of objects and systems of objects', Employ concepts of torque angular acceleration and momentum and rotational kinetic energy to applications

Name
The student will acquire knowledge and understanding of solids and fluids.

Objective
Identify the states of matter', Solve applications of density and pressure of liquids and gases', Apply Archimedes principle to buoyancy problems', Solve applications involving surface tension capillarity and viscosity

Name
The student will acquire knowledge and understanding of temperature, heat and state equations.

Objective
Employ the concept of temperature for measurements', Evaluate solids for thermal expansion', Employ the concept of heat and heat transfer mechanisms in solving applications', Employ the concept of heat capacity and later heat in energy transformations', Evaluate perfect gas properties using the Ideal Gas Law

Name
The student will acquire knowledge and understanding of thermodynamics

Name
The student will acquire knowledge and understanding of vibrations and wave motion.

Objective
Solve applications of Hooks Law', Evaluate material for elastic potential energy', Simple harmonic and uniform circular motion solutions', Evaluate the motion of a pendulum', Evaluate applications of frequency amplitude and wavelength

Name
The student will be able to perform measurement using physical apparatus, analyze the collected data including appropriate treatment of errors and uncertainties, generate and communicate conclusions based on the data and analysis for experimental investigations in Physics I topic.

Objective
Develop the ability to carefully record with measurement apparatus and analyze the resulting data with appropriate attention to errors and uncertainties', Identify and develop teamwork skills including group problem solving consensus building and selfsupervision', Identify and develop productive work habits including attention to detail task completion keeping an orderly work area and using appropriate care with laboratory apparatus

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- MTH112 - College Algebra

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- MTH113 - Trigonometry

PHS125 - General Physics II

Overview

Department
General Education

Course Description
A continuation of PHS 120 General Physics I. Topics include electricity and magnetism — electric potential, current electric power, magnetic field and induction; optics — nature of light and wave optics; and modern physics — special relativity, atomic structure, quantum mechanics and radioactivity. This class is taught in the spring of the year.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to evaluate situations involving Physics II topics by choosing the appropriate conceptual frameworks.

Objective
Illustrate and describe the attractive and repulsive electrical forces', Describe insulators and conductors', Solve applications of Coulombs Law', Solve applications with the Principle of Superposition', Analyze the forces between two or more point charges in electric fields', Describe electrical field lines and illustrate by example

Name
The student will be able to recall relevant physical models and to successfully apply these models using techniques of symbolic and numerical analysis in order to generate solutions to problems in Physics II topics.

Objective
Solve the potential of an electrical field', Evaluate the potential difference expression for the change in potential and', velocity of charged particles', Calculate the electrical potential due to point charges', Determine the work in moving point charges in a potential gradient', Solve expressions for capacitance in applications', Determine the charge of capacitor surfaces', Analyze series and parallel capacitive circuits', Determine the energy in capacitive circuits

Name
The student will be able to think critically by utilizing problem solving techniques to evaluate and analyze context rich, multistep problems in Physics II topics, selecting relevant information, selecting an approach to solving the problem and carry out the analysis needed to generate and communicate solution(s).

Name
The student will be able to perform measurements using physical apparatus, analyze the collected data including appropriate treatment of errors and uncertainties, generate and communicate conclusions based on the data and analysis for experimental investigations in Physics II topics.

Objective
Develop the ability to carefully record with measurement apparatus and analyze the resulting data with appropriate attention to errors and uncertainties', Identify and develop teamwork skills including group problem solving consensus building and selfsupervision', Identify and develop productive work habits including attention to detail task completion keeping an orderly work area and using appropriate care with laboratory apparatus

Requirements

Simple Requirements

A minimum grade of 'C' in Course PHS120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PHS120 - General Physics I

PLT104 - Introduction to Aviation

Overview

Department
Aviation

Course Description
This course will expose the student to knowledge areas of emphasis pertaining to FAA regulations, accident reporting, chart usage, navigation, radio communications, weather, collision avoidance, aerodynamics, systems, weight and balance, stall awareness, aeronautical decision making, preflight and ground operations. Successful completion of this course will provide the student with all information necessary to successfully pass the required FAA written exam for Airplane Single Engine Land (ASEL) and be adequately prepared for the oral portion of the required practical test.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate knowledge of FAA regulations and pilot qualifications.

Name
The student will be able to analyze and apply airworthiness requirements.

Name
The student will be able to interpret aviation weather data and make informed decisions.

Name
The student will be able to create and explain VFR cross-country flight plans.

Name
The student will be able to differentiate classes of airspace and apply operational requirements.

Name
The student will be able to calculate and apply aircraft performance and limitations.

Name
The student will be able to operate aircraft systems and respond to system abnormalities.

Name
The student will be able to apply human factors and aeromedical knowledge to flight operations.

Requirements

Simple Requirements

Enrolled in Course PLT112

Type
Prerequisite

Enroll in the following Courses:
- PLT112 - Private Pilot Flight Lab

PLT112 - Private Pilot Flight Lab

Overview

Department
Aviation

Course Description
This course will enable the student to develop the knowledge and skills required to safely exercise the privileges and responsibilities of a Private Pilot and pass the Private Pilot Practical Flight Exam. Course content includes instruction in aerodynamics, aircraft systems, FAA regulations, U.S. Airspace System, weight and balance, aircraft performance, aviation weather, flight publications, radio navigation, cross-country planning and navigation, basic flight physiology, and flight safety.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will demonstrate the aeronautical knowledge, flying skills, and decision making abilities required to meet the Airman Certification Standards set forth by the FAA to attain the Private Pilot Certification. (required-reflects global outcome)

Objective
Demonstrate the ability to perform all ground operations safely', Demonstrate the ability to fly all required takeoff and landing procedures', Demonstrate the ability to perform all ground reference maneuvers', Demonstrate the ability to perform all emergency procedures required', Demonstrate the skills required to plan and execute cross country flight', Demonstrate the ability to utilize radio communication effectively during flight

Name
The student will complete with a passing score all aircraft simulations associated with Private Pilot Certification.

Name
Preflight Briefings and Post-Flight Debriefings: Students will actively participate in preflight briefings and post-flight debriefings. These sessions will provide opportunities to discuss flight planning, weather conditions, aircraft systems, and other relevant aspects. Feedback from instructors will aid students in identifying strengths, weaknesses, and areas for improvement.

Name
WSU Tech Policies and Procedures: Introduction to WSU Tech Policies and Procedures including the Standard Operating Manual and Student Policies Manual.

Name
Private Pilot Written Knowledge Exam: Students will successfully complete a written private pilot knowledge exam using a sampling of questions from the FAA knowledge exam. This exam will assess their understanding of aviation regulations, meteorology, aerodynamics, navigation, and other pertinent topics. Achieving a passing score demonstrates their readiness for the written portion of the private pilot transfer process.

Name
G1000 Ground Instruction and Familiarization: Students will successfully complete comprehensive ground instruction on the G1000 avionics system. This instruction will cover topics such as system overview, flight planning, navigation, communication, instrument interpretation, and system troubleshooting. Students will gain proficiency in using the G1000 as an essential tool for flight operations.

Name
Evaluation to ACS Standards: Students will be assessed according to the FAA ACS standards for ASEL. This evaluation will cover essential knowledge areas, practical flight skills, and aeronautical decision-making.

Name
G1000 Familiarization Flight: Students will successfully complete a G1000 familiarization flight. This flight will introduce them to the operation and features of the G1000 avionics suite, which is commonly used in modern aircraft. They will gain proficiency in utilizing the G1000's navigation, communication, and flight management capabilities.

Name
Transfer Evaluation Flight: Students will participate in and successfully complete a transfer evaluation flight. This flight will assess their ability to apply the knowledge and skills required by the new jurisdiction. They will demonstrate competence in areas such as airspace management, navigation, radio communication, emergency procedures, and adherence to regulations.

Requirements

Simple Requirements

Enrolled in Course PLT104

Type
Prerequisite

Enroll in the following Courses:
- PLT104 - Introduction to Aviation

PLT114 - Private Pilot Rating Transfer Lab

Overview

Department
Aviation

Course Description
Private Pilot Rating Transfer Lab is a course designed to facilitate students joining the WSU Tech Professional Pilot program who have previously received a Private Pilot rating. This lab is focused on ensuring that students meet the current standards outlined in the Airman Certification Standards (ACS) for Airplane Single Engine Land (ASEL).

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
6

Contact Hours

Contact Hours Min:
180

Billing Hours

Billing Hours Min:
6

Lab Hours

Lab Hours Min:
180

Course Learning Outcomes

Learning Outcomes

Name
Preflight Briefings and Post-Flight Debriefings: Students will actively participate in preflight briefings and post-flight debriefings. These sessions will provide opportunities to discuss flight planning, weather conditions, aircraft systems, and other relevant aspects. Feedback from instructors will aid students in identifying strengths, weaknesses, and areas for improvement.

Name
WSU Tech Policies and Procedures: Introduction to WSU Tech Policies and Procedures including the Standard Operating Manual and Student Policies Manual.

Name
Private Pilot Written Knowledge Exam: Students will successfully complete a written private pilot knowledge exam using a sampling of questions from the FAA knowledge exam. This exam will assess their understanding of aviation regulations, meteorology, aerodynamics, navigation, and other pertinent topics. Achieving a passing score demonstrates their readiness for the written portion of the private pilot transfer process.

Name
G1000 Ground Instruction and Familiarization: Students will successfully complete comprehensive ground instruction on the G1000 avionics system. This instruction will cover topics such as system overview, flight planning, navigation, communication, instrument interpretation, and system troubleshooting. Students will gain proficiency in using the G1000 as an essential tool for flight operations.

Name
Evaluation to ACS Standards: Students will be assessed according to the FAA ACS standards for ASEL. This evaluation will cover essential knowledge areas, practical flight skills, and aeronautical decision-making.

Name
G1000 Familiarization Flight: Students will successfully complete a G1000 familiarization flight. This flight will introduce them to the operation and features of the G1000 avionics suite, which is commonly used in modern aircraft. They will gain proficiency in utilizing the G1000's navigation, communication, and flight management capabilities.

PLT116 - Aviation Weather

Overview

Department
Aviation

Course Description
This course entails the study of weather hazards, meteorological flight planning, aviation weather equipment and human factors in weather flying safety. Elements of the atmosphere with emphasis on those processes that affect the global atmospheric circulation, and meteorology as it applies to the operation of aircraft with emphasis on observation of weather elements and interpretation of flight planning weather information will be emphasized.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explain fundamental concepts of weather systems and weather generation and how the data is disseminated in current real-world applications

Objective
Discuss atmosphere and atmospheric pressure', Discuss Winds and Temperature Aloft', Discuss Icing Types and conditions they will be encountered', Discuss turbulence', Discuss what comprises Instrument Flight Rules Conditions

Name
The student will be able to employ weather data to analyze various predictions in weather modeling systems

Objective
Explain Weather Modeling

Name
The student will be able to perform analysis of severe aviation weather using current online tools to make a go no-go decision.

Objective
Locate Online Weather Resources', Apply weather data to evaluate flight conditions', Analyze weather data that will impact route of flight

PLT120 - Instrument Regulations and Procedures

Overview

Department
Aviation

Course Description
This course will provide the student with a detailed study of the regulations, procedures, publications, and weather considerations necessary for operating IFR in the national airspace system. Terminal and enroute procedures will be studied in detail. Successful completion of this course will provide the student with all information necessary to successfully pass the required FAA written exam and be adequately prepared for the oral portion of the practical test required.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explain the regulatory and qualification requirements for operating under IFR.

Name
The student will be able to interpret and apply aviation weather information for IFR decision-making.

Name
The student will be able to plan, file, and revise IFR cross-country flight plans.

Name
The student will be able to demonstrate knowledge of aircraft systems and avionics related to instrument flight.

Name
The student will be able to interpret ATC clearances, IFR procedures, and IFR navigation.

Requirements

Simple Requirements

A minimum grade of 'C' in Course PLT112

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PLT112 - Private Pilot Flight Lab

Enrolled in Course PLT128

Type
Prerequisite

Enroll in the following Courses:
- PLT128 - Instrument Flight Lab

PLT126 - Aviation Standardization and Career Paths

Overview

Department
Aviation

Course Description
This course will begin with a segment of standardization training for the PLT program including Cessna 172 systems, Operations Manual, and checklist standardization. Additionally, this course will include Professional Pilot program standardization to include the Operations Manual, Student Learning Outcomes, and Pilot Program Operations Manual. The second portion of the course will be an introductory look at Professional Pilot career paths, defining facets of the aviation industry and looking at opportunities for students as they graduate the program.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The students will be introduced to and be able to identify the major systems of the Cessna 172

Objective
Name systems location and purpose of major aircraft systems

Name
The student will be introduced to the checklists for the Cessna 172

Objective
Familiarize with Preflight Normal and Emergency checklists', Memorize memory items from the Emergency Checklist

Name
The student will receive and review the Cessna 172 Aircraft Operating Manual

Objective
Identify maneuvers and expectations for call out procedures

Name
The student will receive and review the Pilot Program Operations Manual

Objective
Complete quiz on Pilot Program Operations

Name
The student will become familiar with different career path options

Objective
Discuss the importance of networking', Talk to Professional Pilots working in a variety of career paths

PLT128 - Instrument Flight Lab

Overview

Department
Aviation

Course Description
This course will introduce the student to the skills required to fly the airplane solely by referencing the instruments in the panel. Performing the four basics of flight, timed turns, unusual attitude recovery, navigation by VOR and GPS, performing both precision and non-precision approaches, as well as planning and executing cross country flight will prepare the student to successfully meet the standards set forth by the FAA to earn the Instrument Rating.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate the skills required to pass the Instrument Practical Exam with an FAA Designated Pilot Examiner. (required - global outcome)

Objective
Demonstrate aircraft control during straight and level flight climbs descents and turns Four Basics of Flight', Demonstrate the ability to recover from unusual attitudes', Demonstrate proper use of navigational equipment', Demonstrate the ability to fly both precision and nonprecision approaches', Demonstrate the ability to Plan and execute cross country flight

Name
The student will complete with a passing score all aircraft simulations associated with commercial Flight.

Requirements

Simple Requirements

A minimum grade of 'C' in Course PLT112

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PLT112 - Private Pilot Flight Lab

Enrolled in Course PLT120

Type
Corequisite

Enroll in the following Courses:
- PLT120 - Instrument Regulations and Procedures

PLT129 - Part 61 Private Pilot and Instrument Rating Transfer Lab

Overview

Department
Aviation

Course Description
Private Pilot and Instrument Rating Transfer Lab is a course designed to facilitate the transfer of both a private pilot rating and an instrument rating from other jurisdictions to the WSU Tech Professional Pilot program. This lab focuses on evaluating students according to the current standards outlined in the Airman Certification Standards (ACS) for Airplane Single Engine Land (ASEL) and Airman Certification Standards (ACS) Instrument Rating.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
12

Contact Hours

Contact Hours Min:
360

Billing Hours

Billing Hours Min:
12

Lab Hours

Lab Hours Min:
360

Course Learning Outcomes

Learning Outcomes

Name
Preflight Briefings and Post-Flight Debriefings: Students will actively participate in preflight briefings and post-flight debriefings. These sessions will provide opportunities to discuss flight planning, weather conditions, aircraft systems, and other relevant aspects. Feedback from instructors will aid students in identifying strengths, weaknesses, and areas for improvement.

Name
WSU Tech Policies and Procedures: Introduction to WSU Tech Policies and Procedures including the Standard Operating Manual and Student Policies Manual.

Name
Private Pilot and Instrument Written Knowledge Exam: Students will successfully complete a written knowledge exam using a sampling of questions from the FAA knowledge test. This exam will assess their understanding of aviation regulations, meteorology, aerodynamics, navigation, and other pertinent topics. Achieving a passing score demonstrates their readiness for the written portion of the private pilot transfer process.

Name
G1000 Ground Instruction and Familiarization: Students will successfully complete comprehensive ground instruction on the G1000 avionics system. This instruction will cover topics such as system overview, flight planning, navigation, communication, instrument interpretation, and system troubleshooting. Students will gain proficiency in using the G1000 as an essential tool for flight operations.

Name
Evaluation to ACS Standards: Students will be assessed according to the FAA ACS standards for ASEL. This evaluation will cover essential knowledge areas, practical flight skills, and aeronautical decision-making.

Name
G1000 Familiarization Flight: Students will successfully complete a G1000 familiarization flight. This flight will introduce them to the operation and features of the G1000 avionics suite, which is commonly used in modern aircraft. They will gain proficiency in utilizing the G1000's navigation, communication, and flight management capabilities.

Name
Transfer Evaluation Flight: Students will participate in and successfully complete a transfer evaluation flight. This flight will assess their ability to apply the knowledge and skills required by the new jurisdiction. They will demonstrate competence in areas such as airspace management, navigation, radio communication, emergency procedures, and adherence to regulations.

PLT130 - Aerodynamics and Aircraft Performance

Overview

Department
Aviation

Course Description
In this course, students will explore the fundamental principles of airplane aerodynamics and aircraft performance. Emphasis will be placed on understanding how forces such as lift, weight, thrust, and drag influence flight. Students will analyze aircraft stability, control, and the performance characteristics of various aircraft types, including low and high-speed aerodynamics. This prepares students for the unique challenges faced by aircraft designers and understanding the reasons for aircraft design.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explain the fundamental aerodynamic principles governing airflow, pressure distribution, lift, drag, and stability as they apply to aircraft in various flight conditions.

Name
The student will be able to analyze the effects of changes in aircraft configuration, center of gravity, and control surface deflection on longitudinal and lateral stability and control.

Name
The student will be able to interpret aircraft performance charts and data to determine takeoff, climb, cruise, descent, and landing performance under varying conditions.

Name
The student will be able to evaluate aircraft performance limitations and flight envelope restrictions in relation to regulatory and operational safety standards.

Name
The student will be able to assess the impact of high-speed flight and compressibility on aircraft design and flight operations.

Name
The student will be able to create and justify a model aircraft for a flight scenario, integrating aerodynamic theory with aircraft limitations and performance data.

PLT132 - Aviation Safety and Human Factors

Overview

Department
Aviation

Course Description
This course provides the student with a detailed introduction into aspects of aviation safety, aviation safety programs, risk management, and the associated components of pilot psychology, physiology, human factors, and accident review and investigation. This course also introduces the student to issues influencing human performance in the complex operational aviation environments. Theory and practical applications of cognitive processing, decision-making, interpersonal interaction and communication will be presented. This course also provides an introduction to design elements intended to optimize man-machine interaction.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the importance of self-assessment and health in relationship to safe flight operations

Objective
Define Aeromedical Factors', Discuss Sleep Exercise and Diets impact on safe flight', Discuss Visions Impact on Safe Flight

Name
The student will be able to discuss components of aeronautical decision making and effects on safe flight operations

Objective
Describe the decision making process', Define Risk Management Processes', Define hazardous attitudes of flight', Discuss appropriate Workload Management procedures', Describe Situational Awareness', Describe Operational Pitfalls

Name
The student will be able to analyze accident and incident reports and discuss outcomes and alternatives which lead to safer flight operations.

Objective
Identify how Controlled Flight into Terrain Occurs', Describe Flight into Known Icing', Describe Visual Flight Rules into Instrument Flight Rules conditions', Discuss Fuel Management procedures

PLT134 - Aircraft Systems for Pilots

Overview

Department
Aviation

Course Description
In this course students will learn the aircraft systems as they relate to reciprocating, turbine, and jet engines.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to describe the function and operation of major aircraft systems.

Name
The student will be able to compare and contrast systems used in piston-powered, turbine-powered, and jet aircraft.

Name
The student will be able to interpret aircraft system diagrams, schematics, and system indications from real-world cockpit displays or flight manuals.

Name
The student will be able to assess the operational implications of aircraft system limitations and performance characteristics during all phases of flight.

Name
The student will be able to synthesize flight planning and in-flight troubleshooting strategies using knowledge of aircraft systems.

PLT136 - Crew Resource Management

Overview

Department
Aviation

Course Description
This course will provide the student the opportunity to explore the many issues involved in Crew Resource Management. It will expose the student to issues involved with communication, situational awareness, pilot judgement, risk assessment and mitigation, and workload management. Students will practice various models of risk assessment and mitigation as well as learn how to properly utilize all available resources in order to conduct a safe and efficient flight both solo and as part of a crew.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the relationship of human factors to safe aircraft operation.

Objective
Describe Good Health Impact on safe flight', Describe the Pilot Readiness Assessment procedures', Discuss the regulations on Drugs and Alcohol usage parameters

Name
The student will be able to apply knowledge and strategies correctly to the crew environment and the single pilot environment.

Objective
Discuss Accident Assessment', Evaluate outcomes of flight operations

Name
The student will be able to demonstrate enhanced knowledge in the areas of human factors, crew resource management and single pilot resource management.

Objective
Describe Effective Communication', Define Situational Awareness', Discuss Resource Management', Perform Self Evaluation for safe flight', Discuss Roles and Responsibilities of the Pilot in Command

Name
The student will be able to identify best possible outcomes to aviation situations by using all available input from both crew and outside resources.

Objective
Describe the evaluation process', Discuss Alternatives for safe flight', Discuss Appropriate action to take to avoid dangerous situations

PLT144 - Introduction to Commercial Flight

Overview

Department
Aviation

Course Description
This course provides the student exposure to the aeronautical knowledge areas required by FAA regulations for a Commercial Pilot Certificate (ASEL). Successful completion of the course will provide the student with all information necessary to successfully pass the required FAA written exam and be adequately prepared for the oral portion of the practical test required.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will demonstrate an increased knowledge of airports, airspace, flight information, and meteorology, as well as airplane performance, VFR cross-country flight planning, and navigation. In addition, the student will demonstrate an understanding of aviation physiology, single-pilot resource management (SRM) and the FARs applicable to commercial pilot operations.

Objective
Identify Airports and National Airspace System', Discuss Aviation Meteorology', Discuss Single Pilot Resource Management', Discuss Federal Regulations for Commercial Flight

Name
The student will be able to discuss the operation of complex airplane systems and aerodynamic concepts as well as determine airplane performance and weight and balance calculations.

Objective
Discuss the Constant Speed Prop', Discuss Retractable Gear Procedures', Describe Advanced Aerodynamics', Perform Performance Calculations

Name
The student will be able to discuss the operation of the G1000 and its use in safe operation of the aircraft

Objective
Discuss Primary Flight Display', Discuss the Multifunction Display', Program the G1000

Name
The student will be able to discuss emergency procedures and the use of single-pilot resource management (SRM) and crew resource management (CRM) skills to help make effective decisions.

Objective
Describe Emergency Operations', Describe Single Pilot Resource management and Crew Resource Management', Describe the Aeronautical Decision Making process

Requirements

Simple Requirements

A minimum grade of 'C' in Course PLT128

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PLT128 - Instrument Flight Lab

Enrolled in Course PLT152

Type
Prerequisite

Enroll in the following Courses:
- PLT152 - Commercial Flight Lab

PLT146 - Air Traffic Control and Airspace

Overview

Department
Aviation

Course Description
This course is designed to provide students with the information about the Air Traffic Management and Control Systems (ATC) and the US National Airspace System which is critical to the success of Pilots.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply critical elements of ATC within the National Airspace System.

Objective
Fundamental knowledge of the ATC system in the US', Utilise Navigational aids airspace communications the Code of Federal Aviation', Regulations ATC procedures control tower operations nonradar operations', radar operations and differing types of environmental concerns within a', geographic area

PLT152 - Commercial Flight Lab

Overview

Department
Aviation

Course Description
This course will introduce the student to all commercial maneuvers and standards. The student will also build hours towards minimum time requirements required to successfully pass the Commercial Pilot Practical Exam.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify both professional organizations to align with as well networking opportunities that enable them to advance their career opportunities

Objective
Discuss importance of networking', Find Professional Organizations to enhance career', Complete and resume and mock interview

Name
The student will be able to demonstrate safe operation of the aircraft for both VFR and IFR flight.

Objective
Demonstrate all Ground Operations', Demonstrate safe Flight Operations

Name
The student will be able to demonstrate the skills required to perform flight maneuvers required for the Commercial Pilot Practical Exam

Objective
Demonstrate Chandelles', Demonstrate Lazy 8s', Demonstrate 8s on Pylons', Demonstrate Steep Spirals', Demonstrate All Private Pilot Maneuvers to CommercialStandards

Name
The student will complete with a passing score all aircraft simulations associated with Commercial Flight.

Requirements

Simple Requirements

A minimum grade of 'C' in Course PLT128

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PLT128 - Instrument Flight Lab

Enrolled in Course PLT144

Type
Prerequisite

Enroll in the following Courses:
- PLT144 - Introduction to Commercial Flight

PLT154 - Aviation Law and Regulations

Overview

Department
Aviation

Course Description
In this course students will explore and apply the Federal Aviation Regulations, contained in Title 14 of the Code of Federal Regulations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will apply 14 CFR as it applies to pilots.

Objective
Administrative Law', Enforcement Law', International law that impacts aviation', Analysis of aviation regulatory environments and processes such as regulatory certifications rule making and legislation

Name
The student will be able to discuss aerodynamics, performance and special considerations involved with multiengine airplanes.

Objective
Discuss Multiengine aircraft design', Discuss Aerodynamics', Discuss Performance Characteristics

PLT156 - Multiengine Aircraft Operation

Overview

Department
Aviation

Course Description
This course is designed to develop the knowledge and skills necessary to safely and proficiently exercise the privileges and responsibilities of a Commercial Pilot with a Multi-engine rating. Included are discussions concerning Aeronautical Decision Making of multi-engine aircraft systems, aerodynamics, Crew Resource Management, weight and balance, aircraft performance, and abnormal/ emergency procedures. The course also includes a scenario - based introduction to U.S. Title 14 Code of Federal Regulations (CFR) governing common carriage commercial operations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss managing engine failures under various phases of flight and the very important balance between performance and control of a multi-engine aircraft experiencing and engine failure.

Objective
Describe Single Engine Aerodynamics', Discuss Aircraft Control

Name
The student will be able to discuss the unique considerations of multi-engine instrument flight including single-engine instrument approaches and performance planning.

Objective
Describe Critical Speeds', Discuss Climb Performance', Discuss Flying Approaches on a single engine

Name
The student will be able to complete flight planning procedures while applying unique considerations to multi-engine aircraft.

Objective
Perform Flight Planning', Discuss Multiengine performance considerations

Name
The student will complete with a passing score all aircraft simulations associated with multi engine rating.

Objective
The student will complete with a passing score all aircraft simulations associated with multi engine rating

Requirements

Simple Requirements

A minimum grade of 'C' in Course PLT128

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PLT128 - Instrument Flight Lab

Enrolled in Course PLT160

Type
Prerequisite

Enroll in the following Courses:
- PLT160 - Multiengine Flight Lab

PLT160 - Multiengine Flight Lab

Overview

Department
Aviation

Course Description
This course provides the practical experience necessary for the student to demonstrate safe operation of a multi-engine aircraft, as well as demonstrate knowledge of best single engine rate of climb (Vyse) and Minimum Control Speed (Vmc). The student will learn how to determine engine failure, demonstrate aircraft control with a simulated engine failure, and perform Instrument approaches during simulated engine failure. The tasks in this course will prepare the student to successfully pass the Multi-Engine Airplane (AMEL) exam.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
2

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will complete with a passing score all aircraft simulations associated with multi engine rating.

Objective
Demonstrate safe Taxing of a Multiengine aircraft', Demonstrate Flying on a single engine', Discuss Performance and Control considerations on a single engine', Demonstrate Instrument Approaches on a single engine', Execute a cross country flight

Requirements

Simple Requirements

Enrolled in Course PLT156

Type
Prerequisite

Enroll in the following Courses:
- PLT156 - Multiengine Aircraft Operation

A minimum grade of 'C' in Course PLT128

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PLT128 - Instrument Flight Lab

PLT168 - Certified Flight Instruction

Overview

Department
Aviation

Course Description
Provides the student with a detailed study of the responsibilities and teaching concerns of a flight instructor. The course is divided into two major sections: fundamentals of teaching and learning, including effective teaching methods, learning process, consideration of flight training syllabi, effective evaluations, and flight instructor responsibilities; the second section is concerned with the analysis of the flight maneuvers involved with Private Pilot, Commercial Pilot and Flight Instructor Certificates.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to define the skills required to be an effective Flight Instructor

Objective
Describe the Learning Process', Describe Transfer of Learning', Discuss Human Behavior', Describe Teaching Process', Describe flight Evaluation and Critique', Discuss Flight Instructor Responsibilities', Demonstrate Flight Instruction and Lesson Planning

Name
The student will be able to discuss regulations that relate to pilot privileges, flight rules, and accident and incident notification

Objective
Discuss Pilot and Aircraft Documents', Discuss Certificates and Limitations', FAA Knowledge and Practical Tests', Discuss Flight Requirements and Limitations', Discuss Aircraft Maintenance and Equipment', Discuss Flight Rules Discuss Alcohol Drugs Emergencies and notification action

Requirements

Simple Requirements

A minimum grade of 'C' in Course PLT152

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PLT152 - Commercial Flight Lab

PLT176 - Certified Flight Instruction Lab

Overview

Department
Aviation

Course Description
This course will provide practical teaching experience for the student during flight as they demonstrate skills flying in the right seat, teaching and demonstrating all required flight maneuvers simultaneously to successfully pass the FAA Practical Exam for Certified Flight Instructor.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
2

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will complete with a passing score all aircraft simulations associated with Flight Instruction.

Objective
Demonstrate All Ground Operations', Demonstrate Private Pilot Maneuvers and Procedures', Demonstrate Commercial Pilot Maneuvers and Procedures', Demonstrate Emergency Operations

Name
The student will be able to demonstrate the skills required to teach and operate the aircraft safely from the right seat.

Objective
Demonstrate All Ground Operations', Demonstrate Private Pilot Maneuvers and Procedures', Demonstrate Commercial Pilot Maneuvers and Procedures', Demonstrate Emergency Operations

Requirements

Simple Requirements

A minimum grade of 'C' in Course PLT152

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PLT152 - Commercial Flight Lab

PNR119 - KSPN Fundamentals of Pharmacology and Safe Medication Administration

Overview

Department
Nursing

Course Description
This course provides an introduction to the principles of pharmacology. Emphasis is placed on nursing care related to the safe calculation and administration of medications to clients across the lifespan.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Discuss the principles of pharmacology, pharmacokinetics, and pharmacodynamics in relation to medication therapy.

Objective
Describe the role of the United States Food and Drug Administration in determining the safety of drugs for use by the population', Define common terminology abbreviations and symbols used in describing drug properties', Describe common terminology used for medication administration', Differentiate between the terms pharmacology pharmacokinetics and pharmacodynamics', Define the following terms drug actions side effects adverse effects nursing implications contraindications and interactions', Describe the various resources that support evidencebased drug information

Objective
Determine the various routes by which medication can be administered', Discuss the role of the nurse related to educating clients about their medications

Name
Demonstrate proper techniques that support safe medication administration.

Objective
Identify measures that support safe medication administration', Discuss factors that can decrease the risk of making a medication error', Perform basic metric conversions and drug calculations', Demonstrate proper techniques that support safe medication administration oral ophthalmic otic nasal rectal topical inhaled and vaginal medications

Name
Describe the legal and ethical implications/aspects of medication administration.

Objective
Discuss legalethical issues related to medication administration', Identify the rights of medication administration

Name
Discuss Nursing implications and concepts of safety when preforming medication administration

Objective
Determine the various routes by which medication can be adminstered, discuss the role of the nurse related to educating clients about their medications

Requirements

Simple Requirements

A minimum grade of 'C' in Course ALH110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ALH110 - Principles of Nutrition

A minimum grade of 'C' in Course BIO150

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- BIO150 - Human Anatomy & Physiology

A minimum grade of 'C' in Course PSY101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PSY101 - General Psychology

A minimum grade of 'C' in Course PSY120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PSY120 - Developmental Psychology

A minimum grade of 'C' in Course PNR136

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR136 - Transition to Nursing

Enrolled in Course PNR120

Type
Prerequisite

Enroll in the following Courses:
- PNR120 - KSPN Foundations of Nursing

Enrolled in Course PNR121

Type
Prerequisite

Enroll in the following Courses:
- PNR121 - KSPN Foundations of Nursing Clinicals

Enrolled in Course PNR128

Type
Prerequisite

Enroll in the following Courses:
- PNR128 - KSPN Nursing Care of Adults I

Enrolled in Course PNR129

Type
Prerequisite

Enroll in the following Courses:

- PNR129 - KSPN Nursing Care of Adults I Clinical

PNR120 - KSPN Foundations of Nursing

Overview

Department
Nursing

Course Description
This course provides an introduction to practical nursing and roles of the practical nurse as well as profession- and client-related care concepts. Emphasis is placed on the knowledge and skills needed to provide safe, quality care. The theoretical foundation for basic data collection and nursing skills is presented and an introduction to the nursing process provides the student with a framework for decision making.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Discuss the history of nursing, the role of the practical nurse, and scope of practice related to established code of ethics, nurse practice acts, and professional registrations/certifications.

Objective
Define nursing and relate its current state to historical events and leaders', Differentiate between the various roles of contemporary nurses today', Review the different educational paths to professional nursing and their implications for career mobility and advancement', Discuss the scope of practice of unlicensed personnel licensedvocational nurses professional nurses and advanced practice nurses', Describe how state nurse practice acts define the legal and scope of nursing practice', Review an established code of ethics and its role in guiding nursing practice and ethical decision making', Recognize competencies related to knowledge skills and attitudes that nurses are expected to integrate into their practice', Discuss the implications of client care in relation to HIPAA regulations in care delivery settings

Name
Review the spectrum of health care settings across which client care is provided.

Objective
Differentiate between the terms health and illness and the impact that lifestyle and risk factors has on ones health status', Define the terms health promotion and wellness and discuss the nurses role in supporting clients movement towards optimal health', Differentiate between primary secondary and tertiary care as well as the role of the nurse when providing these levels of care', Differentiate between the goals of acute and chronic care and examples of client conditions in each category', Discuss the principles of restorative or rehabilitative care its goals and the role of the nurse when working with patients undergoing rehabilitation', Compare and contrast palliative and hospice care and the role of the nurse in providing end of life care', Describe the various health care settings within which client care is delivered', Discuss the roles of state and federal governments in regulating health care agencies

Name
Describe the relationship of profession-related concepts to client care: relationship-centered care, interprofessional collaboration, evidence-based practice, quality improvement, safety, informatics, client education, professionalism, and leadership.

Objective
Discuss the meaning of relationshipcentered care', Describe concepts of holistic health and nursing', Describe the concept of caring as a foundation for nursing practice', Review the professional skills inherent in providing relationshipcentered care', Compare and contrast the concepts of spirituality and religion', Review the religious practices of selected religions and their relationship to health promotion and health care', Determine factors that contribute to spiritual distress and resulting manifestations', Review the nurses role when caring for clients who are experiencing spiritual distress', Define the concept of interprofessional care', Describe the essential aspects of collaborative health care', Discuss the benefits of an interprofessional health care team providing client care', Define the concept of evidencebased practice', Identify available resources for evidencebased nursing practice', Discuss how evidencebased practice provides optimum care for individuals and their families', Define the concept of quality improvement', Discuss the role of the nurse in identifying patient concerns related to quality care', Define the concept of client safety', Discuss personal and environmental factors that impair a clients ability to protect themselves from injury', Review interventions that can assist in reducing risk of client injury properly identifying client performing a fall risk assessment communicating client information to appropriate team member', Discuss how proper and effective use of technology and standardized policies and procedures support safe quality care', Recognize the role of the nurse in monitoring own care and that of others in promoting a safe environment for the client', Review the National Client Safety Goals developed by the Joint Commission and their relationship to the development of national safety standards and accreditation of health care institutions', Relate the importance of knowing the location and purpose of the MSDS Manual', Describe the RACE acronym and its use as a guide for action during a fire', Define the concept of informatics', Describe the uses of computers in nursing education and practice', Discuss the computer skills and computer applications necessary for monitoring and documenting client information', Discuss how to access online library resources', Review criteria that must be met for online resources and websites to be considered credible resources', Demonstrate how to cite resources using recommended form and style', Define the concept of client education', Identify the role of the nurse in relation to client education', Describe the three domains of learning', Review basic principles of learning', Discuss how to identify educational needs of clients', Define the concept of professionalism and its relationship to nursing practice', List professional behaviors that are consistent with those of a nurse', Discuss the relationship of ethical and legal practice to the role of nurses', Compare and contrast accountability and responsibility', Define the concept of leadership', Explore the leadership skills of organization time management and priority setting

Name
Discuss concepts integral to the provision of safe, quality, relationship-centered care: nursing process, advocacy, cultural sensitivity, and communication.

Objective

Nursing process Discuss the purpose of the nursing process and nurses role in each step', Cultural sensitivity Recognize the influence culture has on health health practices illness and caring patterns and verbalize cultural sensitivity and cultural competence and its relationship to nursing practice', Advocacy Define advocacy in relationship to clients right to information Clients Bill of Rights and the Self Determination Act and their association with the nurses role as client advocate', Communication Differentiate between nontherapeutic and therapeutic communication and how it is related to nursing care and documentation', Describe the significance of nursing documentation as a written form of communication', Discuss the use of technology in the communication process', Identify the purpose and various elements of the client record', Review the legal parameters that guide documentation and the maintenance of client records', Review proper guidelines for effective documentation', Apply principles of effective documentation to an actual or simulated client record', Describe proper documentation techniques that support accurate thorough and timely charting

Name

Identify the nurses role in supporting a clients physiologic needs: rest and sleep, spirituality, sensory perception, hygiene, activity and exercise, infection control, elimination, nutrition, oxygenation and comfort.

Objective

Review the role played by rest and sleep in maintaining good physical and mental health', Discuss the effect that lack of sleep has on a clients physical and mental health', Discuss developmental variations in sleep patterns', Describe the functions physiology and stages of sleep', Identify conditions that interfere with a clients rest and sleep pattern', Recognize the characteristics of common sleep disorders', Review nursing interventions that can help improve a clients quality of rest and sleep', Review the role played by sensory perception in maintaining good physical health', Describe the anatomical and physiological components of the sensoryperceptual process', Discuss factors that affect a clients sensory perceptual processes vision loss hearing loss', Identify conditions that interfere with a clients ability to process sensory input', Differentiate between sensory deficits overload and deprivation', Review nursing interventions that can facilitate or maintain a clients sensory perceptual processes', Review the role played by the skin mucous membranes teeth and nails in maintaining the bodys first line of defense against pathogens', Describe conditions and activities that place clients at risk for altered skin integrity', Discuss hygienic practices that support healthy skin integrity', Discuss the effect that cultural practices and developmental stage has on hygiene practices', Determine a clients need for assistance with hygienerelated care', Describe the procedures for providing hygienerelated care in a safe comfortable environment', Describe proper techniques that support client hygiene', List common areas for pressure ulcers', Describe how to assess for early signs of pressure ulcers when providing hygienerelated care', Differentiate between the 4 stages of pressure ulcers', Review the role played by the musculoskeletal and neurological systems in providing and regulating movement', Relate the effect exercise has on proper functioning of body systems and activity tolerance', Identify the elements of an exercise program that serves to maintain proper functioning and prevent lifestyle diseases', Discuss the effect lack of movement has on bones muscles and joints', Discuss the effect developmental stage has on bones muscles and joints', Describe proper techniques that support client mobility and prevent complications of immobility', Compare and contrast the various elements of the chain of infection', Review the anatomical and physiological barriers that protect an individual against infections', Describe the signs and symptoms of an inflammatory response local and systemic infections and related diagnostic tests', Discuss the etiology of nosocomial infections', Differentiate between medical and surgical asepsis', Relate principles of asepsis and their application to client care', Differentiate between standard precautions and various types of isolation precautions', Review nursing interventions that can protect a client against infections', Describe proper techniques that support infection control', Review the role played by elimination in maintaining good physical health', Describe the process of urine and feces production and subsequent elimination patterns', Differentiate between normal and abnormal elimination patterns constipation bowel incontinence urinary retention urinary incontinence', Discuss developmental and other factors that affect a clients elimination status', Identify conditions that interfere with a clients normal elimination patterns', Compare and contrast normal and abnormal characteristics of urine and feces', Identify diagnostic tests related to elimination and the nurses role in obtaining specimens', Review nursing interventions that can facilitate or maintain a clients elimination patterns', Discuss proper techniques that support a clients elimination needs', Review the role played by oxygenation in maintaining good physical health', Describe the process of oxygenation', Differentiate between normal and abnormal respiratory patterns', Discuss developmental and other factors that affect a clients oxygenation status', Identify diagnostic tests related to oxygenation', Review nursing interventions that facilitate or maintain adequate oxygenation', Describe proper techniques that support a clients oxygenation status', Describe proper techniques that support a clients nutrition needs', Review the role played by nutrition in maintaining good physical health', Describe normal processes related to digestion absorption and metabolism of carbohydrates proteins and fats', Describe the role water vitamins minerals and electrolytes play in supporting body functions and processes', Determine the significance of the balance between caloric intake and energy expenditure in relation to weight gain and loss', Discuss physical psychological developmental and cultural factors that affect a clients nutritional status', Identify norms for body weight and BMI based on established standards', Use guidelines based on the USDA My

Name
Describe the various elements of the nursing process and its relationship to clinical decision-making.

Objective
Identify the steps of the nursing process', Differentiate between subjective and objective data and various data collection methods', Review the use of the nursing process as a tool for planning client care', Review potential and actual client problems related to a plan of care', Apply principles of the nursing process to the client record

Name
Identify the nurses role in data collection as an integral part of the nursing process.

Objective
Describe the purpose of assessment when providing client care', Review assessment techniques when collecting data in a focused manner

Name
Describe basic data collection skills as they relate to a client's physiological, psychological, sociological, cultural, and spiritual dimensions using proper techniques and measures that ensure client safety.

Objective
Use culturally sensitive therapeutic communication when interviewing the client regarding their health history and current reason for seeking health care', Discuss interventions that will foster a therapeutic caring nurseclient relationship', Identify findings that are outside the expected range for each body system', Use appropriate terminology when documenting assessment findings', Describe proper assessment techniques on clients

Requirements

Simple Requirements

A minimum grade of 'C' in Course PNR136

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR136 - Transition to Nursing

Enrolled in Course PNR119

Type
Prerequisite

Enroll in the following Courses:
- PNR119 - KSPN Fundamentals of Pharmacology and Safe Medication Administration

Enrolled in Course PNR121

Type
Prerequisite

Enroll in the following Courses:
- PNR121 - KSPN Foundations of Nursing Clinicals

A minimum grade of 'C' in Course ALH110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ALH110 - Principles of Nutrition

A minimum grade of 'C' in Course PSY120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PSY120 - Developmental Psychology

A minimum grade of 'C' in Course PSY101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PSY101 - General Psychology

A minimum grade of 'C' in Course BIO150

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- BIO150 - Human Anatomy & Physiology

PNR121 - KSPN Foundations of Nursing Clinicals

Overview

Department
Nursing

Course Description
This course provides an introduction to the skills required to practice nursing. The theoretical foundation for basic data collection and nursing skills is presented and the student is given an opportunity to demonstrate these skills in a clinical laboratory setting. Students are also given an opportunity to practice application of the nursing process to client-related situations.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
2

Other Hours

Other Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Practice assessment techniques on adult clients recognizing expected findings.

Objective
Apply principles of the nursing process to the assessing planning implementation and evaluation of safe client', Practice assessment techniques on simulated andor actual adult clients recognizing expected findings

Name
Apply the nursing process to client care that is based on the physiological, psychosocial, and spiritual needs of clients and acknowledges their uniqueness related to preferences, values, beliefs, and cultural differences.

Objective
Provide nursing care that is relationshipcentered caring culturally sensitive and based on the physiological psychosocial and spiritual needs of clients with commonly occurring health problems that have predictable outcomes', Describe the role of the nursing process in relation to the provision of client care', Identify the uniqueness of each client related to preferences values beliefs and cultural differences

Name
Describe the various roles of members of the interprofessional health care team, including nurse as advocate.

Objective
Describe the roles and responsibilities of members of the health care team', Verbalize clientrelated information to be shared with designated members of the healthcare team', Identify situations that require knowledgeactions beyond the scope and practice of the LPN', Describe client advocacy

Name
Practice using effective verbal and non-verbal communication techniques with educators, peers, and clients.

Objective
Practice using verbal and nonverbal communication techniques', Collaborate with the client and members of the interprofessional health care team to promote continuity of care and shared decisionmaking

Name
Demonstrate how to safely and securely use client care technology while documenting in an accurate and timely manner.

Objective
Use information and client care technology to support the delivery of safe quality client care', Demonstrate how to use information technology as a communication tool', Demonstrate how to securely and accurately use electronic health records to document nursing care', Demonstrate how to safely use client care technology', Demonstrate proper documentation techniques that support accurate thorough and timely charting

Name
Use current evidence as a basis for nursing practice.

Objective
Use current evidence as a basis for nursing practice', Identify sources of current evidence', Identify how current evidence is used as a basis for nursing practice

Name
Identify education needs of clients based on data.

Objective
Demonstrate proper techniques that support client mobility and prevent complications of immobility while ensuring client safety', Demonstrate proper techniques that support a clients elimination needs while ensuring client safety', Demonstrate proper techniques that support a clients oxygenation status while ensuring client safety', Demonstrate proper techniques that support a clients nutrition needs while ensuring client safety', Demonstrate proper techniques that support client hygiene and safe client care', Demonstrate proper techniques that support infection control while ensuring client safety

Name
Practice establishing a safe environment for client, self, and others.

Objective
Practice client care skills using proper techniques while ensuring safety of team members', Provide an environment that is safe and reduces risk of harm for clients self and others', Identify the difference between actual and potential safety risks in the health care environment', Describe actions that promote safe practice and a safe environment for clients self and others', Describe the purpose of the National Patient Safety Goals

Name
Identify concerns related to the quality of client care.

Objective
Demonstrate proper techniques that support a clients comfort needs while ensuring client safety', Participate in quality improvement practices evaluating their effect on client outcomes', Identify concerns related to the quality of client care', Discuss actions necessary to provide quality care

Name
Demonstrate professional behaviors in academic and client care settings.

Objective
Demonstrate accountability for client care that incorporates legal and ethical principles regulatory guidelines and standards of nursing practice', Describe the purpose and location of the Kansas PN scope of practice nursing regulations and statutes', Describe the Client Bill of Rights and the Self Determination Act along with a nursing code of ethics as a framework to be used for nursing practice', Describe what personal and professional accountability is for the preparation and delivery of client care', Discuss the role of institutional policies and procedures in regard to providing safe quality care

Name
Practice leadership skills that support the educational process (organization, time management, priority-setting).

Objective
Use leadership skills that support the provision and coordination of client care', Identify leadership skills that support the provision of client care', Discuss the role of assistive personnel in relation to their abilities level of preparation and regulatory guidelines', Describe the role of the LPN in supervising assistive personnel

Requirements

Simple Requirements

Enrolled in Course PNR119

Type
Prerequisite

Enroll in the following Courses:
- PNR119 - KSPN Fundamentals of Pharmacology and Safe Medication Administration

Enrolled in Course PRN120

Type
Prerequisite

Enroll in the following Courses:

A minimum grade of 'C' in Course BIO150

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- BIO150 - Human Anatomy & Physiology

A minimum grade of 'C' in Course PSY101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PSY101 - General Psychology

A minimum grade of 'C' in Course PSY120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PSY120 - Developmental Psychology

A minimum grade of 'C' in Course ALH110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ALH110 - Principles of Nutrition

A minimum grade of 'C' in Course PNR136

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR136 - Transition to Nursing

PNR128 - KSPN Nursing Care of Adults I

Overview

Department
Nursing

Course Description
This course focuses on the care of adult clients experiencing common medical/ surgical health alterations with predictable outcomes. Emphasis is placed on the care of clients with alterations in cardiac output and tissue perfusion, oxygenation, regulation and metabolism, and integument. Principles of pre-and post-operative care and IV therapy are also addressed.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
75

Course Learning Outcomes

Learning Outcomes

Name
Describe how to perform a focused assessment on adult clients with common alterations in health related to selected body systems.

Objective
Recognize alterations in the laboratory values of urine osmolarity and serum sodium potassium chloride calcium and phosphorus', Recognize clinical manifestations of fluid imbalances and alterations in sodium potassium chloride calcium and phosphorus', Recognize components of a focused assessment that should be included when collecting data on adults who have an alteration in oxygenation', Recognize components of a focused assessment that should be included when collecting data on adults who have an alteration in cardiac output and tissue perfusion', Recognize components of a focused assessment that should be included when collecting data on adults who have an alteration in regulation and metabolism', Recognize components of a focused assessment that should be included when collecting data on adults who have an alteration in integument

Name
Develop a relationship-centered plan of care that incorporates current evidence and includes cultural, spiritual, and developmentally appropriate interventions for clients with commonly occurring health alterations that have predictable outcomes.

Objective
Discuss the correct use and functioning of therapeutic devices that support oxygenation', Discuss the correct use and functioning of therapeutic devices that support cardiac output and tissue perfusion', Discuss the correct use and functioning of therapeutic devices that support regulation and metabolism', Discuss the correct use and functioning of therapeutic devices that support integument', Describe the impact drugs used during a surgical procedure can have on drugs given in the immediate postoperative period', Compare and contrast medications commonly given for postoperative pain nausea and vomiting', Discuss agerelated considerations', Review client care necessary to maintain patency of established intravenous lines', Discuss the indications for the insertion of peripheral short catheters

Name
Describe the role of members of the health care team in regard to caring for clients with commonly occurring health alterations that have predictable outcomes.

Objective
Differentiate between the various phases of the surgical experience pre peri and postoperative and Identify the role of the nurse in each of these phases', List the responsibilities of the nurse when caring for a client in the immediate pre and postoperative period

Name
Apply a basic level of knowledge of pathophysiology, pharmacology, and nutrition as it relates to adult clients with commonly occurring health alterations that have predictable outcomes.

Objective
Apply knowledge of pathophysiology when planning care for clients with alterations in fluid balance', Apply knowledge of pathophysiology when planning care for clients with alterations in sodium potassium chloride calcium and phosphorus', Apply knowledge of anatomy physiology basic pathophysiology nutrition and developmental variations when helping to plan care for adults who have an alteration in oxygenation', Apply knowledge of anatomy physiology basic pathophysiology nutrition and developmental variations when helping to plan care for adults who have an alteration in cardiac output and tissue perfusion', Apply knowledge of anatomy physiology basic pathophysiology nutrition and developmental variations when helping to plan care for adults who have an alteration in regulation and metabolism', Apply knowledge of anatomy physiology basic pathophysiology nutrition and developmental variations when helping to plan care for adults who have an alteration in integument', Differentiate between general and regional anesthesia and conscious sedation', Define intravenous fluid therapy see definition in KAR 6016101', Identify the different types of vascular access delivery devices', Review the legal implications for intravenous fluid therapy', Review the anatomy and physiology of common sites used for intravenous fluid therapy', Contrast the various types of parenteral solutions and indications for each', Differentiate between central and peripheral vascular devices and their care

Name
Articulate verbal and nonverbal communication strategies that are used to promote caring, therapeutic relationships with clients and their families.

Objective
Discuss administration maintenance and monitoring of existing central intravenous fluid therapy

Name
Describe how information technology is used to communicate with members of the health care team by accurately documenting client care in a secure and timely manner.

Objective
Recognize alterations in pulse oximetry and other laboratory values related to alterations in oxygenation', Recognize alterations in laboratory values related to alterations in cardiac output and tissue perfusion', Recognize alterations in laboratory values related to alterations in regulation and metabolism', Recognize alterations in laboratory values related to alterations in integument', Identify infusion equipment used in intravenous fluid therapy', Describe the process for determining vascular access device selection and placement', Articulate documentation needed in relation to intravenous fluid therapy

Name
Describe the health education needs experienced by clients with commonly occurring health alterations that have predictable outcomes.

Objective
Identify health care education and safety needs for adults who have an alteration in oxygenation', Identify health care education and safety needs for adults who have an alteration in cardiac output and tissue perfusion', Identify health care education and safety needs for adults who have an alteration in regulation and metabolism', Identify health care education and safety needs for adults who have an alteration in integument', Provide client education related to need for intravenous fluid therapy and clients role in maintaining patency and preventing infection

Name
Describe strategies that provide quality care in a safe environment for clients, self, and others.

Objective
Describe the role of the nurse in providing quality care to adults who have an alteration in oxygenation', Describe the role of the nurse in providing quality care to adults who have an alteration in cardiac output and tissue perfusion', Describe the role of the nurse in providing quality care to adults who have an alteration in regulation and metabolism', Describe the role of the nurse in providing quality care to adults who have an alteration in integument', Intervene to provide a safe environment for the surgical client', Practice client care skills using proper techniques while ensuring client safety', Describe infection control and safety measures to be taken to prevent infection and infiltration', Describe site care and maintenance of various type of intravenous therapies

Name
Discuss how organizational and time management skills are used when providing care to adult clients.

Objective
Identify priority actions for clients with an alteration in fluid balance or sodium potassium chloride calcium and phosphorus', Identify priority actions for adults who have an alteration in oxygenation', Apply knowledge of the actions potential side effects and nursing implications when administering medications to adults who have an alteration in oxygenation', Identify priority actions for adults who have an alteration in cardiac output and tissue perfusion', Apply knowledge of the actions potential side effects and nursing implications when administering medications to adults who have an alteration in cardiac output and tissue perfusion', Identify priority actions for adults who have an alteration in regulation and metabolism', Apply knowledge of the actions potential side effects and nursing implications when administering medications to adults who have an alteration in regulation and metabolism', Identify priority actions for adults who have an alteration in integument', Apply knowledge of the actions potential side effects and nursing implications when administering medications to adults who have an alteration in integument', Discuss potential post surgical and immobility complications and the nurses role in preventing them thromboemboli pneumonia atelectasis wound infection wound dehiscence and evisceration

Name
Describe the role of the practical nurse in maintaining personal and professional accountability for the delivery of standard-based, ethical and legal care to clients.

Objective
Discuss the legal and ethical issues related to ensuring informed consent', Outline the scope of practice of PNs see description in KAR 6016102', Review the legal implications for intravenous fluid therapy

Requirements

Simple Requirements

A minimum grade of 'C' in Course PNR120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR120 - KSPN Foundations of Nursing

A minimum grade of 'C' in Course PNR121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR121 - KSPN Foundations of Nursing Clinicals

Enrolled in Course PNR119

Type
Prerequisite

Enroll in the following Courses:
- PNR119 - KSPN Fundamentals of Pharmacology and Safe Medication Administration

Enrolled in Course PNR129

Type
Prerequisite

Enroll in the following Courses:
- PNR129 - KSPN Nursing Care of Adults I Clinical

PNR129 - KSPN Nursing Care of Adults I Clinical

Overview

Department
Nursing

Course Description
This course focuses on the care of adult clients with common medical/surgical health alterations. The clinical laboratory experience gives students the opportunity to apply theoretical concepts from Nursing Care of Adults I and implement safe client care in selected settings.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
3

Other Hours

Other Hours
Min:
135

Course Learning Outcomes

Learning Outcomes

Name
Perform a focused assessment on adult clients differentiating between expected and unexpected findings.

Objective
Demonstrate proper techniques for medication administration maintenance and monitoring of peripheral intravenous fluid therapy', Perform a focused assessment on adult clients differentiating between expected and unexpected findings

Name
Assist in developing an evidence-based plan of care that includes cultural, spiritual, and developmentally appropriate interventions related to health promotion and commonly occurring health alterations of adult clients who have predictable outcomes.

Objective
Provide nursing care that is relationshipcentered caring culturally sensitive and based on the physiological psychosocial and spiritual needs of clients with commonly occurring health problems that have predictable outcomes', Provide culturally sensitive care to adults from diverse backgrounds

Name
Participate as a member of the health care team and client advocate while providing quality care that promotes client safety for adults.

Objective
Identify opportunities for client advocacy', Collaborate with the client and members of the interprofessional health care team to promote continuity of care and shared decisionmaking', Participate as a member of the interprofessional health care team', Collaborate with the healthcare team when a situation requires knowledgeactions beyond the expertise and scope of LPN practice

Name
Apply a basic level of knowledge of pathophysiology, pharmacology, and nutrition, as well as evidence based practice, to the care of adult clients with commonly occurring health alterations who have predictable outcomes.

Objective
Contribute to the development of an individualized relationshipcentered plan of care for adult clients', Access evidence from credible resources', Utilize current evidence as a basis for nursing practice

Name
Use verbal and nonverbal communication that promotes therapeutic relationships with adult clients and their families, as well as professional relationships with members of the health care team.

Objective
Use verbal and nonverbal communication that promotes caring therapeutic relationships with adult clients', Report concerns related to the quality of client care', Reflect on individual action necessary to provide quality care', Use leadership skills that support the provision and coordination of client care

Name
Use information technology to access evidence based literature as well as communicate with members of the health care team, accurately documenting client care in a secure and timely manner.

Objective
Demonstrate documentation related to intravenous fluid therapy', Communicate clientrelated information to designated members of the healthcare team in a timely manner', Use current evidence as a basis for nursing practice', Use information and client care technology to support the delivery of safe quality client care', Use information technology to communicate with other members of the health care team', Use information technology to securely and accurately document nursing care while monitoring client response', Use client care technology in a way that supports quality and safe processes of care

Name
Participate in identifying the educational needs of adult clients and their families, as well as reinforcing education provided by members of the health care team.

Objective
Reinforce healthrelated education provided to adult clients

Name
Participate in quality improvement practices while reflecting on individual action to improve client outcomes.

Objective
Participate in quality improvement practices evaluating their effect on client outcomes

Name
Provide an environment that is safe and reduces risk of harm for clients, self, and others.

Objective
Provide an environment that is safe and reduces risk of harm for clients self and others', Report actual and potential safety risks to clients self and others in the health care environment', Implement actions that promote safe practice and a safe environment for clients self and others', Implement interventions consistent with the National Patient Safety Goals in selected settings

Name
Use organizational, time management, and priority-setting skills when providing care to adult clients.

Objective
Use organizational and time management when providing client care', Support assistive personnel with client care tasks', Supervise assistive personnel to whom tasks have been assigned

Name
Adhere to ethical, legal and professional standards while maintaining accountability and responsibility for the care provided to adult clients and their families.

Objective
Demonstrate accountability for client care that incorporates legal and ethical principles regulatory guidelines and standards of nursing practice', Practice nursing in accordance with the Kansas PN scope of practice as dictated by states practical nursing regulations and statutes', Use the Client Bill of Rights and the Self Determination Act along with an established nursing code of ethics as a personal framework for practice', Maintain personal and professional accountability in the delivery of client care', Practice in accordance with institutional policies and procedures

Requirements

Simple Requirements

A minimum grade of 'C' in Course PNR121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR121 - KSPN Foundations of Nursing Clinicals

Enrolled in Course PNR128

Type
Prerequisite

Enroll in the following Courses:
- PNR128 - KSPN Nursing Care of Adults I

Enrolled in Course PNR119

Type
Prerequisite

Enroll in the following Courses:
- PNR119 - KSPN Fundamentals of Pharmacology and Safe Medication Administration

A minimum grade of 'C' in Course PNR120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR120 - KSPN Foundations of Nursing

PNR130 - KSPN Maternal Child Nursing

Overview

Department
Nursing

Course Description
This course provides an integrative, family-centered approach to the care of childbearing women, newborns, and children. Emphasis is placed on the care of the pregnant woman and newborn, normal growth and development, and common pediatric disorders.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
30

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Describe how to conduct a focused assessment on childbearing women, newborns, and children and identify deviations from normal.

Objective
Discuss the components in the physical and psychosocial assessment of the pregnant woman', Describe common diagnostic procedurestests that may be used during the antepartum experience', Identify signs and symptoms of common complications of pregnancy and appropriate nursing interventions', Recognize variations from normal on a fetal monitoring strip', Describe the nursing assessment components and interventions appropriate for the care of the postpartum client Identify complications that may occur during the postpartum experience', Discuss newborn assessment including use of Apgar scores and the importance of testing reflexes', Describe physical and psychosocial assessments for children of all age groups', Recognize alterations in the laboratory values of electrolytes significant weight change parameters physiologic manifestations and changes in childs behavior that indicate dehydration or overhydration', Recognize components of a focused assessment that should be included when collecting data on children who have an alteration in regulation and metabolism', Recognize components of a focused assessment that should be included when collecting data on children who have an alteration in oxygenation Recognize alterations in pulse oximetry and other laboratory values related to alterations in oxygenation', Recognize components of a focused assessment that should be included when collecting data on children who have an alteration in cardiac output and tissue perfusion', Recognize components of a focused assessment that should be included when collecting data on children who have an alteration in cognition and sensation', Recognize components of a focused assessment that should be included when collecting data on children who have an alteration in integument Recognize components of a focused assessment that should be included when collecting data on children who have an alteration in mobility', Understand basic pathophysiology related to signs and symptoms screening methods and care for infantschildren with alterations in mobility', Recognize components of a focused assessment that should be included when collecting data on children who have an alteration in elimination

Name
Develop a relationship-centered plan of care that incorporates current evidence and includes cultural, spiritual, and developmentally appropriate interventions for childbearing women, newborns, and children.

Objective
Identify current trends in maternal health care', Discuss the effect of current trends on maternal health care', Describe the role of the nurse in promoting the bonding experience between mother and baby', Discuss the child and familys response to illness and ability to cope with the stressor of hospitalization', Apply knowledge of physiological psychosocial and developmental variations when planning care for children of all ages during the pre and postoperative phases of the surgical experience

Name
Describe the role of members of the health care team in regard to childbearing women, newborns, and children.

Objective
Describe the role of the family during the perinatal experience', Identify health education and safety needs for children who sustained an accident and their families', Describe the pathophysiology clinical manifestations emergency management and nursing interventions for children involved in an accident such as drowning poisoning burns choking suffocation and electrical shock

Name
Apply a basic knowledge of pharmacology, health alterations, and nutrition to the care of childbearing women, newborns, children, and adolescents.

Objective
Describe various methods of female and male contraception', Discuss advantages and disadvantages of identified methods of contraception', Identify the most common sexually transmitted infections STIs that affect the male and female reproductive systems including gonorrhea chlamydia syphilis genital herpes hepatitis B and HIV', Describe the pathophysiology clinical manifestations medical management and nursing care of clients who have common STDs', Describe physiological changes that occur in women during the normal antepartum period', Discuss nutritional needs of the pregnant woman and the effects of poor nutrition on the mother and baby', Identify commonly prescribed and overthecounter medications used during the antepartum period', Discuss the effects of medications used during the antepartum period and their nursing implications', Describe the four stages of labor', Describe the physiological changes that occur during the postpartum experience', Identify common medications used for the postpartum client', Describe the physiological needs of the normal newborn', Describe common potential newborn complications that may occur infant of a diabetic mother hyperbilirubinemia blood incompatibilities', Identify common medications given during the neonatal period', Describe the role of play for children of all age groups', Discuss elimination needs for children of all age groups', Identify the most common safety issues for children of all age groups', Discuss principles of pain management for children of all age groups', Apply knowledge of pathophysiology when planning care for clients with dehydration or overhydration', Apply knowledge of anatomy physiology basic pathophysiology nutrition and developmental variations when helping to plan care for children who have an alteration in regulation and metabolism', Apply knowledge of anatomy physiology basic pathophysiology nutrition and developmental variations when helping to plan care for children who have an alteration in oxygenation', Apply knowledge of anatomy physiology basic pathophysiology nutrition and developmental variations when helping to plan care for children who have an alteration in cardiac output and tissue perfusion Apply knowledge of anatomy physiology basic pathophysiology nutrition and developmental variations when helping to plan care for children who have an alteration in cognition and sensation', Apply knowledge of anatomy physiology basic pathophysiology nutrition and developmental variations when helping to plan care for children who have an alteration in integument Apply knowledge of anatomy physiology basic pathophysiology nutrition and developmental variations when helping to plan care for children who have an alteration in mobility', Apply knowledge of anatomy physiology basic pathophysiology nutrition and developmental variations when helping to plan care for children who have an alteration in elimination

Name
Articulate verbal and nonverbal communication strategies that are used to promote caring, therapeutic relationships with childbearing women, newborns, children, and adolescents.

Objective
Discuss care of the normal newborn', Discuss nutritional needs of the newborn', Explain advantages of breast feeding versus bottle feeding', Identify methods of communication with children of all age groups and their families', Describe the nurses role in promoting scheduled immunizations of children', Compare and contrast the amount of body surface of newborns infants and children', Discuss the correct use and functioning of therapeutic devices that support regulation and metabolism

Name
Describe how information technology is used to support documentation of client and family educational needs and evidence-based practice in regard to the care of childbearing women, newborns, and children.

Objective
Discuss the role of fetal monitoring during active labor', Describe common diagnostic tests used for newborns including the purpose of the tests and nursing implications Identify current trends in child health', Review the CDCs schedule for immunizations to protect against communicable diseases', Recognize alterations in laboratory values related to alterations in regulation and metabolism Discuss the correct use and functioning of therapeutic devices that support oxygenation', Recognize alterations in laboratory values and screening tests related to alterations in cardiac output and tissue perfusion', Discuss the correct use and functioning of therapeutic devices that support cardiac output and tissue perfusion', Recognize alterations in laboratory values related to alterations in cognition and sensation', Discuss the correct use and functioning of therapeutic devices that support cognition and sensation', Recognize alterations in laboratory values related to alterations in integument', Discuss the correct use and functioning of therapeutic devices that support integument', Recognize alterations in laboratory values related to alterations in mobility', Discuss the correct use and functioning of therapeutic devices that support mobility', Recognize alterations in laboratory values related to alterations in elimination', Discuss the correct use and functioning of therapeutic devices that support elimination

Name
Describe the health education needs experienced by childbearing women, newborns, children, and their families.

Objective
Describe health education needs of the pregnant woman during the antepartum period', Discuss health education needs of the mother and family as well as the role of the nurse in providing the teaching Describe wellchild and preventive care provided for children of all age groups', Identify health care education and safety needs for children who have an alteration in regulation and metabolism', Identify health care education and safety needs for children who have an alteration in oxygenation', Identify health care education and safety needs for children who have an alteration in cardiac output and tissue perfusion', Identify health care education and safety needs for children who have an alteration in cognition and sensation Identify health care education and safety needs for children who have an alteration in integument', Identify health care education and safety needs for children who have an alteration in mobility', Identify health care education and safety needs for children who have an alteration in elimination

Objective
Discuss the use of medications commonly used by the postpartum client their actions potential side effects and related nursing interventions', Discuss appropriate nursing interventions while caring for patients experiencing complications', Describe common potential newborn complications that may occur infant of a diabetic mother hyperbilirubinemia blood incompatibilities', Demonstrate techniques for safe administration of medications including pediatric dosage calculations to children of all age groups', Apply knowledge of the actions potential side effects and nursing implications when administering medications to children who have an alteration in regulation and metabolism', Apply knowledge of the actions potential side effects and nursing implications when administering medications to children who have an alteration in oxygenation', Apply knowledge of the actions potential side effects and nursing implications when administering medications to children who have an alteration in cardiac output and tissue perfusion Apply knowledge of the actions potential side effects and nursing implications when administering medications to children who have an alteration in cognition and sensation', Apply knowledge of the actions potential side effects and nursing implications when administering medications to children who have an alteration in integument', Apply knowledge of the actions potential side effects and nursing implications when administering medications to children who have an alteration in mobility Apply knowledge of the actions potential side effects and nursing implications when administering medications to children who have an alteration in elimination

Name
Discuss how organizational and time management skills are used when providing care to childbearing women, newborns, children, and their families.

Objective
Identify priority actions for clients with dehydration or overhydration', Identify priority actions for children who have an alteration in regulation and metabolism Identify priority actions for children who have an alteration in oxygenation', Identify priority actions for children who have an alteration in cardiac output and tissue perfusion Identify priority actions for children who have an alteration in cognition and sensation', Identify priority actions for children who have an alteration in integument', Identify priority actions for children who have an alteration in mobility', Identify priority actions for children who have an alteration in elimination

Name
Describe the role of the practical nurse in maintaining personal and professional accountability for the delivery of standard-based, ethical and legal care to childbearing women, newborns, children, and their families.

Objective
Discuss the role of the nurse in womensmaternal health care', Identify current legalethical issues in reproductive health care', Discuss the nurses role in caring for clients who have had a therapeutic abortion invitro fertilization or have had a baby through a surrogate pregnancy', Discuss the nurses role in providing comfort and support to client and family during the intrapartum experience', Discuss common communicable diseases of childhood their signs and symptoms and appropriate nursing interventions and education to prevent transmission of communicable diseases', Identify risk factors and injuries consistent with child and sexual abuse and neglect', Identify appropriate personsagencies to whom suspected abuse and neglect should be reported', Describe the role of the nurse in providing familycentered care for children who have sustained an accident', Describe the role of the nurse in providing quality care to children who have an alteration in regulation and metabolism', Describe the role of the nurse in providing quality care to children who have an alteration in oxygenation', Describe the role of the nurse in providing quality care to children who have an alteration in cardiac output and tissue perfusion', Identify health care education and safety needs for children who have an alteration in cognition and sensation', Describe the role of the nurse in providing quality care to children who have an alteration in integument', Describe the role of the nurse in providing quality care to children who have an alteration in mobility', Describe the role of the nurse in providing quality care to children who have an alteration in elimination

Requirements

Simple Requirements

A minimum grade of 'C' in Course PNR119

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR119 - KSPN Fundamentals of Pharmacology and Safe Medication Administration

A minimum grade of 'C' in Course PNR120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR120 - KSPN Foundations of Nursing

A minimum grade of 'C' in Course PNR121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR121 - KSPN Foundations of Nursing Clinicals

A minimum grade of 'C' in Course PNR128

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR128 - KSPN Nursing Care of Adults I

A minimum grade of 'C' in Course PNR129

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR129 - KSPN Nursing Care of Adults I Clinical

Enrolled in Course PNR131

Type
Prerequisite

Enroll in the following Courses:
- PNR131 - KSPN Maternal Child Nursing Clinical

Enrolled in Course PNR135

Type
Prerequisite

Enroll in the following Courses:
- PNR135 - KSPN Mental Health Nursing

Enrolled in Course PNR138

Type
Prerequisite

Enroll in the following Courses:
- PNR138 - KSPN Nursing Care of Adults II

Enrolled in Course PNR139

Type
Prerequisite

Enroll in the following Courses:
- PNR139 - KSPN Nursing Care of Adults II Clinical

Enrolled in Course PNR141

Type
Prerequisite

Enroll in the following Courses:
- PNR141 - KSPN Care of Aging Adults

Enrolled in Course PNR166

Type
Prerequisite

Enroll in the following Courses:
- PNR166 - KSPN Leadership, Roles, and Issues

PNR131 - KSPN Maternal Child Nursing Clinical

Overview

Department
Nursing

Course Description
This course provides an integrative, family-centered approach to the care of childbearing women, newborns, and children. Students are given the opportunity to observe the uncomplicated birth process and practice postpartum care as well as care of the newborn in the clinical laboratory setting. Common pediatric diseases and the growth and development process is the focus of child-related clinical laboratory experiences.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
1

Other Hours

Other Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Perform a focused health assessment on childbearing women, newborns, children, and adolescents differentiating between expected and unexpected findings.

Objective
Perform a focused assessment on childbearing women newborns children and adolescents differentiating between expected and unexpected findings

Name
Assist in developing an evidence based plan of care that is family- and health promotion-centered and includes cultural and age appropriate interventions for childbearing women, newborns, children, and adolescents.

Objective
Provide nursing care that is relationshipcentered caring culturally sensitive and based on the physiological psychosocial and spiritual needs of clients with commonly occurring health problems that have predictable outcomes', Contribute to the development of an individualized relationshipcentered plan of care for childbearing women newborns children and adolescents', Provide culturally sensitive care to childbearing women newborns children and adolescents from diverse backgrounds

Name
Participate as a member of the health care team and client advocate while providing quality care that promotes client safety for childbearing women, newborns, children, and adolescents.

Objective
Identify opportunities for client advocacy', Collaborate with the client and members of the interprofessional health care team to promote continuity of care and shared decisionmaking', Participate as a member of the interprofessional health care team', Collaborate with the healthcare team when a situation requires knowledgeactions beyond the expertise and scope of LPN practice

Name
Apply a basic level of knowledge of pathophysiology, pharmacology, and nutrition, as well as evidence based practice when providing care to childbearing women, newborns, children, and adolescents.

Objective
Provide an environment that is safe and reduces risk of harm for clients self and others', Report actual and potential safety risks to clients self and others in the health care environment', Implement actions that promote safe practice and a safe environment for clients self and others', Implement interventions consistent with the National Patient Safety Goals in selected settings

Name
Use verbal and nonverbal communication that promotes therapeutic relationships with clients and their families, as well as professional relationships with members of the health care team.

Objective
Use verbal and nonverbal communication that promotes caring therapeutic relationships with childbearing women newborns children and adolescents

Name
Use information technology to access evidence-based literature and current trends, as well as communicate with members of the health care team, accurately documenting client care in a secure and timely manner.

Objective
Use current evidence as a basis for nursing practice', Access evidence from credible resources', Utilize current evidence as a basis for nursing practice', Use information and client care technology to support the delivery of safe quality client care', Use information technology to communicate with other members of the health care team', Use information technology to securely and accurately document nursing care while monitoring client response', Use client care technology in a way that supports quality and safe processes of care

Name
Participate in identifying the health education needs of childbearing women, newborns, children, and their families, as well as reinforcing education provided by members of the health care team.

Objective
Reinforce healthrelated education provided to childbearing women newborns children and adolescents

Name
Report concerns related to client safety and delivery of quality care.

Objective
Participate in quality improvement practices evaluating their effect on client outcomes', Report concerns related to the quality of client care', Reflect on individual action necessary to provide quality care

Name
Use organizational and time management skills when providing care to childbearing women, newborns, children, and adolescents.

Objective
Communicate clientrelated information to designated members of the healthcare team in a timely manner', Use leadership skills that support the provision and coordination of client care', Use organizational time management and priority setting skills when providing client care', Support assistive personnel with client care tasks', Supervise assistive personnel to whom tasks have been assigned

Name
Adhere to ethical, legal, and professional standards while maintaining accountability for the care provided to childbearing women, newborns, children, and adolescents.

Objective
Demonstrate accountability for client care that incorporates legal and ethical principles regulatory guidelines and standards of nursing practice', Practice nursing in accordance with the Kansas PN scope of practice as dictated by states practical nursing regulations and statutes', Use the Client Bill of Rights and the Self Determination Act along with an established nursing code of ethics as a personal framework for practice', Maintain personal and professional accountability in the delivery of client care', Practice in accordance with institutional policies and procedures

Requirements

Simple Requirements

A minimum grade of 'C' in Course PNR119

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR119 - KSPN Fundamentals of Pharmacology and Safe Medication Administration

Enrolled in Course PNR139

Type
Prerequisite

Enroll in the following Courses:
- PNR139 - KSPN Nursing Care of Adults II Clinical

Enrolled in Course PNR166

Type
Prerequisite

Enroll in the following Courses:
- PNR166 - KSPN Leadership, Roles, and Issues

Enrolled in Course PNR141

Type
Prerequisite

Enroll in the following Courses:
- PNR141 - KSPN Care of Aging Adults

Enrolled in Course PNR138

Type
Prerequisite

Enroll in the following Courses:
- PNR138 - KSPN Nursing Care of Adults II

Enrolled in Course PNR135

Type
Prerequisite

Enroll in the following Courses:
- PNR135 - KSPN Mental Health Nursing

Enrolled in Course PNR130

Type
Prerequisite

Enroll in the following Courses:
- PNR130 - KSPN Maternal Child Nursing

A minimum grade of 'C' in Course PNR129

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR129 - KSPN Nursing Care of Adults I Clinical

A minimum grade of 'C' in Course PNR128

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR128 - KSPN Nursing Care of Adults I

A minimum grade of 'C' in Course PNR121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR121 - KSPN Foundations of Nursing Clinicals

A minimum grade of 'C' in Course PNR120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR120 - KSPN Foundations of Nursing

PNR135 - KSPN Mental Health Nursing

Overview

Department
Nursing

Course Description
This course explores basic concepts and trends in mental health nursing. Therapeutic modalities and client behavior management are discussed. Emphasis is placed on using the nursing process and meeting the basic human needs of the client with a mental health disorder.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
30

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Describe how to perform a focused mental health assessment on clients with common mental health disorders.

Objective
Describe the characteristics of mental health wellness and illness', Identify the components of mental health and the variety of factors that influence its development', Explain the purpose of the mental status examination', Identify steps involved in conducting a holistic nursing assessment of the psychiatric client', Describe methods of data collection in the mental health setting and documentation techniques', Describe how to assess a clients risk for suicide including assessment of lethality', Differentiate between primary and secondary gains experienced by clients with somatic illnesses', Discuss the components of a mini mental status examination', Identify mental health disorders that may be associated with an increased risk of physical aggression', Discuss assessment indicators and interventions for child adult and elder abuse

Name
Develop a relationship-centered plan of care that incorporates current evidence and includes cultural, spiritual, and developmentally appropriate interventions for clients with common mental health disorders.

Objective
Apply the nursing process in identifying nursing care plan needs for clients experiencing anxiety andor anxiety disorders', Apply the nursing process in identifying nursing care plan needs for clients with schizophrenia', Apply the nursing process in identifying nursing care needs of clients a mood disorder', Apply the nursing process in identifying the nursing care plan needs of clients with personality disorders', Describe societal and cultural influences on body image diet and exercise', Apply the nursing process in identifying nursing care plan needs of clients with eating disorders', Apply the nursing process to identifying nursing care plan needs of clients with somatic illnesses', Apply the nursing process in identifying nursing care plan needs of children and adolescents with mental health disorders', Apply the nursing process in identifying nursing care needs of clients with cognitive disorders', Apply the nursing process to identifying nursing care needs of clients at risk for anger hostility andor aggression', Apply the nursing process in identifying the nursing care plan needs of clients with alcohol andor substance abuse issues

Name
Describe the role of members of the health care team in regard to clients with common mental health disorders and their families.

Objective
Identify major trends in mental health nursing', Discuss the impact of cultural influences on mental health', Investigate the various settings in which mental health treatment is offered', Identify barriers to effective mental health treatment for homeless people and those in the criminal justice system', Describe the multidisciplinary roles within the mental health team', Discuss the role and responsibilities of psychiatric nurses', Identify the impact of nursing theories on mental health nursing', Explore various treatment settings and identify communitybased andor support services

Name
Apply a basic knowledge of psychopathology, pharmacology, and nutrition as it relates to clients with common mental health disorders.

Objective
Explain the basic beliefs and approaches of the following psychosocial theories Psychoanalytic Developmental Behavioral and Humanistic', Apply Maslows Hierarchy of Human Needs theory to the mental health client', Identify guidelines for conducting effective psychiatric interviews', Identify how psychosocial theoretical perspectives have influenced current nursing practice', Discuss the use of electroconvulsive therapy', Describe mental health conditions appropriate for various neurobiologic treatment applications', Explain the relationship of pharmacological treatment to neurobiologic theories', Identify the major categories of medications used to treat mental illnesses discussing uses actions side effects adverse reactions and nursing implications', Define and describe anxiety', Outline levels of anxiety and list behavioral manifestations associated with each level', Describe theories concerning the causes of anxiety disorders', Differentiate between positive signs and symptoms and negative signs and symptoms of schizophrenia', Discuss theories of causation of schizophrenia', Discuss theories regarding causation of mood disorders', Describe components of commonly used rating scales for depression', Identify populations at risk for suicide', Explore electroconvulsive therapy', Describe behaviors associated with specific types of personality disorders', Describe current treatment modalities for clients with personality disorders', Define psychosomatic illness', Describe the characteristics and dynamics of somatic illnesses', Describe the three central features of somatic illnesses', Identify the treatment modalities for children and adolescents with selected mental health disorders', Describe the characteristics of and risk factors for cognitive disorders', Differentiate between delirium and dementia', Identify the clinical manifestations of Alzheimers disease', Explore aggression and outline its signs symptoms and behavioral manifestations', Define restraints', Describe the various types of substance abuse', Outline onset and clinical course of alcoholism', Describe the signs and symptoms of withdrawal and explore detoxification treatments

Name
Articulate verbal and nonverbal communication techniques that support the development of trust, respect, security, and therapeutic nurse-client relationships.

Objective
Discuss the importance of establishing and maintaining a therapeutic environment', Explain the various types of interpersonal relationships', Describe the nature and goals of a therapeutic nurseclient relationship', Explore techniques that might enhance the development of trust respect security and a therapeutic nurseclient relationship', Discuss the goals of therapeutic communication', Identify therapeutic and nontherapeutic communication techniques', Compare the characteristics of verbal and nonverbal communication', Distinguish between concrete and abstract messages', Compare and contrast the characteristics of the three clusters of personality disorders', Discuss factors thought to contribute to the development of personality disorders', Identify potential challenges in establishing a therapeutic relationship with a client with a personality disorder', Compare and contrast anorexia nervosa and bulimia nervosa', Discuss etiological theories pertaining to eating disorders', List treatment goals for clients with eating disorders', Discuss etiological theories pertaining to somatic illnesses', Discuss risk factors characteristics and family dynamics pertaining to child and adolescent mental health disorders', Discuss anger hostility and aggression', Discuss characteristics and risk factors associated with abusive and violent behaviors', Apply the nursing process in identifying nursing care plan needs of clients with eating disorders', Discuss etiology risk factors and family dynamics as they relate to substance abuse

Name
Describe how information technology is used to support mental status assessments, client and family education, and evidence-based practice in regard to the care of clients with common mental health disorders and their families.

Objective
Examine incidences and trends in domestic violence child and elder abuse', Discuss substance abuse as it occurs among health care providers andexamine the Kansas Nurse Assistance Program

Name
Describe the health education needs experienced by clients with common mental health disorders and their families.

Objective
Discuss physiologic functions and selfcare considerations to be addressed in the mentally ill client', Outline a teaching plan for clients with eating disorders andor their families', Outline components of a teaching plan for parents family and clients with selected mental health disorders', Outline components of a teaching plan for caregivers of client with cognitive disorders', Promote abuse awareness and prevention activities

Objective
Explore appropriate nursing interventions for prevention and management of aggressive behaviors

Name
Discuss how organizational and time management skills are used when providing care to clients with common mental health disorders.

Objective
Describe expected behaviors required of the nurse caring for the mentally ill client', Identify factors that can interfere with the therapeutic nurseclient relationship', Describe the clinical manifestations goals nursing interventions and treatment of clients with selected anxiety disorders', Describe the clinical manifestations goals nursing interventions and treatment of clients with schizophrenia', Describe the clinical manifestations goals nursing interventions and treatment of clients with selected mood disorders

Name
Describe the role of the practical nurse in maintaining accountability for the delivery of standard-based, ethical and legal care to clients with common mental health disorders and their families.

Objective

Discuss the purpose and use of the American Psychiatric Associations Diagnostic and Statistical Manual of Mental Disorders', Apply the American Nurses Association standards of practice for psychiatric mental health nursing', Explain the purpose of the Patients Bill of Rights', Describe the rights of the client in a psychiatric setting', Compare and contrast aspects of voluntary and involuntary admissions', Identify the legal and ethical issues related to seclusion and restraint', Discuss the importance of privacy and respecting physical and social boundaries in communicating with mental health clients', Describe communication by the client that requires nurses to breach confidentiality', Explain the role of the nurse in individual family group online treatment modalities', Discuss the actions side effects adverse reactions and nursing implications for medications used to treat anxiety disorders', Discuss the actions side effects adverse reactions and nursing implications for medications used to treat schizophrenia', Discuss the actions side effects adverse reactions and nursing implications for medications used to treat selected mood disorders', Explore safety and security legal and ethical issues surrounding care of a client with a cognitive disorder', Describe the legal responsibilities of healthcare providers in documentation and reporting of suspected of known abuse

Requirements

Simple Requirements

A minimum grade of 'C' in Course PNR121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR121 - KSPN Foundations of Nursing Clinicals

A minimum grade of 'C' in Course PNR128

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR128 - KSPN Nursing Care of Adults I

A minimum grade of 'C' in Course PNR129

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR129 - KSPN Nursing Care of Adults I Clinical

Enrolled in Course PNR130

Type
Prerequisite

Enroll in the following Courses:
- PNR130 - KSPN Maternal Child Nursing

Enrolled in Course PNR131

Type
Prerequisite

Enroll in the following Courses:
- PNR131 - KSPN Maternal Child Nursing Clinical

Enrolled in Course PNR138

Type
Prerequisite

Enroll in the following Courses:
- PNR138 - KSPN Nursing Care of Adults II

Enrolled in Course PNR139

Type
Prerequisite

Enroll in the following Courses:
- PNR139 - KSPN Nursing Care of Adults II Clinical

Enrolled in Course PNR141

Type
Prerequisite

Enroll in the following Courses:
- PNR141 - KSPN Care of Aging Adults

Enrolled in Course PNR166

Type
Prerequisite

Enroll in the following Courses:
- PNR166 - KSPN Leadership, Roles, and Issues

A minimum grade of 'C' in Course PNR120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR120 - KSPN Foundations of Nursing

A minimum grade of 'C' in Course PNR119

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR119 - KSPN Fundamentals of Pharmacology and Safe Medication Administration

PNR136 - Transition to Nursing

Overview

Department
Nursing

Course Description
This course is designed to provide skills to enhance the success of the practical nurse student. It will include study and test-taking skills, time and stress management, goal setting, social and cultural awareness skills, written communication, an introduction to critical thinking and the nursing process, APA format, review of PN policies and procedures, and learning in a hybrid/online format.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to understand policies of the PN department

Objective
Be able to locate identified policies in handbook', Locate general WATC policies', List consequences for failure to comply with identified policies

Name
The student will be able to differentiate the responsibilities of the learner and educator

Objective
List three responsibilities of the instructor', List three responsibilities of the student

Name
The student will be able to understand the theoretical framework of the PN program and its relationship to program content

Objective
Describe Hendersons theory of Basic Needs', Match three basic needs to specific course outcomes', Recognize the steps of the nursing process

Name
Demonstrate an understanding an ability to set personal and professional goals

Objective
Demonstrate the ability to set personal and professional SMART goals', Develop an individualized study plan', Understand how procrastination can affect achievement of goals', List personal strengths and challenges that might impact learning

Name
Develop test taking, problem solving and critical thinking skills

Objective
Understand important testtaking skills', Completion of critical thinking exercises', Demonstrate ability to analyze an NCLEX and NGN style questions

Name
Demonstrate ability to use LMS system

Objective
Demonstrate ability to access course', Demonstrate ability to send professional emails', Demonstrate ability to utilize drop boxes to submit assignments

Name
Understand scope of practice for a PN student per Kansas Nurse Practice Act

Objective
Locate scope of practice in Kansas Nurse Practice Act', Discuss legalities of PN practice

Name
Demonstrate the skills associated with writing and professional communication

Objective
Identify which forms of communication work best for different types of messages', Understand the writing process in a digital age and how to compose an effective message', Understand and use APA formatting

Name
Demonstrate knowledge and awareness of cultural diversity

Objective
Recognize examples of cultural diversity', Recognize accept and respect peoples differences', Define unconscious bias

Requirements

Simple Requirements

A minimum grade of 'C' in Course PSY120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PSY120 - Developmental Psychology

A minimum grade of 'C' in Course ALH110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ALH110 - Principles of Nutrition

A minimum grade of 'C' in Course PSY101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PSY101 - General Psychology

A minimum grade of 'C' in Course BIO150

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- BIO150 - Human Anatomy & Physiology

PNR138 - KSPN Nursing Care of Adults II

Overview

Department
Nursing

Course Description
This course focuses on the care of adult clients experiencing common medical/ surgical health alterations with predictable outcomes. Emphasis is placed on the care of clients with alterations in cognition and sensation, mobility, elimination, immunity and hematology, and reproduction. Principles related to emergency preparedness are also addressed.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
75

Course Learning Outcomes

Learning Outcomes

Objective
Recognize alterations in the laboratory values of arterial pH CO2 HCO3 and O2 indicative of respiratory and metabolic acidosis or alkalosis', Recognize the indications for administration of potassium supplements Kayexalate and sodium bicarbonate', Recognize components of a focused assessment that should be included when collecting data on adults who have an alteration in cognition and sensation', Recognize components of a focused assessment that should be included when collecting data on adults who have an alteration in immunity and hematology', Recognize components of a focused assessment that should be included when collecting data on adults who have an alteration in mobility', Recognize components of a focused assessment that should be included when collecting data on adults who have an alteration in reproduction', Recognize components of a focused assessment that should be included when collecting data on adults who have an alteration in elimination

Objective
Identify priority actions for clients with respiratory and metabolic acidosis or alkalosis', Identify priority actions for adults who have an alteration in cognition and sensation', Identify priority actions for adults who have an alteration in immunity and hematology', Identify priority actions for adults who have an alteration in mobility', Identify priority actions for adults who have an alteration in reproduction', Identify priority actions for adults who have an alteration in elimination

Name
Describe the role of members of the health care team in regard to clients with commonly occurring health alterations that have predictable outcomes.

Objective
Discuss issues related to an internal threat natural disaster or a mass casualty situation', Review prepared security plans and chain of responsibility for emergency situations

Name
Apply a basic level of knowledge of pathophysiology, pharmacology, and nutrition, as well as evidence based practice, to the care of adult clients with commonly occurring health alterations that have predictable outcomes.

Objective
Apply knowledge of pathophysiology when planning care for clients with respiratory or metabolic acidosis or alkalosis', Apply knowledge of anatomy physiology pathophysiology nutrition and developmental variations when helping to plan care for adults who have an alteration in cognition and sensation', Apply knowledge of anatomy physiology pathophysiology nutrition and developmental variations when helping to plan care for adults who have an alteration in immunity and hematology', Apply knowledge of anatomy physiology pathophysiology nutrition and developmental variations when helping to plan care for adults who have an alteration in mobility', Apply knowledge of anatomy physiology pathophysiology nutrition and developmental variations when helping to plan care for adults who have an alteration in reproduction', Apply knowledge of anatomy physiology pathophysiology nutrition and developmental variations when helping to plan care for adults who have an alteration in elimination

Name
Articulate verbal and nonverbal communication strategies that are used to promote caring, therapeutic relationships with clients and their families, as well as professional relationships between members of the healthcare team.

Objective
Differentiate between the clinical manifestations indicative of respiratory and metabolic acidosis or alkalosis', Discuss the correct use and functioning of therapeutic devices that support cognition and sensation', Discuss the correct use and functioning of therapeutic devices that support immunity and hematology', Discuss the correct use and functioning of therapeutic devices that support mobility', Discuss the correct use and functioning of therapeutic devices that support reproduction', Discuss the correct use and functioning of therapeutic devices that support elimination

Name
Describe how information technology is used to access evidence, mitigate error, and communicate relevant information to members of the health care team.

Objective
Recognize alterations in laboratory values related to alterations in cognition and sensation', Recognize alterations in laboratory values related to alterations in immunity and hematology', Recognize alterations in laboratory values related to alterations in mobility', Recognize alterations in laboratory values related to alterations in reproduction', Recognize alterations in laboratory values related to alterations in elimination

Name
Describe teaching strategies that can be used to reinforce the health education needs of clients with commonly occurring health alterations that have predictable outcomes.

Objective
Identify health care education and safety needs for adults who have an alteration in cognition and sensation', Identify health care education and safety needs for adults who have an alteration in immunity and hematology', Identify health care education and safety needs for adults who have an alteration in mobility', Identify health care education and safety needs for adults who have an alteration in reproduction', Describe the role of the nurse in providing quality care to adults who have an alteration in elimination

Objective
Describe the role of the nurse in providing quality care to adults who have an alteration in cognition and sensation', Describe the role of the nurse in providing quality care to adults who have an alteration in immunity and hematology', Describe the role of the nurse in providing quality care to adults who have an alteration in mobility', Describe the role of the nurse in providing quality care to adults who have an alteration in reproduction', Identify health care education and safety needs for adults who have an alteration inelimination

Name
Discuss how organizational, time management, and priority-setting skills are used when providing care to adult clients.

Objective
Define the term triage and its related steps', Determine priorities when evacuating clients from a client care setting

Name
Describe the role of the practical nurse in maintaining personal and professional accountability for the delivery of standard-based, ethical and legal care to clients with commonly occurring health alterations that have predictable outcomes.

Objective
Apply knowledge of the actions potential side effects and nursing implications when administering medications to adults who have an alteration in cognition and sensation', Apply knowledge of the actions potential side effects and nursing implications when administering medications to adults who have an alteration in immunity and hematology', Apply knowledge of the actions potential side effects and nursing implications when administering medications to adults who have an alteration in mobility', Apply knowledge of the actions potential side effects and nursing implications when administering medications to adults who have an alteration in reproduction', Apply knowledge of the actions potential side effects and nursing implications when administering medications to adults who have an alteration in elimination

Requirements

Simple Requirements

A minimum grade of 'C' in Course PNR119

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR119 - KSPN Fundamentals of Pharmacology and Safe Medication Administration

Enrolled in Course PNR166

Type
Prerequisite

Enroll in the following Courses:
- PNR166 - KSPN Leadership, Roles, and Issues

A minimum grade of 'C' in Course PNR120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR120 - KSPN Foundations of Nursing

A minimum grade of 'C' in Course PNR121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR121 - KSPN Foundations of Nursing Clinicals

A minimum grade of 'C' in Course PNR128

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR128 - KSPN Nursing Care of Adults I

A minimum grade of 'C' in Course PNR129

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR129 - KSPN Nursing Care of Adults I Clinical

Enrolled in Course PNR130

Type
Prerequisite

Enroll in the following Courses:
- PNR130 - KSPN Maternal Child Nursing

Enrolled in Course PNR131

Type
Prerequisite

Enroll in the following Courses:
- PNR131 - KSPN Maternal Child Nursing Clinical

Enrolled in Course PNR135

Type
Prerequisite

Enroll in the following Courses:
- PNR135 - KSPN Mental Health Nursing

Enrolled in Course PNR139

Type
Prerequisite

Enroll in the following Courses:
- PNR139 - KSPN Nursing Care of Adults II Clinical

Enrolled in Course PNR141

Type
Prerequisite

Enroll in the following Courses:
- PNR141 - KSPN Care of Aging Adults

PNR139 - KSPN Nursing Care of Adults II Clinical

Overview

Department
Nursing

Course Description
This course focuses on the care of adult clients with common medical/surgical health problems. The clinical laboratory experience provides the student an opportunity to build on the theoretical concepts from Nursing Care of Adults I and II and implement safe client care in selected settings. Students are given the opportunity to practice leadership skills while managing a caseload of clients.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
2

Other Hours

Other Hours
Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Identify priority assessment findings while performing a focused health assessment on clients experiencing common medical/surgical health alterations.

Objective
Perform a focused assessment prioritizing assessment findings

Name
Assist in developing an evidence based plan of care that includes cultural, spiritual, and developmentally appropriate interventions related to health promotion and commonly occurring health alterations of adult clients who have predictable outcomes.

Objective
Provide nursing care that is relationshipcentered caring culturally sensitive and based on the physiological psychosocial and spiritual needs of clients with commonly occurring health problems that have predictable outcomes', Provide culturally sensitive care to clients from diverse backgrounds

Name
Collaborate with members of the health care team serving as a client advocate when providing and coordinating client care.

Objective
Advocate for client rights and needs', Collaborate with the client and members of the interprofessional health care team to promote continuity of care and shared decisionmaking', Collaborate with the healthcare team when a situation requires knowledgeactions beyond the expertise and scope of LPN practice

Objective
Use current evidence client preferences and clinical experience as a basis for nursing practice

Objective
Use verbal and nonverbal communication that promotes caring therapeutic relationships with clients as well as professional relationships with members of the healthcare team

Name
Use information technology to access evidence based literature as well as mitigate error and support clinical decision making with members of the health care team.

Objective
Access evidence from credible resources client preferences and clinical expertise', Use information technology to support clinical decisionmaking in collaboration with the health care team', Use information technology to securely and accurately document nursing care and evaluate client response', Use client care technology to mitigate error and monitor outcomes of care processes

Name
Evaluate clients acquisition of new knowledge and skills while reinforcing health education provided by members of the health care team.

Objective
Evaluate the acquisition of new knowledge and skills by clients who have received healthrelated education

Name
Implement corrective actions for actual and potential safety risks to client, self, and others.

Objective
Use information and client care technology to support the delivery of safe quality client care', Implement corrective actions for actual and potential safety risks to clients self and others', Implement actions that promote safe practice and a safe environment for clients self and others

Name
Participate in quality improvement activities developed to enhance client outcomes.

Objective
Participate in quality improvement activities evaluating their effect on client outcomes

Name
Use organizational, time management, and priority-setting skills when coordinating the care of adult clients and assigning and supervising unlicensed assistive personnel.

Objective
Prioritize the delivery of care using the nursing process', Prioritize the relevance of clientrelated information that should be shared with members of the healthcare team', Use organizational time management and priority setting skills when coordinating the care of clients', Assign client care tasks to assistive personnel', Evaluate the performance of assistive personnel to whom tasks have been assigned

Name
Adhere to ethical, legal and professional standards while maintaining accountability for the care provided to adult clients and their families.

Objective
Demonstrate accountability for client care that incorporates legal and ethical principles regulatory guidelines and standards of nursing practice', Practice nursing in accordance with the Kansas PN scope of practice as dictated by states practical nursing regulations and statutes', Use the Client Bill of Rights and the Self Determination Act along with an established nursing code of ethics as a personal framework for practice', Maintain personal and professional accountability in the delivery of client care', Practice in accordance with institutional policies and procedures

Requirements

Simple Requirements

A minimum grade of 'C' in Course PNR119

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR119 - KSPN Fundamentals of Pharmacology and Safe Medication Administration

A minimum grade of 'C' in Course PNR121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR121 - KSPN Foundations of Nursing Clinicals

A minimum grade of 'C' in Course PNR128

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR128 - KSPN Nursing Care of Adults I

A minimum grade of 'C' in Course PNR129

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR129 - KSPN Nursing Care of Adults I Clinical

Enrolled in Course PNR130

Type
Prerequisite

Enroll in the following Courses:
- PNR130 - KSPN Maternal Child Nursing

A minimum grade of 'C' in Course PNR120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR120 - KSPN Foundations of Nursing

Enrolled in Course PNR135

Type
Prerequisite

Enroll in the following Courses:
- PNR135 - KSPN Mental Health Nursing

Enrolled in Course PNR138

Type
Prerequisite

Enroll in the following Courses:
- PNR138 - KSPN Nursing Care of Adults II

Enrolled in Course PNR141

Type
Prerequisite

Enroll in the following Courses:
- PNR141 - KSPN Care of Aging Adults

Enrolled in Course PNR166

Type
Prerequisite

Enroll in the following Courses:
- PNR166 - KSPN Leadership, Roles, and Issues

Enrolled in Course PNR131

Type
Prerequisite

Enroll in the following Courses:
- PNR131 - KSPN Maternal Child Nursing Clinical

PNR141 - KSPN Care of Aging Adults

Overview

Department
Nursing

Course Description
This course is designed to explore issues related to the aging adults. Course content addresses the impact of ageism, alterations in physiological and psychosocial functioning, and the role of the practical nurse in caring for older adult clients across a continuum of care.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Examine the impact of ageism on client demographics, economic status, family dynamics, and health care needs.

Objective
Define ageism', Identify personal and social attitudes regarding aging', Describe major economic concerns of aging', Describe changes in family dynamics', Discuss elder abuse', Identify current trends and demographics

Name
Identify psycho-social, spiritual and cultural considerations related to the care of aging adults.

Objective
Identify Cognitiveperceptual issues related to the aging adult', Explore concepts related to selfperception and selfconcept', Examine changing roles and relationships', Discuss stress reduction and coping mechanisms', Consider common values and beliefs', Explore effective communication techniques and resources for the aging adult', Discuss loss and grief associated with aging and increased vulnerability', Discuss sexuality in aging adults', Explore factors affecting the aging family', Identify the impact of spirituality and cultural rituals and beliefs

Name
Identify anticipated alterations of physiological functioning in aging adults.

Objective
Describe expected acute and chronic changes in an older adults body systems', Relate these changes to the aging process', Outline components of a psychosocial assessment

Name
Discuss focused nursing assessment unique to aging adults including functional, environmental, risk, and setting specific assessments.

Objective
Review considerations for performing health assessments and the aging adult client', Describe the components of a functional assessment', Outline considerations for completing an environmental assessment', Describe techniques for physical assessment of the aging adult client', Describe federal state and facility specific assessment requirements

Name
Explore health promotion and disease prevention for aging adults.

Objective
Introduction to health promotion and disease prevention for aging adults', Discuss polypharmacy', Examine client teaching for safe administration of medication', Identify immunization needs of aging adults', Identify evidence based practice related to skin care', Explore client education techniques for the aging adult', Outline nutrition and hydration needs of aging adults', Discuss measures to promote safety modify the environment and mitigate fall risk

Name
Differentiate between restorative and rehabilitative care.

Objective
Discuss Interdisciplinary collaboration', Examine strategies to promote mobility', Outline planning documentation and client teaching relative to restorative and rehabilitative care

Name
Differentiate among varying types of end-of-life and palliative care and the nurses role in their provision.

Objective
Explore the range of care options related to end of life care', Differentiate between palliative hospice and comfort care', Explore nursing interventions that support end of life care', Identify strategies to promote pain management pain and rest

Name
Explore the role of the practical nurse in caring for aging adults in a variety of care settings.

Objective
Describe factors which increase vulnerability in the aging adult', Discuss options for care of the aging adult in the community', Discuss options for care for the aging adult in a variety of healthcare facilities', Explore the continuum of care for aging adults', Examine expectations related to professionalism across the continuum of care', Discuss the nurses role as an advocate for the aging adult

Name
Explore legal and ethical considerations in caring for aging adults.

Objective
Discuss advanced directives', Outline Client rights in healthcare settings', Identify reporting requirements for elder abuse', Differentiate among sources of funding for care', Describe how HIPAA is applied across the continuum of care

Requirements

Simple Requirements

A minimum grade of 'C' in Course PNR119

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR119 - KSPN Fundamentals of Pharmacology and Safe Medication Administration

Enrolled in Course PNR166

Type
Prerequisite

Enroll in the following Courses:
- PNR166 - KSPN Leadership, Roles, and Issues

Enrolled in Course PNR139

Type
Prerequisite

Enroll in the following Courses:
- PNR139 - KSPN Nursing Care of Adults II Clinical

Enrolled in Course PNR138

Type
Prerequisite

Enroll in the following Courses:
- PNR138 - KSPN Nursing Care of Adults II

Enrolled in Course PNR135

Type
Prerequisite

Enroll in the following Courses:
- PNR135 - KSPN Mental Health Nursing

A minimum grade of 'C' in Course PNR120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR120 - KSPN Foundations of Nursing

Enrolled in Course PNR130

Type
Prerequisite

Enroll in the following Courses:
- PNR130 - KSPN Maternal Child Nursing

A minimum grade of 'C' in Course PNR129

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR129 - KSPN Nursing Care of Adults I Clinical

A minimum grade of 'C' in Course PNR128

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR128 - KSPN Nursing Care of Adults I

A minimum grade of 'C' in Course PNR121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR121 - KSPN Foundations of Nursing Clinicals

Enrolled in Course PNR131

Type
Prerequisite

Enroll in the following Courses:
- PNR131 - KSPN Maternal Child Nursing Clinical

PNR166 - KSPN Leadership, Roles, and Issues

Overview

Department
Nursing

Course Description
This course provides orientation to leadership roles of the LPN and related responsibilities. It will introduce issues to the student they will encounter in the workplace.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Identify effective leadership and management skills for the licensed practical nurse.

Objective
Compare and contrast the concepts of leadership and management', Examine the difference between formal and informal leaders', Review descriptions of various leadership styles and subsequent roles assumed by leaders', Discuss the connection between leadership style and the employer and employee relationship', Discuss appropriate and inappropriate uses of power and influence', Explore the feelings of powerlessness and empowerment by nurses and characteristics of work environments that contribute to each', Discuss leadership strategies that LPNs can employ

Name
Discuss how health care is provided, regulated, and financed and the impact on the delivery of healthcare in various settings.

Objective
Explain methods of payment options for clients of health care', Discuss issues and trends that affect financing of health care and challenges the health care industry faces in providing accessible equitable care', Examine the role of the practical nurse in cost containment', Discuss current national initiatives that affect the healthcare system

Name
Discuss how to assign client care tasks to assistive personnel commensurate with abilities, level of preparation, and regulatory guidelines and supervise care provided.

Objective
Apply critical thinking in making clinical judgments in various client care situations', Examine the role of group decision making and brainstorming when attempting to resolve practice or client care related issues', Apply guidelines for appropriate and effective delegation', Identify strategies to involve the client in care decision making

Name
Communicate effectively as a leader in verbal and written format.

Objective
Explore the concept of teamwork and its relationship to productivity and job satisfaction', Discuss the purpose of interdisciplinary teams and the role of the LPN', Determine communication skillsstrategies needed when interacting with client families subordinates and peers', Explore the use of proper channels of communication for managing practice and client related issues in an organization', Examine various types of conflict and conflict management strategies within the various communication styles

Name
Construct examples of ethical decision-making, exhibiting tolerance of and respect for diversity in human abilities, cultures, age and beliefs.

Objective
Define quality improvement and determine its relationship to safe quality client care and institutional accreditation', Review the role of regulatory agencies and other accreditation entities in establishing institutional standards and accrediting the institutions who meet those standards', Examine the role of the nurse in identifying resolving and documenting client care issues through the quality improvement process', Discuss the role of the risk management department in identifying work place threats and working to ensure the safety of clients their families and staff

Name
Describe common legal issues for nurses including negligence and malpractice.

Objective
Examine the organizational chart in relation to its implications for organizational authority decision making and professional control', Compare and contrast nursing care delivery and its relationship to the roles of healthcare team members', Examine the scope of practice in relation to the roles of RNs LPNs and unlicensed personnel with respect to chain of commandand their relationship to the management of a nursing unit', Discuss the responsibility of the nurse in reporting unprofessional behavior such as suspected substance abuse by employees workplace violence and sexual harassment', Develop awareness of personal values and integrate a code of ethics into practice when directly or indirectly providing client care', Explore the ethical and legal challenges in assisting clients and their personal support systems as they deal with end of life issues including the role of the nurse in establishing and maintaining a do not resuscitate DNR or allow natural death', Examine the five elements of liability that constitute negligence torts of false imprisonment assault battery and defamation', Examine the leaders role in establishing and guiding that institutions standards for client care using institutional policies and procedures

Name
Describe the process of attaining and maintaining licensure as a practical nurse.

Objective
Describe the regulatory authority of state boards of nursing', Determine how a states nurse practice act drives nursing practice and determines its legal parameters', Describe the process for obtaining employment', Explore the process of transitioning to the role of new graduate and licensed nurse', Compare and contrast accountability and responsibility of a licensed practical nurse', Discuss anticipated challenges related to the role of the new graduate', Examine the process for obtaining licensure and requirements for renewal such as continuing education', List the national organizations that are available to LPNs as well as sthe organizations that support specialized practice

Name
Identify appropriate resolutions to work related challenges a practical nurse will be faced with upon entering the workforce.

Objective
Determine communication skillsstrategies needed when interacting with clients and families', Determine communication skillsstrategies needed when interacting with subordinates and peers', Explore the use of proper channels of communication for managing practice and clientrelated issues in an organization', Compare and contrast between assertive passive aggressive and passiveaggressive communication', Examine various types of conflict and conflict management strategies

Name
Describe skills necessary for career placement and advancement as a licensed practical nurse.

Objective
Examine the path nurses take when transitioning from a novice nurse to an expert nurse', Discuss the role that preceptors and mentors have in assisting new graduates in becoming competent in their practice and socialized into their new role', List the causes and characteristics of burnout and strategies that can be used to reduce the likelihood of its development', Examine various career paths that can promote career advancement through degree completion

Requirements

Simple Requirements

A minimum grade of 'C' in Course PNR119

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR119 - KSPN Fundamentals of Pharmacology and Safe Medication Administration

A minimum grade of 'C' in Course PNR120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR120 - KSPN Foundations of Nursing

A minimum grade of 'C' in Course PNR121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR121 - KSPN Foundations of Nursing Clinicals

A minimum grade of 'C' in Course PNR128

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR128 - KSPN Nursing Care of Adults I

A minimum grade of 'C' in Course PNR129

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR129 - KSPN Nursing Care of Adults I Clinical

Enrolled in Course PNR130

Type
Prerequisite

Enroll in the following Courses:
- PNR130 - KSPN Maternal Child Nursing

Enrolled in Course PNR131

Type
Prerequisite

Enroll in the following Courses:
- PNR131 - KSPN Maternal Child Nursing Clinical

Enrolled in Course PNR135

Type
Prerequisite

Enroll in the following Courses:
- PNR135 - KSPN Mental Health Nursing

Enrolled in Course PNR138

Type
Prerequisite

Enroll in the following Courses:
- PNR138 - KSPN Nursing Care of Adults II

Enrolled in Course PNR139

Type
Prerequisite

Enroll in the following Courses:
- PNR139 - KSPN Nursing Care of Adults II Clinical

Enrolled in Course PNR141

Type
Prerequisite

Enroll in the following Courses:
- PNR141 - KSPN Care of Aging Adults

PNR170 - Healthcare Practice Management

Overview

Department
Nursing

Course Description
This course explores the overall perspective of health service organizations and the associated managerial role. The student will be able to utilize practical building blocks for managerial growth. The student will discuss the involvement of future roles for healthcare providers and outside forces that impact management of a healthcare component.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to provide nursing care within the scope of the ethical and legal responsibilities of practical nursing.

Objective
Assign care to CNAs and CMAs in a manner that results in safe and effective provision of care', Analyze ethical dilemmas', Apply legal principles to ensure safe and effective care of clients

Name
The student will be able to utilize the nursing process to identify basic needs of the client throughout the life span for health promotion and maintenance, or when biological, spiritual, cultural and psychosocial needs are not being met.

Objective
Provide hands on nursing care to a group of patients in a health care setting based on application of the nursing process', Identify biological spiritual cultural andor psychosocial needs of clients

Name
The student will be able demonstrate effective interpersonal relationships with the client, the clients family, and members of the interdisciplinary health care team.

Objective
Clearly and accurately communicate assignments to members of the health care team', Interact with the client and the clients family in a therapeutic and supportive manner

Name
The student will be able to demonstrate responsibilities of the practical nurse as an individual who collaborates within the healthcare system and the community.

Objective
Analyzes principles of leadership and motivation', Identifies specific management concerns in healthcare settings

Requirements

Simple Requirements

A minimum grade of 'C' in Course PNR120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR120 - KSPN Foundations of Nursing

A minimum grade of 'C' in Course PNR121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR121 - KSPN Foundations of Nursing Clinicals

A minimum grade of 'C' in Course PNR122

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR122 - KSPN Pharmacology (Inactive)

A minimum grade of 'C' in Course PNR123

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR123 - KSPN Medical Surgical Nursing I (Inactive)

A minimum grade of 'C' in Course PNR124

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR124 - KSPN Medical Surgical Nursing I Clinical (Inactive)

A minimum grade of 'C' in Course PNR126

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR126 - KSPN Medical Surgical Nursing II (Inactive)

A minimum grade of 'C' in Course PNR127

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR127 - KSPN Medical Surgical Nursing II Clinical (Inactive)

A minimum grade of 'C' in Course PNR130

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR130 - KSPN Maternal Child Nursing

A minimum grade of 'C' in Course PNR131

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR131 - KSPN Maternal Child Nursing Clinical

A minimum grade of 'C' in Course PNR132

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR132 - KSPN Gerontology Nursing (Inactive)

A minimum grade of 'C' in Course PNR134

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- PNR134 - Role Development (Inactive)

A minimum grade of 'C' in Course PNR135

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR135 - KSPN Mental Health Nursing

A minimum grade of 'C' in Course PNR136

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR136 - Transition to Nursing

PNR175 - Healthcare Management Research

Overview

Department
Nursing

Course Description
This course explores management issues, funding and actual provision of healthcare by various entities. The student will research and discuss the role of management in healthcare. The student will complete projects that expand on specific areas of individual interest in adminstration and management.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2015

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to analyze principles of leadership and motivation.

Objective
Function in a management role at the PN level in a healthcare organization', Identify management and funding issues in various healthcare settings

Name
The student will be able to verify aspects of specific management concerns in healthcare settings.

Objective
Schedule staff to meet client needs in a specific healthcare setting', Direct ancillary staff in the provision of nursing care to meet client needs

Requirements

Simple Requirements

A minimum grade of 'C' in Course PNR120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR120 - KSPN Foundations of Nursing

A minimum grade of 'C' in Course PNR135

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR135 - KSPN Mental Health Nursing

A minimum grade of 'C' in Course PNR134

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR134 - Role Development (Inactive)

A minimum grade of 'C' in Course PNR132

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR132 - KSPN Gerontology Nursing (Inactive)

A minimum grade of 'C' in Course PNR131

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR131 - KSPN Maternal Child Nursing Clinical

A minimum grade of 'C' in Course PNR130

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR130 - KSPN Maternal Child Nursing

A minimum grade of 'C' in Course PNR136

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR136 - Transition to Nursing

A minimum grade of 'C' in Course PNR126

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR126 - KSPN Medical Surgical Nursing II (Inactive)

A minimum grade of 'C' in Course PNR124

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR124 - KSPN Medical Surgical Nursing I Clinical (Inactive)

A minimum grade of 'C' in Course PNR123

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR123 - KSPN Medical Surgical Nursing I (Inactive)

A minimum grade of 'C' in Course PNR122

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR122 - KSPN Pharmacology (Inactive)

A minimum grade of 'C' in Course PNR121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR121 - KSPN Foundations of Nursing Clinicals

A minimum grade of 'C' in Course PNR127

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR127 - KSPN Medical Surgical Nursing II Clinical (Inactive)

PNR180 - Healthcare Issues

Overview

Department
Nursing

Course Description
This course explores current issues in healthcare and the impact of those issues on society. The students will discuss specific pieces of legislation, regulatory initiatives, public concern issues, funding and actual provision of healthcare by various entities. The student will complete projects that expand on specific areas of inidividual interest.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2015

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to analyze ethical issues in healthcare.

Objective
Apply ethical principles to resolve issues in healthcare', Outlines current advances and controversies in healthcare delivery

Name
The student will be able to integrate knowledge of specific health care issues with the impact of legislative, regulatory and funding concerns on those issues

Objective
Describe the implications of pharmaceutical costs on health care', Analyze the impact of legislative and regulatory proposals on specific health care problems

Name
The student will be able to discuss the role of third party insurance payers in providing health care.

Objective
Analyze the role of Medicare in providing acute and long term care', Describe the role of Medicaid in providing care to clients', Discuss the implications of third party insurance providers

Requirements

Simple Requirements

A minimum grade of 'C' in Course PNR121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR121 - KSPN Foundations of Nursing Clinicals

A minimum grade of 'C' in Course PNR122

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR122 - KSPN Pharmacology (Inactive)

A minimum grade of 'C' in Course PNR123

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR123 - KSPN Medical Surgical Nursing I (Inactive)

A minimum grade of 'C' in Course PNR120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR120 - KSPN Foundations of Nursing

A minimum grade of 'C' in Course PNR124

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR124 - KSPN Medical Surgical Nursing I Clinical (Inactive)

A minimum grade of 'C' in Course PNR126

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR126 - KSPN Medical Surgical Nursing II (Inactive)

A minimum grade of 'C' in Course PNR127

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR127 - KSPN Medical Surgical Nursing II Clinical (Inactive)

A minimum grade of 'C' in Course PNR130

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR130 - KSPN Maternal Child Nursing

A minimum grade of 'C' in Course PNR131

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR131 - KSPN Maternal Child Nursing Clinical

A minimum grade of 'C' in Course PNR132

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR132 - KSPN Gerontology Nursing (Inactive)

A minimum grade of 'C' in Course PNR134

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR134 - Role Development (Inactive)

A minimum grade of 'C' in Course PNR135

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR135 - KSPN Mental Health Nursing

A minimum grade of 'C' in Course PNR136

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PNR136 - Transition to Nursing

POL101 - American Government

Overview

Department
General Education

Course Description
A general study of the development, structure and functions of the American National Government. Topics to be studied include an introduction to government, principles of constitutionalism and federalism, political parties and political behavior, the Presidency, congress, the judiciary and the federal bureaucracy. Of specific emphasis is an analysis of decision-making in government, public participation and influence in government as well as a study of specific problems concerning the operation of the federal government.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Institutions: Analyze the roles, powers, and relationships among the 3 branches of government (legislative/judicial/executive)

Name
Political Behavior: Explain various forms of political participation possible in the U.S. democratic process.

Name
Constitution: Describe the origins and evolution of the U.S. Constitution.

Name
Public Policy: Explore how public policy decisions are made and the results of those policies.

PPT225 - Plumber & Pipefitters Apprenticeship

Overview

Department
Apprenticeship & Appl Learning

Course Description
This course serves as a credit placeholder for students participating in the Plumber & Pipefitters Apprenticeship program in partnership with WSU Tech, industry partners, and the Kansas Office of Apprenticeships. Students who have successfully completed the approved apprenticeship training may receive 45 credit hours of prior learning. Students must provide approved documentation outlining successful completion of apprenticeship training.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
45

Contact Hours

Contact Hours
Min:
2025

Billing Hours

Billing Hours
Min:
45

Other Hours

Other Hours
Min:
2025

Course Learning Outcomes

Learning Outcomes

Name
Students will demonstrate mastery of technical competencies gained through the Plumbing and Pipefitting Apprenticeship program

PRD055 - New Hire Orientation

Overview

Department
Professional Development

Course Description
This session is for new employees at WATC. The online portion of this course provides new employees with digital access to new hire paper work as well as policy and procedures, an overview of the college, and benefits orientation. The face to face portion of the course provides new employees general systems onboarding and an opportunity to meet with HR representative.

Academic Level (Course Level)
Non-Credit

Effective Start Term
Summer 2015

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
8

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
8

PRDN152 - WSU Tech FERPA Review

Overview

Department
Open Education

Course Description
The Family Education Rights and Privacy Act of 1974 (FERPA) is a federal law that protects the privacy of student education records and applies to all schools that receive funds under an applicable program of the U.S. Department of Education. It is important to understand and abide by FERPA regulations to protect the confidentiality of eligible students' education records in accordance with federal law. The WSU Tech FERPA Quiz is to be completed after reviewing the WSU Tech General FERPA Overview document. Participants are encouraged to reference the FERPA document as they work through the questions. WSU Tech employees are required to take the FERPA Quiz and must pass with an 80% or better.

Academic Level (Course Level)
Non-Credit

Effective Start Term
AY 2025-2026 Non-credit

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
1

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
1

PSS100 - Six Sigma Yellow Belt

Overview

Department
Professional Studies

Course Description
Six Sigma Yellow Belt training introduces the fundamentals of Six Sigma to individual process owners and operators who can then act as team members on Six Sigma projects. Not only do these Yellow Belts gain the skills necessary to identify, monitor and control profit-eating practices in their own processes, but they are also prepared to feed that information to Green Belts and Black Belts working on larger system projects.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Spring 2021

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to successfully understand what Six Sigma is, the players involved, and how to select a good project

Objective
Overview of Six Sigma', DMAIC Model', Roles and Responsibilities in Six Sigma', Project Selection and Data Collection

Name
The student will be able to successfully work in the Define and Measure Phases of a DMAIC project

Objective
Define Phase of the Project', Measure Phase of the Project

Name
The student will be able successfully work in the Analyze, Improve, and Control phases of a DMAIC project

Objective
Analyze Phase of the Project', Improve Phase of the Project', Control Phase of the Project', Tying it All Together

PSS101 - Six Sigma Green Belt Methods

Overview

Department
Professional Studies

Course Description
This course is designed to help the adult learner understand Six Sigma concepts and be able to apply their knowledge to a real problem. It also addresses the challenges of change management and data management.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Spring 2021

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to successfully capture the voice of the process and the customer, explain the benefits of Six Sigma, and list key ingredients to success

Objective
Successful Applications of Six Sigma Management', Timeline for Six Sigma Management', Key Ingredients for Success with Six Sigma Management', Benefits of Six Sigma Management', Process Basics', Definition of Quality', Definitions of Six Sigma Management', What is New About Six Sigma Management

Name
The student will be able to successfully understand the roles and responsibilities of Six Sigma

Objective
Roles and Responsibilities in Six Sigma Management', Technical Terminology of Six Sigma Management', Beginning Six Sigma Management', Nonmanufacturing Industries

Name
The student will be able to successfully explain the dashboard concept and create one for each project

Objective
Structure of a Dashboard', Components of a Dashboard', Example of a Dashboard', Managing with a Dashboard', Prioritization of Six Sigma Projects', Management Decides Whether a Project Team is Necessary

Name
The student will be able to successfully complete the Define Phase of a Six Sigma project

Objective
Activating a Six Sigma Project Team', Structure of the Define Phase', Project Charter', Conducting a SIPOC Analysis', Voice of the Customer Analysis', Finalize Project Objective', Champion and Process Owner Tollgate Reviews', Presidential Tollgate Reviews', Define Phase Tollgate Checklist

Name
The student will be able to successfully complete the Measure Phase of a Six Sigma project

Objective
Constructing Operational Definitions for CTQs', Establishing the Validity of the Measurement System for Each CTQ', Establishing the Baseline Capabilities for CTQs', Measure Phase Tollgate Review Checklist

Name
The student will be able to successfully complete the Analyze Phase of a Six Sigma project

Objective
Identify the Xs for the Process Under Study', Identify the Xs Related to Each CTQ', Identify the HighRisk Xs for Each CTQ', Develop Operational Definitions for HighRisk Xs', Establish Measurement System for HighRisk Xs', Establish Baseline Process Capabilities for Xs', Stabilize HighRisk Xs', Consider Major Nuisance Variables', Using Screening Designs to Reduce the Number of HighRisk Xs', Develop hypotheses about the relationships between the HighRisk Xs and the CTQs', Analyze Phase Tollgate Review Checklist', The Analyze Phase for Processes with a WellEstablished Dashboard

Name
The student will be able to successfully complete the Improve Phase of a Six Sigma project

Objective
Purpose of Designed Experiments', Level of Process Knowledge', Some Flawed Experimental Designs', TwoFactor Factorial Designs', Example of Designed Experiment', Avoid Potential Problems in the Xs', Conduct a Pilot Study', Example of a Pilot Study', Identify Actions Needed to Implement Optimized Process', Improve Phase Tollgate Review Checklist

Name
The student will be able to successfully complete the Control Phase of a Six Sigma project

Objective
Reduce the Effects of Collateral Damage to Related Processes', Standardize Process Improvements in the Xs', Maintain Control of the Xs', Develop a Control Plan for the Process Owner', Identify and Document the Benefits and Costs of the Project', Input Project into the Six Sigma Database', Diffuse the Improvements Throughout the Organization', Control Phase Tollgate Review

PSS105 - Six Sigma Green Belt Statistics

Overview

Department
Professional Studies

Course Description
Students develop an in-depth understanding of how computers and statistical software are essential components in the business world and society in general for exploring data in depth, data simulation, screening data for errors, manipulating data, performing transformations, focus on the use of the computer and statistical software as a valuable productivity and data analysis tool.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Spring 2021

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to successfully use basic statistical tools to display and analyze data

Objective
Introduction to Statistics', Enumerative and Analytic Studies', Types of Sampling', Types of Variables', Operational Definitions', Introduction to Graphics', Graphing Attribute Data', Graphing Measurement Data', Measures of Central Tendency', Measures of Variation', The Shape of Distributions

Name
The student will be able to successfully understand probability and their distributions

Objective
Introduction to Probability', Some Rules of Probability', Probability Distribution', Binomial Distribution', Poisson Distribution', Normal Distribution', Normal Probability Plot

Name
The student will be able to successfully use sampling distributions and interval estimations

Objective
Sampling Distributions', Basic Concepts of Confidence Intervals', Confidence Interval Estimate for the Mean', Prediction Interval Estimate for a Future Individual Value', Confidence Interval Estimation for the Proportion

Name
The student will be able to successfully use Hypothesis Testing in a Green Belt project

Objective
Fundamental Concepts of Hypothesis Testing', Testing for the Difference Between Two Proportions', Testing for the Difference Between the Means of Two Independent Groups', Testing for the Difference Between Two Variances', OneWay ANOVA

Name
The student will be able to successfully understand the use of Design of Experiments

Objective
Design of Experiments Background and Rationale', TwoFactor Factorial Designs', 2k Factorial Designs', Fractional Factorial Designs

Name
The student will be able to successfully apply Control Charts techniques

Objective
Basic Concepts of Control Charts', The Funnel Experiment', Control Limits and Patterns', Rules for Determining OutOfControl Points', The pChart', The cChart', The uChart', Control Charts for the Mean and Range', Control Charts for the Mean and the Standard Deviation', Individual Value and Moving Range Charts

Name
The student will be able to successfully use a variety of tools in different phases of the DMAIC project

Objective
Brainstorming', Affinity Diagram', CauseandEffect Diagram and Matrix', Check Sheets', Stratification', Gantt Charts', Presentation Skills

Name
The student will be able to successfully summarize and report out on their project

Objective
Tying it all together', Final Project Report Outs

Requirements

Simple Requirements

A minimum grade of 'C' in Course PSS101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PSS101 - Six Sigma Green Belt Methods

PSS115 - Six Sigma Black Belt Methods

Overview

Department
Professional Studies

Course Description
The Six Sigma Black Belt Methods incorporates data and statistical analysis into a project based workflow that allows businesses to make intelligent decisions about where and how to incorporate improvements.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Hybrid

Effective Start Term
Spring 2014

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate advanced hypothesis testing

Objective
Demonstrate an understanding of Confidence Intervals including the factors that drive them', Demonstrate an ability to perform and analyze the various Tests for Means t ANOVA', Demonstrate an ability to perform and analyze Tests for Variance Test for Equal Variance', Demonstrate an ability to perform and analyze tests of proportions and attribute factors', Demonstrate an understanding of various NonParametric Testing

Name
The student will be able to discuss advanced process stability and capability

Objective
Explain Advanced SPC', Demonstrate the use of variable and attribute control charts', Discuss the importance of proper sampling as it relates to control limits', Demonstrate the use of control charts for diagnostic purposes', Demonstrate the use of control charts for traditional process control', Distribution identification and capability analyses', Demonstrate the ability to develop and analyze the following capability analyses for attribute Binomial and Poisson', Demonstrate the ability to develop and analyze the following capability analyses for attribute variable XbarR Xbars IMR

Name
The student will be able to understand variation

Objective
Demonstrate variation and its impact on processes for common cause variation', Demonstrate variation and its impact on processes for special cause variation', Discuss the measures of variation and their uses

Requirements

Simple Requirements

A minimum grade of 'C' in Course PSS101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PSS101 - Six Sigma Green Belt Methods

A minimum grade of 'C' in Course PSS105

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PSS105 - Six Sigma Green Belt Statistics

PSS120 - Six Sigma Black Belt Experimentation & Transfer Function

Overview

Department
Professional Studies

Course Description
Students will learn how to manipulate data with statistical tools to transform it into valuable information (numeric and/or graphic). This data will be incorporated into a project.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Online

Effective Start Term
Spring 2014

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to understand statistical relationships

Objective
Demonstrate an understanding of correlation and causation', Demonstrate the ability to perform and analyze Simple Linear Regression

Name
The student will be able develop transfer functions

Objective
Demonstrate the ability to perform and analyze Multiple Regression

Name
The student will be able to explain experimental design

Objective
Explain the role of Screening Designs in the Design of Experiments methodology', Explain the role of Simple Modeling Designs Full factorialin the Design of Experiments methodology', Explain the role of Response Surface Methodologies in the Design of Experiments methodology', Demonstrate the ability to plan for run and analyze a basic Design of Experiments DOE for Manufacturing Transactional', Discuss the possible uses of some advanced techniques in DOE Blocking Taguchi designs etc

Name
The student will be able to implement improvements and control plans

Objective
Discuss the use of Change Management techniques in order to gain support for implementation of improvements', Demonstrate the ability to develop and implement an effective control plan

Requirements

Simple Requirements

A minimum grade of 'C' in Course PSS115

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PSS115 - Six Sigma Black Belt Methods

PST010 - Private Security Officer Training - Basic

Overview

Department
Professional Studies

Course Description
The Private Security Officer Annual Review is a 4 hour course designed to provide trained Security Officers with updates on local laws effecting their everyday duties. This course is also designed to provide a refresher on effective communication skills, the Use of Force continuum, and Crime Scene protocols for Private Security Officers.

Academic Level (Course Level)
Non-Credit

Instructional Methods
Traditional

Effective Start Term
Fall 2019

Credits

Credit Hours

Credit Hours
Min:
0

Contact Hours

Contact Hours
Min:
4

Billing Hours

Billing Hours
Min:
0

Lecture Hours

Lecture Hours
Min:
4

Course Learning Outcomes

Learning Outcomes

Name
The student will demonstrate a working knowledge of information and procedures related to topic relevant to Private Security Officer Training in compliance with the Wichita City Code. The student will demonstrate the ability to competently perform all applicable skills, exhibit attitudes and behavior consistent with the ethics and professionalism expected of a Private Security Officer.

Objective
The student will be able to explain the historical developments in private security operations', The student will be able to explain the foundations of effective communication', The student will be able to summarize a private security officers responsibilities in being culturally aware', The student will be able to identify effective defensive driver techniques', The student will be able to identify ways to prevent sexual harassment in the work place', The student will be able to explain the philosophy of community policing and problem solving', The student will be able to compare and contrast different types of civil liability', The student will be able to explain use of force continuum', The student will be able to outline procedures involved fire safety', The student will be able to outline the criminal justice system', The student will be able to analyze challenges of law enforcement interaction with special andor diverse populations', The student will be able to conduct handcuffing operations', The student will be able to identify ethical challenges private security officersface', The student will be able to identify effective courtroom testimony techniques

PST110 - Private Security Officer Training - Basic

Overview

Department
Professional Studies

Course Description
The Basic Private Security Officer Training (Basic PSOT) course is a 45 hour course designed to train Security Officers in basic duties and requirements of a security officer in compliance with the Wichita City Code.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will demonstrate a working knowledge of information and procedures related to topic relevant to Private Security Officer Training in compliance with the Wichita City Code. The student will demonstrate the ability to competently perform all applicable skills, exhibit attitudes and behavior consistent with the ethics and professionalism expected of a Private Security Officer.

Objective
The student will be able to explain the historical developments in private security operations', The student will be able to explain the foundations of effective communication', The student will be able to summarize a private security officers responsibilities in being culturally aware', The student will be able to identify effective defensive driver techniques', The student will be able to identify ways to prevent sexual harassment in the work place', The student will be able to explain the philosophy of community policing and problem solving', The student will be able to compare and contrast different types of civil liability', The student will be able to explain use of force continuum', The student will be able to outline procedures involved fire safety', The student will be able to outline the criminal justice system', The student will be able to analyze challenges of law enforcement interaction with special andor diverse populations', The student will be able to conduct handcuffing operations', The student will be able to identify ethical challenges private security officersface', The student will be able to identify effective courtroom testimony techniques

PSY101 - General Psychology

Overview

Department
General Education

Course Description
A general introduction to the scientific study of behavior and mental processes to enable students to apply the knowledge they gain about the history of psychology, psychological perspectives, biological bases of behavior, sensation and perception, learning, cognition, intelligence, motivation, development, personality, psychological disorders and treatments of disorders, social psychology and critical thinking skills to enhance the quality of his/her life as he/she interacts with others and the environment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Identify historical foundations and current trends in psychology

Name
Distinguish methods of research in psychology

Name
Identify the biological basis of behavior including physiology of the brain

Name
Distinguish principles and theories of learning and cognition

Name
Recognize theories and applications of motivation and emotion

Name
Demonstrate an understanding of human life span development

Name
Identify the major theories of personality

Name
Recognize categories of psychological disorders and treatments

Name
Recognize the major theories and findings in social psychology

PSY110 - Child Psychology

Overview

Department
General Education

Course Description
This course is a scientific study of child behavior and development from the prenatal period through adolescence. This includes special emphasis in topics of physical development, cognitive and language development, social-emotional development and attachment, socialization, and practical applications of discipline and child rearing.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Differentiate developmental theories and research methods.

Objective
Gain an appreciation of the scientific basis of human development from conception through infancy and childhood', Identify the prominent child psychologists in the field', Develop skills in evaluating prevalent theories of developmental psychology as applies to child development', Be familiar with research methods used in child psychology

Name
Explain foundational concepts and terminology appropriate to development of a child.

Objective
Identify the major domains of development in child psychology', Develop an understanding of the current trends in child psychology', Gain an understanding of the Nature vs Nurture concept

Name
The student will gain an understanding of the developmental process that occurs from conception to infancy

Objective
Identify the genetic foundations of development', Gain an awareness of the interaction of heredity and the environment', Understand the course of prenatal development hazards and prenatal care', Understand the birth process and the postpartum period

Name
Describe the social and emotional development of a child

Objective
Identify the attachment and temperament stages in infancy', Understand the role of emotions in socialemotional development', Discuss the importance of family birth order and socialization agents in socialemotional development', Identify the theories of identity and gender development', Be familiar with the impact of stress and mental health issues commonly seen in children adolescents', Examine the progression of peer relationships throughout childhood adolescence

Name
Summarize cognitive and neurological development of a child

Objective
Summarize the development of the brain structures and functions', Understand Piagets Vygotskys and the Information Processing theories of cognitive development', Trace the pathway for language acquisition and key milestones of development', Gain an understanding of intellectual development intelligence theories and the use of intelligence measures', Gain an understanding of the components of critical thinking and problem solving

Name
Explain the physical development of a child

Objective
Be familiar with neonatal reflexes', Trace the course of sensory development', Summarize the course of motor development and identify the major milestones in motor skills', Gain an understanding of the Biopsychosocial influences on physical development', Examine the issues of health exercise and obesity in children adolescents', Discuss the physical changes that occur during puberty

Name
Evaluation special areas of development and their potential impact on childhood growth and development

Objective
Explore the influence of early childhood education and the impact on development', Examine the effects of childhood abuse and neglect on development', Evaluate the types of psychopathology in childhood and effective courses of education and treatment', Understand the various family dynamics family structures and parenting styles and how they affect development', Evaluate the types of childcare and its qualities', Be familiar with the explanations for substance abuse and delinquent behavior in children adolescents', Gain an understanding of the different methods for disciplining and modifying behavior', Be aware of the importance of cultural diversity in development

Requirements

Simple Requirements

A minimum grade of 'C' in Course PSY101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PSY101 - General Psychology

PSY120 - Developmental Psychology

Overview

Department
General Education

Course Description
A study of individual development from conception through death to enable students to apply the knowledge they gain about the general areas of biological, neurological, physical, cognitive, social, emotional and personality development at each stage of life to enhance more meaningful interactions with others and better understanding of his/herself.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Distinguish among developmental theories

Objective
Identify the periods of development and developmental domains across the lifespan', Develop skills in evaluating prevalent theories of developmental psychology', Explain the importance of studying lifespan development', Discuss the contemporary concerns and developmental issues

Name
Identify research methods in development

Objective
Gain an appreciation of the scientific study of human development from conception to death', Be familiar with the special research designs used to study development Understand how to conduct ethical research

Name
Describe social and emotional development throughout the lifespan

Objective
Identify the attachment and temperament stages', Chart the qualities of child care', Identify the components of emotional and personality development in early childhood', Be familiar with Ericksons theory of Psychosocial development', Match the various parenting styles', Discuss the importance of sibling relationship and birth order', Identify the unique issues of the changing family in a changing society', Identify the components of emotional and personality development in middle and late childhood', Explain the concept of gender and how it is developed', Explore how family and peers influence development', Be familiar with the changes of the brain in adolescence', Describe parentadolescent conflict', Discuss the importance of identity and be familiar with the major theories of identity development in adolescence', Be familiar with the unique concerns of adolescent delinquency and mental health issues', Describe the components of successful intervention programs for addressing adolescent behavior and mental health issues', Be familiar with how attachment styles can influence adult relationships', Identify the different theories of love', Be familiar with the different lifestyles of young adulthood', Describe the challenges and strategies for coping with marriage divorce and transitioning into parenthood', Discuss careers and work and how they change during this time', Be familiar with the unique concerns of careers work and leisure in middle adulthood', Describe the different research studies on personality development in middle adulthood', Be familiar with the unique transitions in relationships in middle adulthood particularly empty nest sandwich generation and retirement', Describe the unique mental health issues of aging including understanding dementia and the dementia related issues Alzheimers Parkinsons', Understand the theories of successful aging

Name
Explain cognitive development throughout the lifespan

Objective
Understand Piagets Preoperational stage of cognitive development', Understand Vygotskys and the Information Processing theories of cognitive development', Chart the course of language development', Review the variations of early childhood education', Be familiar with Piagets theory of cognitive development', Define language and describe the theories of language development', Evaluate the types of disabilities and education', Define intelligence and be familiar with the different theories of intelligence', Explain the use and misuse of IQ tests', Review the contemporary approaches to education in middle and late childhood', Discuss cognitive changes that occur in thinking abilities during adolescence', Describe the components of postformal thought', Identify the cognitive changes in middle adulthood particularly related to intelligence and memory', Be familiar with cognitive functioning in aging and how to preserve cognitive functions

Name
Identify physical development throughout the lifespan

Objective
List the reflexes', Compare gross and fine motor skills', Gain an understanding of sensory and perceptual development', Discuss the physical changes of development in early childhood', Gain an understanding of nutritional needs and the importance of exercise', Examine illness and disease that is common at different developmental periods', Identify the physical changes and health in middle and late childhood', List physical changes including those that occur during puberty and the outcomes of the onset of puberty', Describe important concepts related to adolescent health including sleep substance abuse and eating disorders', Compare the transition from adolescence with adulthood', Identify the changes in physical development in early adulthood and the impact of lifestyle choices on later physical development', Be familiar with the unique issues of sexuality and sexual behavior in young adulthood', List physical changes that occur in middle adulthood', Identify stress symptoms and how to more effectively deal with stress', Understand the different theories of aging', Describe the physical changes with aging', Be familiar with the unique health issues of aging and how to maintain health and wellbeing

Name
Describe the processes of death and dying

Objective
Defining death and life death issues', Be familiar with the grieving process and the process of death and dying', Understand the sociohistorical and cultural contexts of death', Be familiar with different coping strategies when facing death

Requirements

Simple Requirements

A minimum grade of 'C' in Course PSY101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PSY101 - General Psychology

PSY135 - Social Science Prospectus

Overview

Department
General Education

Course Description
The social sciences provide various perspectives on how we view the behavior of individuals and society. The predominant research of individuals, families, and larger society is done through the scope of the social sciences, particularly psychology, geography, and sociology. In this class, students will examine the relevance of social science within historical and current issues, develop evidence-based questions about human behavior, and explore prevalent research approaches and their findings.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Analyze and explain the multiple perspectives found in the social sciences that relate to important historical and contemporary issues.

Name
Understand the foundations of the various social and behavioral sciences.

Name
Review prevalent research and statistics related to the various course topics

Name
Recognize relevant social and individual patterns and use those patterns to interpret behaviors.

Name
Explore how diverse cultures and institutions shape decisions for a particular geographical domain, political system, groups within the area, and the individuals that make up the members of the groups.

Name
Recognize major psychological, sociological, geographical, political, and criminal justice theories relevant to the primary topic within the perspective course.

Name
Display integrated thinking and application of the perspectives by synthesizing select readings presenting key arguments and analyze the strengths and weaknesses of given perspectives.

Name
Display understanding of the various perspectives with an application that encompasses concepts learned throughout the course.

QAI135 - Quality Assurance Orientation

Overview

Department
Manufacturing

Course Description
This course provides an overview of the Quality Assurance Program. The course includes an overview of the expectations of the program, potential safety hazards, traits employers value, various role and responsibilities within advanced manufacturing teams and what elements are necessary to make a manufacturing company successful.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the basic work requirements associated Quality Assurance Technician

Objective
Describe what this program means for you', List the expectations of all students of the program including motivation attention participation attendance', Explain the potential safety hazards including equipment safety hazardous energy controls compressed air safety hand tool safety drilling safety riveting safety chemical safety PPE', Identify concept of good work traits including character attitude respect appearance teamwork and productivity', Explain the components of each work trait', Define each of the work traits', Identify how the work traits are applied on the job', Identify the role of in giving and receiving respect', Identify the impact of attendance on safety in the workplace', Identify teams that work together in the advanced manufacturing world', Articulate the overall mission of a team', Describe various roles and responsibilities within advanced manufacturing teams', Describe how teams and individuals work together to manufacture quality products', List the teams that are present in a manufacturing environment', List the main elements that can help a manufacturing company win', Understand how costs - including target costs and cost of production - help determine an advanced manufacturing companys success', Use math to determine the efficiency and productivity of a manufacturing cycle or equipment', Explain how customer satisfaction creates several wins for the manufacturing company

Name
The student will be able identify the concepts associated with good work traits in the workplace

Objective
Identify concept of good work traits including character, attitude, respect, appearance, teamwork and productivity Explain the components of each work trait Define each of the work traits Identify how the work traits are applied on the job Identify the role of in giving and receiving respect Identify the impact of attendance on safety in the workplace

Name
The student will be able to describe the concepts associated with teams in the manufacturing environment

Objective
Identify teams that work together in the advanced manufacturing world Articulate the overall mission of a team Describe various roles and responsibilities within advanced manufacturing teams Describe how teams and individuals work together to manufacture quality products List the teams that are present in a manufacturing environment

Name
The student will be able to explain how companies succeed

Objective
List the main elements that can help a manufacturing company “win” Understand how costs – including target costs and cost of production – help determine an advanced manufacturing company’s success Use math to determine the efficiency and productivity of a manufacturing cycle or equipment Explain how customer satisfaction creates several wins for the manufacturing company

QAI145 - Quality Management

Overview

Department
Manufacturing

Course Description
This course provides an overview of quality management principles and practices within organizations. Students will explore key concepts such as total quality management (TQM), continuous improvement, quality assurance, quality control, ISO 9001, AS9100, quality auditing and compliance standards. Students will learn to apply various quality tools and methodologies, including Six Sigma, Lean principles, and statistical process control (SPC).

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Understand the fundamental concepts and importance of quality management.

Name
Identify quality management tools and techniques for real-world situations.

Name
Identify quality metrics and data to drive decision-making.

Name
Understand quality improvement plans within an organization to create a culture of continuous improvement and customer focus.

Name
Recognize the structure and key components of ISO 9001, including the principles of quality management.

Name
Recognize the structure and components of AS9100, including the core principles and requirements that distinguish it from other quality management systems.

Name
Understand the role of leadership in promoting a quality culture and ensuring that quality objectives align with the organizations strategic direction and ensuring the effectiveness of the quality management system.

Name
Identify methods in determining customer needs and expectations, and learn how to enhance customer satisfaction through effective QMS practices.

Name
Learn how to identify and assess risks and opportunities that could affect the QMS, and apply risk-based thinking to drive continual improvement.

Name
Understand how to create, manage, and control documented information to ensure effective communication and compliance with ISO 9001 requirements.

Name
Learn how to identify, document, and address non-conformities and implement corrective actions to prevent recurrence.

Name
Identify relationships in the use of tools and techniques for driving continuous improvement within the organizations processes and QMS, and understand how to use those tools to measure and analyze data to evaluate the performance of the QMS and make informed decisions for improvement.

Name
Explain the concept of traceability and its importance in quality assurance.

Name
Understand the importance of risk management in aerospace and manufacturing and how to apply the principles of risk-based thinking to improve processes and outcomes.

Name
Identify effective document control and record-keeping practices that comply with AS9100 requirements.

Name
Gain knowledge of relevant regulatory requirements and how to integrate them into the AS9100 framework.

Name
Learn about the importance of training and competency in ensuring that personnel are equipped to fulfill their roles effectively.

Name
Understand how to identify, document, and address non-conformities and implement corrective actions to prevent recurrence.

Name
Identify skills in using key performance indicators (KPIs) and other metrics to measure the effectiveness of the quality management system.

QAI155 - Quality Documentation and Traceability

Overview

Department
Manufacturing

Course Description
This course provides a thorough understanding of the principles and practices of quality documentation and traceability within organizations. Participants will learn the importance of maintaining accurate, accessible, and organized documentation as a key component of effective quality management systems (QMS). Students will explore best practices for creating, managing, and controlling documentation to ensure compliance with industry standards and regulatory requirements. Additionally, the course will focus on traceability concepts, enabling participants to understand the significance of tracking materials, processes, and product information throughout the supply chain and production lifecycle.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Recognize the types of quality documents (e.g., policies, procedures, work instructions) needed for compliance with quality standards.

Name
Understand the importance of document control, including version control, approval processes, and distribution to ensure the integrity of quality documents.

Name
Identify skills to communicate quality standards and procedures effectively through documentation to all customers.

Name
Understand how quality documentation supports compliance with relevant quality management standards (e.g., ISO 9001, AS9100).

Name
Explain how internal and external audits and maintaining organized and accessible documentation demonstrates compliance and effectiveness.

Name
Learn to review and update documentation regularly to reflect process changes and continuous improvement initiatives.

Name
Recognize the importance of traceability in quality management, including its role in product quality, safety, and regulatory compliance.

Name
Identify how to collect and record relevant data for traceability purposes, ensuring accuracy and completeness.

Name
Understand the use of tools and technologies (e.g., barcoding, RFID) to enhance traceability efforts.

Name
Learn how to use traceability information to identify, manage, and resolve non-conformances effectively.

Name
Understand how traceability contributes to risk management by enabling root cause analysis and corrective action in case of product issues.

Name
Understand basic regulatory requirements related to traceability in various industries, including aerospace, automotive, and pharmaceuticals.

Name
Learn how to communicate traceability information to customers, enhancing transparency and trust in the quality management process.

QAI165 - Materials Testing and Analysis

Overview

Department
Manufacturing

Course Description
This course offers an exploration of materials testing and analysis techniques essential for evaluating the properties and performance of various materials used in engineering and manufacturing. Participants will gain an understanding of the fundamental principles of materials science, as well as the methodologies employed to assess material characteristics and ensure quality and compliance with industry standards. The course covers a wide range of topics, including mechanical testing, chemical analysis, thermal analysis, and non-destructive testing methods. Students will learn how to select appropriate testing methods based on material types and intended applications, and how to interpret test results to inform design and manufacturing decisions. Through hands-on laboratory exercises, demonstrations, and case studies, participants will develop practical skills in conducting tests, analyzing data, and applying results to solve real-world problems in materials selection and quality assurance.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Understand the fundamental properties of materials and their relevance to testing and analysis.

Name
Demonstrate various materials testing methods, including tensile, compressive, and fatigue testing.

Name
Identify chemical analysis and thermal testing methods to evaluate material composition and behavior.

Name
Identify non-destructive testing techniques to assess material integrity.

Name
Familiarize with relevant industry standards and protocols for materials testing (e.g., ASTM, ISO, ANSI) to ensure compliance and consistency.

Name
Identify appropriate testing methods based on the material type, intended application, and specific properties to be evaluated (e.g., tensile, compressive, fatigue testing).

Name
Demonstrate hands-on skills in conducting various materials tests using appropriate equipment and following standardized procedures to ensure accuracy and reliability.

Name
Identify appropriate collecting, interpreting, and analyzing data from testing to draw valid conclusions about material performance.

Name
Understand various analytical techniques (e.g., microscopy, spectroscopy, chromatography) for assessing material composition and structure.

Name
Learn appropriate dissemination of documentation and communicating test results clearly and effectively through technical reports, presentations, and data visualization.

Name
Understand the role of materials testing in quality control and assurance processes to ensure material performance and compliance with specifications.

Name
Recognize the regulatory and safety considerations involved in materials testing, including handling hazardous materials and ensuring environmental compliance.

Name
Understand the importance of the interdisciplinary nature of materials testing, collaborating effectively with engineers, scientists, and other customers in the materials development and testing process.

QAI175 - Quality Assurance Inspection Internship I

Overview

Department
Manufacturing

Course Description
The internship represents an educational strategy linking the classroom with the acquisition of knowledge in the workplace. Through direct observation, reflection and evaluation, students gain an insight into the internship site's work, mission, and audience, how these relate to their academic study, as well as the organization's position in the broader industry or field. Students will produce a critical reflection on their internship experience demonstrating how they have addressed specific learning goals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
3

Other Hours

Other Hours
Min:
135

Course Learning Outcomes

Learning Outcomes

Name
Applied your knowledge, skills, experience to a work environment;

Name
Acquired new learning through challenging and meaningful activities;

Name
Reflected on the content and process of the learning experience;

Name
Advocated for your own learning in alignment with internship goals;

Name
Demonstrated professional skills in the workplace;

Name
Built and maintained positive professional relationships;

Name
Demonstrated awareness of community and/or organizational issues;

Name
Identified, clarified and/or confirmed professional direction as it relates to your academic studies and future career path;

Name
Developed self-understanding, self-discipline, maturity and confidence;

Name
Developed strong networking/mentoring relationships

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

A minimum grade of 'C' in Course AVC112

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC112 - Blueprint Reading

A minimum grade of 'C' in Course MMG140

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MMG140 - Metrology

A minimum grade of 'C' in Course PDV115

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- PDV115 - Work Ethics

A minimum grade of 'C' in Course QAI135

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- QAI135 - Quality Assurance Orientation

A minimum grade of 'C' in Course QAI145

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- QAI145 - Quality Management

A minimum grade of 'C' in Course QAI155

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- QAI155 - Quality Documentation and Traceability

QAI185 - Statistical Process Control

Overview

Department
Manufacturing

Course Description
This course provides an introduction to Statistical Process Control (SPC) as a vital tool for improving quality and operational efficiency in manufacturing and service environments. Participants will learn how to utilize statistical methods to monitor and control processes, ensuring they operate at their full potential and produce consistent, high-quality outputs.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
Understand statistical process control and explain its importance in monitoring and controlling manufacturing and business processes.

Name
Distinguish between common cause and special cause variation and understand their implications for process stability and quality.

Name
Learn effective data collection methods to gather relevant information for SPC analysis, including sampling techniques and measurement systems.

Name
Understand the purpose and types of control charts (e.g., X-bar, R, p, np) and how to create, interpret, and use them to monitor process performance.

Name
Learn how to identify control limits for different types of control charts and understand their significance in identifying process stability.

Name
Understand skills to analyze patterns and trends in control charts to detect signals of process changes or non-conformance.

Name
Understand how to conduct process capability analysis (Cp, Cpk) to assess whether a process meets specification limits and customer requirements.

Name
Gain familiarity with additional SPC tools (e.g., Pareto charts, histograms, cause-and-effect diagrams) for diagnosing and improving process performance.

Name
Understand SPC data for continuous improvement initiatives, linking SPC with methodologies like Six Sigma and Lean.

Name
Understand the importance of training employees on SPC principles and techniques to foster a culture of quality and continuous improvement.

Name
Identify skills and tools to make informed decisions based on SPC data and analysis, enhancing problem-solving capabilities in quality management.

Name
Learn effective techniques for documenting SPC findings and reporting them to stakeholders to communicate process performance and improvement efforts.

QAI195 - Root Cause Analysis

Overview

Department
Manufacturing

Course Description
This course provides a thorough understanding of Root Cause Analysis (RCA) methodologies and techniques designed to identify, analyze, and resolve the underlying causes of problems within organizations. Participants will learn the importance of RCA in improving processes, enhancing product quality, and preventing recurrence of issues. Course covers various RCA tools and techniques, including the 5 Whys, Fishbone (Ishikawa) diagrams, and Fault Tree Analysis. Students will engage in practical exercises and case studies to apply these methodologies in real-world scenarios, fostering critical thinking and problem-solving skills.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
Understand the principles and significance of Root Cause Analysis.

Name
Identify and differentiate between symptoms, causes, and root causes of problems.

Name
Apply various RCA techniques and tools to analyze issues effectively.

Name
Understand relationship of corrective action plans based on RCA findings to foster a culture of continuous improvement.

Name
Define root cause analysis and its importance in problem-solving and quality management.

Name
Develop skills to effectively identify and articulate problems that require root cause analysis.

Name
Identify various RCA methodologies (e.g., 5 Whys, Fishbone Diagram, Fault Tree Analysis) and their appropriate application in different contexts.

Name
Understand how to gather and analyze relevant data to support root cause identification, including qualitative and quantitative data.

Name
Identify teamwork and collaboration skills in conducting RCA to leverage diverse perspectives and insights.

Name
Learn how to document the RCA process, findings, and conclusions to ensure clarity and facilitate follow-up actions.

Name
Identify skills in developing and implementing effective corrective actions that address identified root causes.

Name
Understand the importance of verifying the effectiveness of corrective actions and how to monitor outcomes over time.

Name
Learn how to use insights from RCA to develop preventive actions that minimize the risk of future occurrences.

Name
Recognize how RCA fits within the larger framework of continuous improvement initiatives (e.g., Lean, Six Sigma).

Name
Learn effective communication skills to present RCA findings and recommendations to customers at all levels.

Name
Understand the role of RCA in fostering a culture of accountability, transparency, and continuous learning within the organization.

QAI201 - Geometric Dimensioning & Tolerance

Overview

Department
Manufacturing

Course Description
The Geometric dimensioning and tolerance course is an in-depth study designed to develop a basic working knowledge in geometric dimensioning and tolerancing (GD&T). It is delivered per the ASME Y14.5M, 1994 standard. This program has been presented and refined over the past 25 years and covers what personnel need to know in order to work in an industrial environment on a daily basis. The course includes emphasis on all the basics, such as the rules, measurement theory, the datum reference frame, form, orientation, profile and positional tolerancing. The program materials contain a variety of computer color animated graphics, video clips and plastic models which allow the students to clearly understand the concepts.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to Understand geometric dimensioning and tolerance

Objective
Using computer animated color graphics and plastic models student teams learn to apply and verify geometric tolerancing to a variety of mating parts and assemblies The participants must solve case study problems according to predetermined functional requirements', Datum reference frames must be established along with necessary application of MMC RFS and LMC modifiers form orientation profile and positional tolerances Geometric characteristics must be selected and tolerance values must be calculated The problems include a variety of molded sheet metal machined parts wire formed and welded assemblies

Name
The student will be able to apply geometric dimensioning and tolerance

Objective
Straightness Flatness Circularity Cylindricity', Parallelism Perpendicularity Angularity', Runout Total and Circular', Definitions and Explanations', Coaxial Controls

Name
The student will be able to explain geometric dimensioning and tolerance

Objective
Profile for location', Position Verification Exercises', Position Tolerance', Position Theory', Position Verification Exercises', Projected Tolerance Zone', Composite Tolerancing', Fixed and Floating Fastener Calculations', IB OB calculations', Inspection Techniques and Functional Gages

Name
The student will be able to demonstrate time management skills in the laboratory

Objective
Identity role of planning in time management', Identify planning tools including current technologies', Identify role of prioritizing in time management', Demonstrate prioritizing techniques', Demonstrate planning skills

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- AVC112 - Blueprint Reading

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- MMG113 - Print Reading

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- MCD104 - Blueprint Reading for Drafting

QAI215 - Human Factors in Manufacturing

Overview

Department
Manufacturing

Course Description
This course provides an examination of the principles of human factors and ergonomics as they apply to the manufacturing industry. Participants will explore how understanding human capabilities and limitations can lead to improved safety, productivity, and overall performance in manufacturing environments. The course covers key topics such as human-computer interaction, workplace design, task analysis, and the impact of ergonomics on employee well-being and efficiency. Students will learn to identify common human factors issues in manufacturing processes and develop strategies to mitigate risks associated with human error, enhance usability, and optimize work environments.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Define human factors and ergonomics and explain their significance in the manufacturing context, including their impact on safety, productivity, and quality.

Name
Identify potential human factors issues that can affect worker performance and safety.

Name
Identify principles of ergonomic design and how to apply them to create workspaces that enhance worker comfort, efficiency, and safety.

Name
Understand the role of effective communication and teamwork in manufacturing processes and how to foster a culture of collaboration.

Name
Identify safety protocols that consider human factors, aiming to minimize accidents and injuries on the shop floor.

Name
Understand proficiency in conducting assessments and audits of human factors in manufacturing settings, using techniques like task analysis and observational studies.

Name
Understand the principles of human-centered design and how to apply them to improve tools, equipment, and processes in manufacturing.

Name
Identify metrics and indicators to assess the impact of human factors on performance and productivity in manufacturing environments.

Name
Recognize the importance of continuous improvement in addressing human factors issues and learn how to implement initiatives that foster ongoing enhancement.

QAI225 - Quality Assurance Inspection Internship II

Overview

Department
Manufacturing

Course Description
This course is a continuation of QAI 175 Quality Assurance Inspection I. In this course students will continue to enhance their skills as they apply knowledge learned into the classroom to the workplace. Students will produce a critical reflection on their internship experience demonstrating how they have addressed specific learning goals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
180

Billing Hours

Billing Hours
Min:
4

Other Hours

Other Hours
Min:
180

Course Learning Outcomes

Learning Outcomes

Name
Applied your knowledge, skills, experience to a work environment;

Name
Acquired new learning through challenging and meaningful activities;

Name
Reflected on the content and process of the learning experience;

Name
Advocated for your own learning in alignment with internship goals;

Name
Demonstrated professional skills in the workplace;

Name
Built and maintained positive professional relationships;

Name
Demonstrated awareness of community and/or organizational issues;

Name
Identified, clarified and/or confirmed professional direction as it relates to your academic studies and future career path;

Name
Developed self-understanding, self-discipline, maturity and confidence;

Name
Developed strong networking/mentoring relationships

Requirements

Simple Requirements

A minimum grade of 'C' in Course QAI175

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- QAI175 - Quality Assurance Inspection Internship I

REL101 - New Testament

Overview

Department
General Education

Course Description
This course is an introduction to history, literature and culture that gave rise to the New Testament from an objective and analytical approach.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Summarize the content and context of the New Testament.

Name
Distinguish among the various genres represented in the New Testament.

Name
Apply the tools, methods, and results of academic Biblical scholarship to New Testament texts.

Name
Analyze New Testament texts against the backdrop of Jewish, Greek, and/or Roman worlds.

Name
Evaluate basic questions about the role of the New Testament.

REL130 - World Religions

Overview

Department
General Education

Course Description
This course provides students an overview of the major world religions, prepares students to identify the differences and similarities between the major tenants of these religions, and helps students develop an appreciation and understanding of religious diversity.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Identify principal texts, central religious figures and ideas of major world religions such as Hinduism, Buddhism, Christianity, Judaism and Islam.

Name
Demonstrate knowledge of beliefs, practices, and values of major world religions.

Name
Describe historical narratives and cultural expressions of major world religions.

Name
Analyze concepts and issues basic to the study of major world religions in a comparative framework.

Name
Explain the implications of beliefs and practices with respect to religions in a religiously diverse world.

Name
Evaluate definitions of religion.

ROB100 - Introduction to Robotics

Overview

Department
Automation and Advanced Tech

Course Description
This course explores basic robotic concepts. Studies robotics in typical application environments. Topics include: robot history and fundamentals, robot classification, power sources, robot applications in the workplace, robot control techniques, path control, end of arm tooling, robot operation and robot controllers, controller architecture in a system, robotic language programming, and human interface issues.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate through classroom and laboratory projects the ability to describe the history and basic functions of robotics

Objective
List early robotlike machines', Discuss the impact of key individuals on robotics development', Outline early robot development', Identify initial robot applications', Outline reasons for the late emergence including inflation in the 1970s the development of offshore industries the development of the microprocessor and human resistance to the introduction of robots in the workplace', Discuss the Society of Manufacturing', Discuss engineers definition with particular emphasis on the key terms reprogrammable and multifunctional', Discuss the operation and functions of the following components of a basic robot system mechanical arm production tooling external power source robot controller permanent storage device teach station and vision', Define accuracy repeatability work envelope degree of freedom orientation axes position axes toolcenter point work cell coordinates speed and payload

Name
The student will be able to demonstrate through classroom and laboratory projects the ability to classify robots

Objective
Perform a work envelope analysis by coordinate system', Discuss position and orientation axes', Describe work envelope', List advantages and disadvantages of rectilinear coordinate systems', List applications of rectilinear coordinate systems', Discuss position and orientation axes', Describe work envelope', List advantages and disadvantages of spherical coordinate systems', List applications of spherical coordinate systems', Discuss position and orientation axes', Describe work envelope', List advantages and disadvantages of jointedspherical coordinate systems', List applications of jointedspherical coordinate systems

Name
The student will be able demonstrate through classroom and laboratory projects the ability to select appropriate power sources for robotic projects

Objective
Describe a hydraulic drive power system', List types of actuators available for use with this type of system', List advantages and disadvantages of hydraulic drive power sources', Describe a pneumatic power system', List types of actuators available for use with this type of system', List advantages and disadvantages of pneumatic drive power sources', Describe electrical power systems', List types of electrical systems available for use', List advantages and disadvantages of electrical power drive systems

Name
The student will be able to demonstrate through classroom and laboratory projects the ability to describe application of robotics in the workplace

Objective
Discuss current and anticipated applications of robots in the workplace', Discuss current and anticipated applications of robots in non assembly applications

Name
The student will be able to demonstrate through classroom and laboratory projects the ability to utilize robot control techniques

Objective
Describe closedloop systems operation', List advantages and disadvantages of closedloop systems', Describe nonservo feedback systems operation', List advantages and disadvantages of nonservo feedback systems

Name
The student will be able to demonstrate through classroom and laboratory projects the ability to utilize path control

Objective
Define path control', Define stoptostop control', Describe the operation of stoptostop control', List advantages and disadvantages of stoptostop control', Define pointtopoint control', Describe the operation of pointtopoint control', List advantages and disadvantages of pointtopoint control', Define controlled path control', Describe the operation of controlled path control', List advantages and disadvantages of controlled path control', Define continuous path control', Describe the operation of continuous path control', List advantages and disadvantages of continuous path control', Discuss the relative level of intelligence of low medium and high technology robots

Name
The student will be able to demonstrate through classroom and laboratory projects the ability to differentiate between the types of end of arm tooling available in the robotics industry

Objective
List six characteristics of end of arm tooling', Discuss intelligence requirements of tooling and the robot', Differentiate between angular and parallel grippers', List the four standard power sources of grippers hydraulic pneumatic electric and spring and appropriate applications of each', Discuss vacuum cups vacuum suckers and vacuum surfaces', Differentiate among the theory of operation of the three vacuum powered grippers', Discuss magnetic grippers', Define and differentiate among pneumatic fingers mandrel grippers and pin grippers', Define special purpose grippers', Define special purpose tooling', List applications and tools used for the following robot applications drilling welding gluing and sealing coating and painting and grinding', Define compliance', List three types of system compliance', Describe the operation of an active compliance system', Describe device operation and remote center compliance devices in a passive compliance system', Define multiple end effector systems', List advantages and disadvantages of multiple end effector systems', Discuss vision and artificial skin

Name
The student will be able to demonstrate through classroom and laboratory projects the ability to utilize robot operation and controllers

Objective
Define reference frame', List five frames of reference', List applications of reference frames in robot control', Discuss internal controls in openloop systems', Discuss the following internal positioning mechanisms fixed hard stops adjustable hard stops limit switches and stepper motors', Discuss external controls in openloop systems', Discuss the following external devices for position control drum controllers pneumatic logic and programmable controllers', Operate an openloop system', Discuss internal controls in closedloop systems', Discuss the theory of operation and the advantages and disadvantages of using the following internal positioning devices potentiometers optical encoders revolvers and synchros and sonic displacers', Discuss external techniques for position control', Describe the path control algorithm for the following pointtopoint controlled path and continuous path', Discuss the programming language of the particular system available', Describe work cell sensors

Name
The student will be able to demonstrate through classroom and laboratory projects the ability to utilize controller architecture

Objective
Discuss the following as related to the system to be operated CPU configurations memory techniques robot arm interfaces and work cell interfaces', Use controller architecture in the system to be operated

Name
The student will be able to utilize robotic language

Objective
Explain program instruction codes', Describe the decimal equivalent of the instruction code', Explain stepping through a program entered at a program panel', Discuss the specialized robot programming languages including', C VAL RAIL and AML', Write sample programs', Load a program into a robot', Test programs', Interpret error messages

Name
The student will be able to demonstrate through classroom and laboratory projects the ability to discuss human interface issues in reference to robotics in the workplace

Objective
Describe operator training requirements', Discuss resistance to automation in industry', Discuss the roles of management individuals and organized labor in the establishment of FMS environments

ROB103 - Applied Robotics Lab I

Overview

Department
Automation and Advanced Tech

Course Description
In this course students will learn basic robotic applications and devices utilized in automated systems. Using hands on step by step approach students will program different types of robots and interface the robots and controllers within parameters defined by the instructor and the application.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to execute commands.

Objective
Utilize teach pendant technology', Utilize teach pendant programming', Identify programming language used in robots', Identify the commands available on each robot', Identify move points', Identify coordinate systems including Cartesian tool frame and joint frame', Execute move commands', Execute move sequences', Execute conditional commands', Execute loop commands', Execute message commands', Execute math commands', Execute IO commands', Execute conveyor control commands', Execute communications commands', Executer commands

Name
The student will be able to demonstrate interface capabilities.

Objective
Interface variety of devices with power supply', Interface variety of devices with multiple inputsoutputs', Demonstrate simple handshaking between PLC and robot

Name
Student will demonstrate safety in the Robot Workcell

Objective
Complete pre Inspection of all components in robotic work cell', Identify pinch points', Identify engage and clear all Emergency stop buttons for normal operation', Identify light curtains and cell safety switches', Perform safe entry into robotic work cell for inspection maintenance and editing programs

Objective
Identify and understand robot axes and movement of each', Program robot Home position', Program TCP Tool Center Point

Name
Student will demonstrate basic robot welding programming

Objective
Basic programming language', Write basic program for robot movement no part', Write program to weld a part with at least 3 joints', Run programmed part', Edit program

Name
Student will perform basic daily operational maintenance associated with Robotic Welding.

Objective
Routine maintenance checks of all robot and cell components

Requirements

Simple Requirements

A minimum grade of 'C' in Course ROB104

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ROB104 - Robotics Simulation

ROB104 - Robotics Simulation

Overview

Department
Automation and Advanced Tech

Course Description
This course provides the student an introduction to robotic simulation using industry current software. Students will learn to build computer simulated models of robotic work cells.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to run work cell in the simulation application

Objective
Retrieve previously stored work cells', Run simulations', Utilize crash detection', Manipulate the work cells', View the simulation from various angles

Name
The student will be able to manipulate devices in the simulation application

Objective
Differentiate between work cell and devices', Retrieve devices in relation to one another', Position devices in relation to one another', Translate devices to new positions

Name
The student will be able utilize paths and tag points in the simulation application

Objective
Describe the difference between tool and world reference frames', Store tag points in various frames of reference', Differential between slew joint interpolate and line at interpolate motion

Name
The student will be able to demonstrate the ability to utilize programming functions in the simulation application

Objective
Write basic programs to create robot motion', Utilize programming constructions including counters gotos and if then', Create hand shaking interface between two devices', Prevent crashes between robots', Utilize programming constructs including while do and for to end', Utilize sub programs', Build simple device in CAD program', Incorporate the device created in CAD into the work cell', Identify commands including message math operator IO conveyor loop conditional move IO interface', Program move commands', Program move sequences', Program conditional commands', Program loop commands', Program message commands', Program math commands', Program IO commands', Program conveyor control commands', Program communications commands', Program Palletizing Commands', Program Region Commands', Identify teach pendant technology', Define all elements of teach pendant technology

Requirements

Simple Requirements

Completed Course ROB100

Type
Prerequisite

Complete ALL of the following Courses:
- ROB100 - Introduction to Robotics

ROB106 - Robotics Controller Maintenance

Overview

Department
Automation and Advanced Tech

Course Description
This course will provide the student with basic skills and techniques used in the maintenance and repair of robotic/automated equipment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
1

Contact Hours

Contact Hours Min:
30

Billing Hours

Billing Hours Min:
1

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate through classroom and laboratory assignments the ability to effectively apply basic principles of manufacturing safety, instrumentation, maintenance and documentation.

Objective
Identify safety issues associated with robotic repair and maintenance', Apply industrial safety concepts to repair and maintenance', Identify basic hand tools used in repair and maintenance including VOMs oscilloscopes micrometers dial indicators calipers', Utilize basic hand tools used in repair and maintenance including VOMs oscilloscopes micrometers dial indicators calipers', Identify documentation processes and procedures', Demonstrate appropriate documentation procedures', Know how to find maintenance tables in manuals', Battery maintenance techniques such as replacement interval power on vs off swapping and error recovery', Robot mastering techniques', Proper lubrication technique

Name
The student will be able to interpret ANSI symbol

Objective
Define ANSI', Interpret ANSI symbols

Name
The student will be able utilize schematics to effectively repair and maintain automated systems and equipment.

Objective
Identify schematics for automated systems', Read schematics for repair and maintenance purposes', Interpret the schematics for use in repair and maintenance situations

Name
The student will be able to establish work-cell safety circuits per the robot safety standards.

Objective
Identify safeguarding devices', Review ANSI symbols of electrical circuits', Identify the basic safety circuits for a singlerobot cell', Identify the basic safety circuits for a multirobot cell', Identify safety circuits with light curtains andor laser scanners

Name
The student will be able to relocate robotic system.

Objective
Identify processes and procedures associated with robot relocation', Identify materials and tools associated with robot relocation', Perform floor load analysis to determine if concrete padding is sufficient

Requirements

Simple Requirements

A minimum grade of 'C' in Course ROB103

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- ROB103 - Applied Robotics Lab I

ROB115 - Introduction to Programming Robots in ROS

Overview

Department
Automation and Advanced Tech

Course Description
In this course students will become familiar with the basic programming languages used in Robotics; Python, Linux, and C++. Students will practice programming and applying different programs in the Robot Operating System (ROS) to help Robots move and interpret reference frames. The course will conclude with students applying their knowledge of the programming languages to the design and simulation of a robot.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
4

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
4

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
At the end of this program students will be able to demonstrate through laboratory and classroom work the ability program and operate robotic equipment

Name
At the end of this program students will be able to apply problem solving and critical thinking skills to troubleshoot robotic equipment

Name
Demonstrate basic robotic programming skills.

Name
Demonstrate basic and advanced programming skills for basic robotic equipment

Name
Demonstrate problem solving and critical thinking skills to troubleshoot robotic equipment

Name
Demonstrate advanced robot programming with Machine Learning

Requirements

Simple Requirements

Enrolled in Course MTH112

Type
Prerequisite

Enroll in the following Courses:
- MTH112 - College Algebra

ROB118 - Basic Circuits

Overview

Department
Automation and Advanced Tech

Course Description
This course introduces direct current (DC) concepts and applications and the theory and application of varying sense wave voltages and current. Topics include: electrical principles and laws; batteries; DC test equipment; series, parallel and simple combination circuits; magnetism, AC wave generation, AC test equipment, inductance, capacitance, and basic transformers, and laboratory procedures and safety practices.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the terminology, principles, and applications of DC Circuits.

Objective
Understanding basic Electrical Safety rules', Recognizing Symbols and reading Schematics', Identifying the relationship between circuit voltage current and resistance', Differentiating between Series and Parallel circuits', Identifying types of switches and switching concepts', Using Ohms Law as it applies to circuit resistance current and voltage', Calculating resistance and power in series seriesparallel and parallel resistive circuits', Calculating current in a series circuit', Understanding current flow in a series and seriesparallel resistive circuit', Understanding voltage in a series and seriesparallel resistive circuit', Identifying and applying rheostats potentiometers voltage current and voltagecurrent dividers', Using a DC ammeter ohmmeter and voltmeter', Troubleshooting DC circuits

Name
The student will be able to discuss the terminology, principles, and applications of AC Circuits.

Objective
Understanding what Magnetism is and how magnetic fields are created', Understanding what an electromagnet is', Basic Oscilloscope and AC Waveform Generator use', Measuring amplitude AC voltage current and impedance with an Oscilloscope', Measuring and setting Frequency', Understanding the fundamentals of Inductive Reactance and Impedance', Understanding how magnetism applies to the operation of solenoids and relays', Apply define and explain transformer turns and voltage ratios', Explain transformer stepupstepdown theory and demonstrate secondary output', Determine capacitance in series and parallel circuits', Explain the fundamentals of capacitive reactance', Recognize Series and Parallel Capacitive Reactance circuits', Troubleshoot basic AC circuits

Objective
Identify Semiconductor components such as resistors linear potentiometers power transformers LED indicators silicon and Zener diodes and bridge rectifiers', Demonstrate control of a semiconductor switch', Explain diode and DC characteristics', Discuss halfwave rectification', Apply fullwave diode bridge rectification', Explain power supply filtering and diode waveshaping', Describe the function of a voltage doubler', Describe a Zener Diode and its use in voltage regulation', Test the junctions of a transistor', Explain the function of a PNP transistor current control circuit', Discuss emitterbased bias potentials and the differences between collector current versus base bias', Measure transistor voltages and identify transistor load lines', Troubleshoot Semiconductor devices in electronic circuits

Requirements

Simple Requirements

Enrolled in Course MTH112

Type
Prerequisite

Enroll in the following Courses:
- MTH112 - College Algebra

ROB120 - IoT Fundamentals: Introduction to the Internet of Things

Overview

Department
Automation and Advanced Tech

Course Description
In this course, students learn about Internet of Things and how it enables Digital Transformation along with emerging technologies such as data analytics, artificial intelligence, and the increased attention on cybersecurity. Students will also understand the basics of Intent Based Networking that uses software-driven approach and machine learning to be able to connect and secure new devices with ease.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Students will be able to analyze the meaning of the Internet of Things (IoT), to build interfaces using sensors and other hardware to collect data for integrating with Analytics.

Objective
How does Digital Transformation affect business industry and daily life', Explore the internet of Things including sensors actuators and controllers and they are connected in a network', Demonstrated how to add IoT devices to a Smart Home

Name
Students will create and apply basic programming skills and languages to support IoT hardware devices

Objective
Understand basic programming language concepts', Develop basic programming skills to create applications', Introduction to flowcharts visual programming in Blockly and Python', Create a simple game with Python', Rapid Prototyping with a Raspberry Pi and Arduino

Name
Students will be able to assess the benefits of automation through IoT.

Objective
Explore how artificial intelligence and Machine Learning leverage Big Data to enable smarter business decisions', Experiment with robotic hardware and software for interfacing IoT hardware to collect data from robotic tasks and actions', Appraise how IoT processes for integrating sensors and hardware to control evaluate and improve everyday events

Name
Students will engage with networking groups for professional development and potential employment opportunities in IoT related fields.

Objective
Explore the evolving job market opportunities in the increasingly digitized world', Learn the lifelong learning educational opportunities importance of industry certifications and communities of interest related to IoT and other areas of interest', Explore IoT related jobs and learning opportunities

Name
Understand and explain the concepts, opportunities, and challenges of digital transformation using IoT.

Name
Student will create connections between IoT hardware devices to collect, transfer, and analyze data

Objective
Explore sources of data where it is stored and the role of distributed processing', Use excel to forecast data

ROB121 - IoT Fundamentals: Introduction to the Internet of Things

Overview

Department
Automation and Advanced Tech

Course Description
In this course, students learn about Internet of Things and how it enables Digital Transformation along with emerging technologies such as data analytics, artificial intelligence, and the increased attention on cybersecurity. Students will also understand the basics of Intent Based Networking that uses software-driven approach and machine learning to be able to connect and secure new devices with ease.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
1

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Students will be able to analyze the meaning of the Internet of Things (IoT), to build interfaces using sensors and other hardware to collect data for integrating with Analytics.

Objective
1.1. How does Digital Transformation affect business, industry, and daily life 1.2. Explore the internet of Things including sensors, actuators, and controllers and they are connected in a network 1.3. Demonstrated how to add IoT devices to a Smart Home

Name
Students will create and apply basic programming skills and languages to support IoT hardware devices

Objective
2.1. Understand basic programming language concepts 2.2. Develop basic programming skills to create applications 2.3. Introduction to flowcharts, visual programming in Blockly and Python 2.4. Create a simple game with Python 2.5. Rapid Prototyping with a Raspberry Pi and Arduino

Name
Students will be able to assess the benefits of automation through IoT.

Objective
3.1. Explore how artificial intelligence and Machine Learning leverage Big Data to enable smarter business decisions 3.2. Experiment with robotic hardware and software for interfacing IoT hardware to collect data from robotic tasks and actions. 3.3. Appraise how IoT processes for integrating sensors and hardware to control, evaluate, and improve everyday events

Name
Students will engage with networking groups for professional development and potential employment opportunities in IoT related fields.

Objective
4.1. Explore the evolving job market opportunities in the increasingly digitized world 4.2. Learn the lifelong learning educational opportunities, importance of industry certifications, and communities of interest related to IoT and other areas of interest 4.3. Explore IoT related jobs and learning opportunities.

Name
Understand and explain the concepts, opportunities, and challenges of digital transformation using IoT.

Name
Student will create connections between IoT hardware devices to collect, transfer, and analyze data

Objective
6.1. Explore sources of data, where it is stored, and the role of distributed processing 6.2. Use excel to forecast data

- ROB130 - IoT Fundamentals: Connected Things

Requirements

Simple Requirements

Enrolled in ROB 130: IoT Fundamentals: Connected Things

Type
Corequisite

Enroll in the following Courses:

ROB124 - Robotic Navigation

Overview

Department
Automation and Advanced Tech

Course Description
In this course, students will learn how to properly navigate robots using ROS. Navigation allows mobile robots to move around autonomously and an essential element in multiple industrial fields including warehousing, commercial, consumer, and entertainment. Students will learn the key components of ROS Navigation and how to use it in robot projects.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
At the end of this program students will be able to demonstrate through laboratory and classroom work the ability program and operate robotic equipment

Name
Demonstrate basic robotic programming skills.

Name
Demonstrate basic and advanced programming skills for basic robotic equipment

Name
Demonstrate problem solving and critical thinking skills to troubleshoot robotic equipment

Name
Demonstrate advanced robot programming with Machine Learning

Requirements

Simple Requirements

A minimum grade of 'C' in Course ROB115

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ROB115 - Introduction to Programming Robots in ROS

ROB128 - Basic PLC

Overview

Department
Automation and Advanced Tech

Course Description
This course introduces operational theory, systems terminology, PLC installations, and programming procedures for programmable logic controls. Emphasis is placed on PLC programming, connections, installations, and start-up procedures. Topics include: PLC hardware and software, PLC functions and terminology, PLC installation and set up, PLC programming basics, relay logic instructions, timers and counters, connecting field devices to I/O cards, and PLC safety procedures.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to install PLC hardware and software

Objective
Identify and discuss functions of all PLC components', Discuss and install DOS and windows versions software

Name
The student will be able to discuss functions and terminology associate with PLC

Objective
Discuss functions of the PLC and its role in industry', Discuss common terminology used in PLC applications

Objective
Completely install a PLC processor power supply and IO cards', Load software and setup the PLC for operation

Name
The student will be able to perform basic PLC programming

Objective
Discuss the processor memory organization', Discuss the program scan', Discuss PLC programming languages and bit patterns', Discuss programming instructions and addressing', Execute a ladder logic rung and address inputs and outputs

Name
The student will be able to execute relay logic instructions

Objective
Discuss and execute examine on examine off output energize latch and unlatch', Write and execute a ladder logic rung using these instructions

Name
The student will be able to execute timer and counter functions

Objective
Discuss and execute timer on timer off retentive timers and timer reset', Discuss and execute counter up counter down and counter reset

Name
The student will be able to connect field devices to I/O cards

Objective
Install switches and other control devices to input cards and address the terminals', Install relays indicator lights solenoids and motor starters to output cards and address the terminals', Write program files using relay instructions edit program file download to processor go online and execute

Name
The student will be able to preform PLC safety procedures

Objective
Discuss techniques for discrete IO signal communication', Discuss the hazards of forcing inputsoutputs', Discuss hazards of leaky inputs and outputs', Check for leaky triacs SCRs and transistors', Discuss safe methods of installing power and control cable', Install power and control cables

Requirements

Simple Requirements

A minimum grade of 'C' in Course ROB118

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ROB118 - Basic Circuits

ROB130 - IoT Fundamentals: Connected Things

Overview

Department
Automation and Advanced Tech

Course Description
This course will prepare students with the technical and soft skills needed to ideate, design, prototype, and present the business value of an end-to-end IoT solution. The typical end-to-end solution will include sensors and actuators, gateways, wired and wireless network connections and cloud services.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Understand and explain the concepts, opportunities, and challenges of digital transformation using IoT.

Name
Build IoT solutions using IoT sensors and network components.

Name
Design and prototype IoT solutions using electronics, microcontrollers and other programmable controllers.

Objective
Rapid prototyping with programmable controllers

Name
Securely connect the prototype industrial IoT solutions to the Internet.

Name
Students will be able to program the behavior of the IoT devices and to connect them to cloud services via APIs

Objective
Use structured text programing languages to control device behavior', Develop network communication programs using IoT components and tools

Name
Student will collect, extract and store data from IoT hardware devices.

Objective
Students will connect multiple IoT devices', Collect various sources of data', Use excel to forecast data

Name
Work as a team and apply the User-Centered Design Approach (design thinking) to develop, rapidly prototype, iteratively refine, and pitch a business idea for an IoT solution (Hackathon).

Requirements

Simple Requirements

Enrolled in Course ROB120

Type
Prerequisite

Enroll in the following Courses:

- ROB120 - IoT Fundamentals: Introduction to the Internet of Things

ROB134 - Robotic Perception and Manipulation

Overview

Department
Automation and Advanced Tech

Course Description
In this course, students will learn and become competent in the concepts necessary to get a robot to perceive and manipulate objects in their environment. This course teaches students how to utilize ROS Industrial to achieve these goals in various settings.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Student will demonstrate ability to use ROS with industrial robots

Objective
Overview of how to create a URDF file for an industrial robot', How to create a MoveIt Package for your industrial robot', How to perform motion planning using Python

Name
Students will demonstrate knowledge and application of ROS Perception

Objective
Track objects by its color blobs', Navigate following floor lines with only RGB cameras', Detect human faces and track them', Recognize different faces', Track a person through a 3D environment', Recognize flat surfaces like tables where object might be placed', Recognize objects and track them in 3D space with PointCloudSensors

Name
Students will demonstrate knowledge and application of ROS Manipulation

Objective
Basics of ROS Manipulation', How to create and configure a MoveIt Package for a manipulator robot', How to perform Motion Planning', How to perform Grasping

Name
Students will demonstrate mastery of mobile manipulators

Objective
How to do robot navigation in known environments', How to use perception to detect the objects to gasp in the background', How to move a robotic arm with a gripper to grasp an object', How to create a complete application that integrates all these behaviors into a single ROS app based on State Machines', How to create a web interface that allows people without ROS knowledge to control the robots operation

Requirements

Simple Requirements

A minimum grade of 'C' in Course ROB124

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ROB124 - Robotic Navigation

ROB138 - Advanced PLC

Overview

Department
Automation and Advanced Tech

Course Description
This course examines types, installation and troubleshooting of programmable logic controllers (PLC). Hardware and programming aspects, as well as ladder logic symbols and operations necessary to develop a PLC program are covered in this course.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate the safety procedures when working with programmable logic controllers

Name
Identify the types and components of a programmable logic controller

Name
Connect a programmable logic controller to a programming device

Name
Select the proper wiring and terminations of inputs and outputs

Name
Identify the numbering systems used in programmable logic controllers

Name
Identify the symbols used in programmable logic controller relay ladder logic

Name
Develop a functional programmable logic controller program

Name
Document a programmable logic controller program

Name
Demonstrate the process of programmable logic controller system troubleshooting

Requirements

Simple Requirements

A minimum grade of 'C' in Course ROB128

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ROB128 - Basic PLC

ROB140 - IoT Fundamentals: Big Data Analytics

Overview

Department
Automation and Advanced Tech

Course Description
This course will continue to expand your skills in all aspects of IoT, focusing mainly on data analytics and Big Data Systems. It includes extensive hands-on labs to practice data acquisition from sensors and video cameras, data visualization and an introduction to Machine Learning. This path enhances the communication skills and business acumen of the students by teaching storytelling with data. It introduces the students to the field of Big Data engineering platforms. The capacity to leverage the data analytics in the IoT Solutions is strategically important for value creation and requires the development of specific data analysis skills that are extremely valuable in the market.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Understand and explain the concepts, opportunities and challenges of digital transformation using IoT.

Name
Design and model IoT solutions using simulation tools (Packet Tracer).

Name
Design and prototype IoT solutions using electronics, microcontrollers (Arduino) and single board computers (Raspberry Pi).

Name
Use Python to Collect, Transform, analyze, and visualize data from the sensor and store them in SQL data bases. - Conduct exploratory data analysis activities.

Name
Apply basic Machine Learning algorithms to extract insights from data.

Name
Present and communicate using data storytelling.

Name
Describe the evolution of data management technologies from SQL to NoSQL.

Name
Explain the fundamental principles of a modern data center and of a distributed scalable Big Data platform like Apache Hadoop.

Name
Securely connect the prototype to the Internet.

Name
Use Python to program the behavior of the IoT devices and to connect them to cloud services via APIs.

Name
Work as a team and apply the User Centered Design Approach (design thinking) to develop, rapidly prototype, iteratively refine and pitch a business idea for an IoT solution (Hackathon).

Requirements

Simple Requirements

A minimum grade of 'C' in Course ROB130

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- ROB130 - IoT Fundamentals: Connected Things

ROB144 - Machine Learning for Robotics

Overview

Department
Automation and Advanced Tech

Course Description
In this course students will utilize Machine Learning to get robots to recognize images, be trained on randomly simulated environments, achieve level 3 autonomy, and operationalize a robot on the CUDA platform.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Students will demonstrate skills and knowledge associated with ROS Deep Learning with TensorFlow

Objective
How to use Google TensorFlow Image Recognition DB to recognize hundreds of different objects with ROS', How to generate your own TensorFlow Inference graph to make it learn a custom object', How to use TensorBoard Web Visualizer to monitor how the learning process is going

Name
Students will demonstrate skills and knowledge associated with using Open AI with ROS

Objective
Basic Concepts of OpenAI ROS structure', Set up the OpenAI ROS structure for a CartPole environment', Train the CArtPole with the Qlearn algorithm', Set up the OpenAI ROS structure for a Moving Cube environment', Train the Cube with the Qlearn algorithm', Modifying the learning algorithm DeepQ', Set up the OpenAI ROS structure for a Fetch Robot', Training Fetch Robot with the HER algorithm form OpenAI baselines

Name
Students will demonstrate skills and knowledge associated Deep Learning with Domain Randomization

Objective
How to use Keras in a basic way', How to train a deep neural network using Gazebo Simulation', How to work with ROS plus Gazebo plus Keras in tandem', How the Random Environment generation works in Gazebo

Name
Students will demonstrate skills and knowledge associated with ROS autonomous Vehicles

Objective
What are the sensors required for an autonomous car and how to access them using ROS', How to do autonomous navigation using a GPS', How to create an obstacle avoider for an autonomous car

Name
Students will demonstrate skills and knowledge associated with using NVIDIA Jetson Nano with ROS

Objective
The basics of Artificial Intelligence and Deep Learning', How to develop a physical robot on a CUDA platform that has deep learning capabilities', How to set up a Jetbot with ROS including Deep Learning and future expansions

Requirements

Simple Requirements

A minimum grade of 'C' in Course ROB134

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- ROB134 - Robotic Perception and Manipulation

ROB145 - Applied Robotics Lab II

Overview

Department
Automation and Advanced Tech

Course Description
In this course students will expand on their experiences from Applied Robotics Lab II. Students will further enhance the robotic applications and integration of PLC's and PC's to robot controllers.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to program binary vision system.

Objective
Identify binary vision systems', Check for presence of attributes in parts using pixel count', Measure parts using edge detection', Identify lighting parameters', Select lighting for optimizing vision performance', Ulitize Fanuc iRvision to perform identificationorientation task to pick parts of multiple different orientations', Sort parts of various color using Cognex vision system

Name
The student will be able to demonstrate effective use of calibration and frames.

Objective
Master and calibrate the robot', Utilize frames for program adjustment and transfer

Requirements

Simple Requirements

A minimum grade of 'C' in Course ROB106

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ROB106 - Robotics Controller Maintenance

ROB148 - PLC Systems Design and Simulation

Overview

Department
Automation and Advanced Tech

Course Description
This course provides a more advanced study of PLC's in manufacturing including Distributed Control Systems (DCS), Supervisory Control and Data Acquisition Systems (SCADA), and advanced programming languages.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will demonstrate ladder logic programming techniques using PLC simulation software.

Objective
Define ladder logic', Convert relay logic schematics to ladder logic', Write a ladder logic program using PLCLogix', Define the terms examine on and examine off', Explain the purpose of a latching relay instruction', Differentiate between a branch and a nested branch', Describe the controller scan operation', Name two programming restrictions', Describe the use of Force instructions in PLC applications', Explain the purpose of bit status flags

Name
The student will demonstrate integration of PLC timers in their applications for industrial control circuits.

Objective
Name two types of relay logic timers', List the four basic types of PLC timers', Describe the function of a timedriven circuit', Differentiate between an ONdelay and an OFFdelay instruction', Write a ladder logic program using timers', Describe the operating principle of retentive timers', Explain the purpose of cascading timers', Define reciprocating timers

Name
Students will demonstrate applications of PLC counters in control systems

Objective
Name two types of mechanical counters', Define the two basic types of PLC counters', Write a ladder logic program using CTU CTD and RES', Explain the terms underflow and overflow', Describe the function of an eventdriven circuit', Design an updown counter', Define cascading counters', Explain the advantages of combining timers and counters

Name
Students will demonstrate various branch and loop instructions including MCR, JSR, and JMP.

Objective
Define program control instructions', Differentiate between master control reset and relay', Explain the purpose of a jump instruction', Describe the basic operation of a subroutine', Use a Force command for troubleshooting', Differentiate between a JSR and a JMP', Explain the purpose of fault routine', List the values associated with a GSV instruction

Name
The student will demonstrate clear understanding and purpose of PLC sequencers.

Objective
Explain the operation of a mechanical drum controller', Describe the basic function of a PLC sequencer', Explain how timedriven sequencers operate', Describe the operation of eventdriven sequencers', Derive a sequencer chart', Define the term matrix', Explain the purpose of masking', List three types of sequencers', Write a ladder logic program using SQO SQL and SQ1

Name
Students will demonstrate understanding how various aspects of data transfer is completed using instructions MOV, FIFO, and LIFO.

Objective
Name the three main data handling functions', Differentiate between words and arrays', Convert data from one form to another', Explain the purpose of a move instruction', Write a ladder logic program using an MOV instruction', Describe the purpose of an array to array move', Name two types of shift registers', Differentiate between FIFO and LIFO instructions', Transfer data between memory locations

Name
Students will demonstrate basic and advanced mathematical function usage in the PLC system.

Objective
Name the four main PLC mathematical functions', List three types of data comparison', Add and subtract numbers using PLC instructions', Write a ladder logic program using MUL and DIV instructions', Define the terms scaling and ramping', Use LES GRT and EQU instructions in a ladder logic program', Write a program using the SQR instruction', List three advanced math operations', Describe the purpose of an AVE instruction

Name
Student will demonstrate principles of open and closed loop control in industrial control systems.

Objective
Define the terms process process variable and controlled variable', Name four applications for control systems', Explain the advantage of using block diagrams', Describe the relationship between the set point error signal and measured value', Differentiate between openloop control and closedloop control', List the five basic components in a closedloop control system', Name the four variables that are generally used to evaluate the performance of a closedloop control system', Define dead time', Explain the basic operating principles of on off proportional integral derivative and PID control', Describe the purpose of feedforward control in process systems

Name
Student will demonstrate understanding of basic PLC systems and peripherals data communications.

Objective
Define the term data communication', Explain the purpose of a LAN', Describe the term protocol and its application to PLCs', Differentiate between OLE and DDE', Name two types of topology', List four factors affecting transmission media', Define the term response time', Describe the basic principles of proprietary networks', Name the seven MAP layers', List three advantages of using Ethernet', Explain the purpose of network switching', Name three types of RSLinx diagnostic resources

Name
The student will demonstrate understanding of important aspects of Distributed Control Systems including Remote terminal units, Human Machine Interfaces, and introduction to Local Area Networks.

Objective
Differentiate between DCS and SCADA', List the three main elements in a DCS', Identify the difference between uptime and system latency', Explain the purpose of a remote terminal unit RTU', Define task architecture and hardware architecture', Describe the reason why algorithms are popular in DCS', Name four common uses for HMI in DCS applications', Explain the function of a local area network LAN', Identify three components of quality of use in HMI', Define the terms topology and Ethernet', Compare softwarebased alarms with hardwarebased alarms', List five applications for DCS', Name the four elements in a typical OTS

Name
Student will demonstrate understanding using SCADA in automation systems and peripherals.

Objective
Describe the basic function of a SCADA system', List four examples of SCADA systems', Define SCADA architecture', Identify seven elements in a SCADA system', Explain the purpose of alarm management', Identify three types of changes noted by alarms and events', List the 10 stages of an alarm management lifecycle', Describe how Six Sigma is applied to alarm management', Explain the purpose of a firewall in a SCADA system', Define the term SCADA security', Name the two most common authentication methodologies', Describe the benefits of SCADA simulation

Name
Student will demonstrate understanding in advanced PLC programming languages used widely in automation.

Objective
Explain the purpose of the IEC611313 programming standard and its application in industry', Name two textbased languages and three graphical languages', Describe the basic programming and operating characteristics of Sequential Function Chart SFC', List the three main parts of a function and explain their application in Function Block Diagrams FBD', Write a simple Structured Text ST program', Differentiate between Instruction List IL programming and ST', Define online editing', Describe the function of program tags in the RSLogix 5000 software', List the four programming languages used by RSLogix 5000', Explain the purpose of the Controller Organizer in RSLogix 5000

Requirements

Simple Requirements

A minimum grade of 'C' in Course ROB138

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ROB138 - Advanced PLC

ROB150 - IoT Fundamentals: Security

Overview

Department
Automation and Advanced Tech

Course Description
The explosive growth of connected IoT devices enables the digitization of industries, but also increases the exposure to security threats. Upon completion students will be able to perform vulnerability and risk assessments, and research and recommend risk mitigation strategies for common security threats in IoT systems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Articulate specific security challenges related to the Internet of Things.

Name
Perform threat modeling activities on an IoT system at physical, communication and application layers.

Name
Use Kali Linux penetration testing tools to identify vulnerabilities in IoT systems.

Name
Apply threat modeling and risk assessment frameworks and recommend threat mitigation measures.

Name
Explain the impact of emerging technologies on IoT Security.

Requirements

Simple Requirements

A minimum grade of 'C' in Course ROB140

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ROB140 - IoT Fundamentals: Big Data Analytics

ROB155 - Advanced Industrial Workcell Programming

Overview

Department
Automation and Advanced Tech

Course Description
This course explores the fundamentals of work-cell integration and programming. The topics include integration of machine elements, motion control programming, and industrial control networks.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to establish work-cell safety circuits per the robot safety standards

Objective
Identify safeguarding devices', Review ANSI symbols of electrical circuits', Identify the basic safety circuits for a singlerobot cell', Identify the basic safety circuits for a multirobot cell', Identify safety circuits with light curtains andor laser scanners

Name
The student will be able to set up communication networks

Objective
Identify network protocols', Establish straight IO communication', Establish Ethernet communication', Basic masterslave control concepts

Name
The student will be able to operate, program, maintain, and troubleshoot a robotic welding cell

Objective
Learn the basic welding concepts', Explore robotic welding cells', Identify welding parameters', Create basic welding programs', Create circular welding programs', Simulate the programs in a virtual workcell', Troubleshoot the programs', Execute the programs on an actual welding cell', Perform the basic maintenance

Name
The student will be able to operate, program, maintain, and troubleshoot a robotic paint cell

Objective
Learn the basic paintingcoating concepts', Explore robotic paint cells', Identify paint spray gun parameters', Create basic paint programs', Create paint programs for curved surfaces', Simulate the programs in a virtual workcell', Troubleshoot the programs', Execute the programs on an actual paint cell', Perform the basic maintenance

Name
The student will be able to integrate and program advanced programmable logic controllers

Objective
Identify advanced programmable logic controllers ie Siemens controllers', Identify memory organization and addressing', Identify timers counters and function blocks', Identify Ladder logic routines for prototype applications', Integrate PLCs and robot controllers

Name
The student will be able to design and integrate machine elements

Objective
Discuss different machine elements', Discuss different power sources', Discuss different drive mechanisms', Identify computerbased controllers', Practice integration of machine elements', Identify the characteristics of machines ie payload capacity reachability power supply etc

Name
The student will be able to write motion control program

Objective
Implement position control methods', Implement velocity control methods', Implement force control methods

Name
The student will be able to use the basic control network technologies

Objective
Discuss different types of industrial control networks', Set up and troubleshoot multinode control networks', Write masterslave communication programs

Requirements

Simple Requirements

A minimum grade of 'C' in Course ROB145

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ROB145 - Applied Robotics Lab II

ROB170 - Robotics Internship

Overview

Department
Automation and Advanced Tech

Course Description
The internship represents an educational strategy linking the classroom with the acquisition of knowledge in the workplace. Through direct observation, reflection and evaluation, students gain an insight into the internship site's work, mission, and audience, how these relate to their academic study, as well as the organization's position in the broader industry or field. Students will produce a critical reflection on their internship experience demonstrating how they have addressed specific learning goals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2022

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
3

Other Hours

Other Hours
Min:
135

Course Learning Outcomes

Learning Outcomes

Name
Applied your knowledge, skills, experience to a work environment;

Name
Acquired new learning through challenging and meaningful activities;

Name
Reflected on the content and process of the learning experience;

Name
Advocated for your own learning in alignment with internship goals;

Name
Demonstrated professional skills in the workplace;

Name
Built and maintained positive professional relationships;

Name
Demonstrated awareness of community and/or organizational issues;

Name
Identified, clarified and/or confirmed professional direction as it relates to your academic studies and future career path;

Name
Developed self-understanding, self-discipline, maturity and confidence;

Name
Developed strong networking/mentoring relationships

Requirements

Simple Requirements

A minimum grade of 'C' in Course ROB134

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ROB134 - Robotic Perception and Manipulation

A minimum grade of 'C' in Course ROB138

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ROB138 - Advanced PLC

A minimum grade of 'C' in Course ROB140

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ROB140 - IoT Fundamentals: Big Data Analytics

A minimum grade of 'C' in Course ROB145

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ROB145 - Applied Robotics Lab II

ROB172 - Robotics Capstone

Overview

Department
Automation and Advanced Tech

Course Description
In this project-based course, students will apply the skills and knowledge acquired throughout the Digital Marketing program to a real-world project. In partnership with a local non-profit organization, students will create a digital marketing strategy designed to meet the customer needs. Students will produce a critical reflection on their capstone experience demonstrating how they have addressed specific learning goals. A successful project will include a project presentation to representatives of the non–profit organization, faculty and fellow students.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2022

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
135

Billing Hours

Billing Hours
Min:
3

Other Hours

Other Hours
Min:
135

Course Learning Outcomes

Learning Outcomes

Name
Applied your knowledge, skills, experience to your capstone project

Name
Acquired new learning through challenging and meaningful activities

Name
Reflected on the content and process of the learning experience

Name
Advocated for your own learning in alignment with capstone goals

Name
Demonstrated professional skills when working with industry professional

Name
Built and maintained positive professional relationships

Name
Demonstrated awareness of community and/or organizational issues

Name
Identified, clarified and/or confirmed professional direction as it relates to your academic studies and future career path

Name
Developed self-understanding, self-discipline, maturity and confidence

Requirements

Simple Requirements

A minimum grade of 'C' in Course ROB134

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ROB134 - Robotic Perception and Manipulation

A minimum grade of 'C' in Course ROB138

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ROB138 - Advanced PLC

A minimum grade of 'C' in Course ROB140

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ROB140 - IoT Fundamentals: Big Data Analytics

A minimum grade of 'C' in Course ROB145

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ROB145 - Applied Robotics Lab II

SAF101 - Safety Orientation/OSHA 10

Overview

Department
Applied Technologies

Course Description
This course provides a fundamental understanding of OSHA Safety for the Construction Industry. Students who successfully complete the course will be issued a Department of Labor (DOL) 10 hour card.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
1

Contact Hours

Contact Hours Min:
15

Billing Hours

Billing Hours Min:
1

Lecture Hours

Lecture Hours Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explain the fundamentals of OSHA Safety

Objective
Explain the OSHA Act general duty clause employer and employee rights responsibilities and the Whistleblowers Act', Demonstrate the ability to perform basic recordkeeping procedures', Explain implications of audits inspections and penalties', Read and interpret the General Safety Health provisions Subpart C', Explain the value of safety and health within a construction setting

Name
The student will be able to interpret OSHA required guidelines

Objective
Read and interpret the fall protection standards Subpart M', Read and interpret electrical standards Subpart K', Explain hazards and prevention of falling objects', Explain trench hazards and recovery

Name
The student will be able to interpret OSHA required elective guidelines

Objective
Read and interpret tools - hand and power standards Subpart I', Read and interpret structures and overhead protection standards Subpart O', Read and interpret fire protection and prevention standards Subpart F', Read and interpret materials handling storage use and disposal standards Subpart H

Name
The student will be able to explain fundamental requirements of OSHA

Objective
Demonstrate the ability to assess health hazards in construction', Read and interpret stairways and ladders standards Subpart X

SAF110 - OSHA 510

Overview

Department
Applied Technologies

Course Description
This course covers OSHA standards, policies, and procedures in the construction industry. Topics include scope and application of the OSHA Construction Standards, construction safety and health principles, and special emphasis on those areas in construction which are most hazardous.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2023

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
32

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
32

Course Learning Outcomes

Learning Outcomes

Name
Define the purpose of OSHA

Objective
Define the mission focusing on the importance of OSHA', Describe the organization origin and codification of OSHA standards', Define the OSHA recordkeeping requirements for injuries and illnesses', Describe the effects of workplace injuries and illnesses

Name
Use current resources to search OSHA 29 CFR 1926 standards

Objective
Utilize OSHAgov', Identify specific standards found in the OSHA 29 CFR 1926 publication

Name
Identify hazards which occur in the construction industry

Objective
Describe specific requirements in OSHA 29 CFR 1926 standards that protect workers from common electrical safety hazards', Describe specific requirements in OSHA 29 CFR 1926 standards that protect workers from common structural safety hazards', Describe specific requirements in OSHA 29 CFR 1926 standards that protect workers from common mechanical safety hazards

SAF122 - OSHA 501 - Trainer Course in OSHA Standards for General Industry

Overview

Department
Applied Technologies

Course Description
This course is designed for participants interested in teaching the 10- and 30-hour general industry safety and health outreach program to their employees and other interested groups. Special emphasis is placed on those topics that are required in the 10- and 30-hour programs as well as on those that are the most hazardous, using OSHA standards as a guide. Course participants are briefed on effective instructional approaches and the effective use of visual aids and handouts. This course allows the participant to become a trainer in the Outreach Program and to conduct both a 10- and 30-hour general industry safety and health course and to issue cards to participants verifying course completion.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
32

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
32

Requirements

Simple Requirements

A minimum grade of 'C' in Course SAF123

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- SAF123 - OSHA 511 - Occupational Safety and Health Standards for General Industry

SAF123 - OSHA 511 - Occupational Safety and Health Standards for General Industry

Overview

Department
Applied Technologies

Course Description
This course covers OSHA policies, procedures, and standards, as well as general industry safety and health principles. Topics scope and application of the OSHA general industry standards. Special emphasis is placed on those areas that are the most hazardous, using OSHA standards as a guide.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
32

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
32

SAF130 - OSHA 503 Update for General Industry Trainers

Overview

Department
Applied Technologies

Course Description
This course is designed for Outreach Training Program trainers who have completed the OSHA 501 Trainer Course in Occupational Safety and Health Standards for General Industry and who are authorized trainers in the OSHA Outreach Training Program. The course provides students with updates on OSHA General Industry Standards and policy and regulations while offering opportunities to develop effective facilitation skills teaching the 10 and 30 hour General Industry Program classes. The OSHA 501 Trainer Course in Standard for the General Industry must be completed before taking this course.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
1

Contact Hours

Contact Hours Min:
21

Billing Hours

Billing Hours Min:
1

Lecture Hours

Lecture Hours Min:
21

Course Learning Outcomes

Learning Outcomes

Name
Explain significant changes in General Industry that have occurred within the previous four years.

Name
Describe the requirements of the OSHA Outreach Training Programs

Name
Describe changes in the Outreach Training Programs

Name
Describe adult learning principles and techniques

Name
Demonstrate the ability to effectively deliver OSHA General Industry training as well as analyze other trainers

Objective
Prepare a Presentation on an assigned OSHA General Industry Outreach Training Program topic individually or as part of a group

Name
Identify required curriculum for the Outreach Training Program

SAF135 - Safety/OSHA 30

Overview

Department
Applied Technologies

Course Description
This course equips students with essential knowledge and skills to enhance job-site safety. Students will explore the role of OSHA in promoting workplace safety, including a thorough understanding of the General Duty Clause and 1926 CFR Subpart C. The course covers hazard recognition and risk assessment techniques while identifying critical high-hazard areas, such as falls, electrical hazards, and heavy equipment safety. Participants will gain hands-on experience using personal protective equipment, following proper safety procedures, and implementing effective emergency protocols. Upon completing the course, students will receive their OSHA 30 card.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Explain the role of OSHA in job-site safety.

Name
Explain OSHA's General Duty Clause and 1926 CFR Subpart C.

Name
Describe the impact of accidents.

Name
Identify the four high-hazard areas.

Name
Demonstrate hazard recognition and risk assessment techniques.

Name
Explain the basics of construction health.

Name
Identify basic fall, electrical, fire, trenching, materials handling, and heavy equipment hazards, and explain the general safety procedures associated with them.

Name
Explain and demonstrate the use of appropriate personal protective equipment.

Name
Explain and identify the various signs, signals, barricades, markers, and tags used on a job site.

Name
Demonstrate proper housekeeping procedures.

Name
Demonstrate an understanding of assured equipment grounding conductor programs and the use of GFCIs.

Name
Demonstrate and explain general hand- and power-tool safety guidelines.

Name
Explain your company- or site-specific fall protection procedures and requirements.

Name
Demonstrate and explain the proper use of ladders and scaffolding.

Name
Explain the use of work permits and lockout/tag out procedures.

Name
Demonstrate and explain the emergency procedures for trenching accidents.

Name
Demonstrate proper manual lifting procedures.

Name
Identify the hazards of working around or on heavy equipment.

Name
Describe proper rigging safety procedures.

Name
Demonstrate use of hand signals.

SGT101 - Introduction to Surgical Technology

Overview

Department
Health Sciences

Course Description
This course introduces the role and functions of proper documentation, post and pre-operative case management, professional and self-management, professionalism, and work place management, scope of practice, patient care standards, death and dying issues, legal and ethics dilemma, risk management and safety, basic computer skills and electricity concepts.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Students will demonstrate knowledge of the professional role, scope of practice, and collaborative functions of the surgical technologist within the healthcare team.

Objective
Identify responsible and accountable behavior within the role and competencies of the surgical technologist, Identify roles of team members, chain of command in the operating room, and hospital departments that relate to direct and indirect patient care, Discuss the various functions of professional credentialing and organizations related to the field of surgical technology, Acknowledge the importance of cooperative behavior by group members to accomplish common team goals, Describe effective leadership, communication styles and management, Apply information effectively in a variety of formats including written, verbal and electronic, Demonstrate the use of computer skills and access information.

Name
Students will apply legal, ethical, and risk management principles to promote patient safety and uphold professional standards in surgical practice.

Objective
Summarize the recommended practices and legal elements of proper documentation including informed consent, Develop surgical conscience by analyzing the role of morality during ethical decision making, Interpret the legal responsibilities and professional standards of conduct for surgical team members, Identify preventative measures for common errors that occur in the operating room and possible appropriate responses, Identify essential components of all hazards preparation

Name
Students will provide safe, compassionate, and holistic care to meet the biopsychosocial, physical, and emotional needs of surgical patients throughout the perioperative continuum

Objective
State the purposes of proper identification, Describe the physical preparation and care that the surgical patient may receive prior to the surgical procedure, Describe the responses to the process of death in the operating room and various coping strategies and mechanisms, Biopsychosocial needs of the patient- Identify appropriate behavior in response to the needs manifested by the surgical patient and their significant others, Discuss the components of physical and mental health and the effects of stress on various body systems, Identify necessary equipment in the PACU and potential postoperative complications of the surgical patient, Describe the process of discharge planning of the surgical patient

Name
: Students will maintain a safe surgical environment by applying safety standards, environmental controls, and technical knowledge to protect patients and personnel.

Objective
Describe a basic surgical suite including environmental systems and controls, Describe environmental safety controls and guideline including potential hazards to the surgical patient, Describe essential electrical knowledge for safe patient care practices in the OR, Identify essential components of all hazards preparation.

Requirements

Simple Requirements

A minimum grade of 'C' in Course BIO150

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- BIO150 - Human Anatomy & Physiology

A minimum grade of 'C' in Course BIO160

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- BIO160 - Microbiology

A minimum grade of 'C' in Course CPR101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

A minimum grade of 'C' in Course ALH101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ALH101 - Medical Terminology

A minimum grade of 'C' in Course ENG101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ENG101 - Composition I

A minimum grade of 'C' in Course MTH101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MTH101 - Intermediate Algebra (Inactive)

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- SOC101 - Principles of Sociology

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- PSY101 - General Psychology

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- SPH101 - Public Speaking

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- SPH111 - Interpersonal Communication

SGT107 - Pharmacology for Surgical Technology

Overview

Department
Health Sciences

Course Description
This course will provide general pharmacologic information, including how medications are measured, what kind of medications are used, what laws pertain to them, how they are labeled, how they are administered to the surgical patient, and an understanding of preoperative and intraoperative anesthesia as it relates to routine and emergency situations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Apply the principles of anesthesia administration by selecting appropriate methods, agents, techniques, and monitoring devices, recognizing complications, and identifying appropriate interventions to maintain patient homeostasis.

Objective
Analyze the principles of anesthesia administration and explain the necessity of each component of anesthesia preparation of the surgical patient, Compare and contrast methods, agents, and techniques of anesthesia administration and preparation, Correlate anesthesia monitoring devices with patient homeostasis, Explain anesthesia complications and interventions.

Name
Accurately calculate medication conversions and dosages, and correctly use general pharmacological terminology in the preparation and handling of medications for surgical procedures.

Objective
Calculate medication conversions and dosages, Apply general terminology to medication use.

Requirements

Simple Requirements

A minimum grade of 'C' in Course SGT101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT101 - Introduction to Surgical Technology

A minimum grade of 'C' in Course SGT140

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT140 - Principles and Practices in Surgical Technology Lab

A minimum grade of 'C' in Course SGT120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT120 - Principles and Practices in Surgical Technology

A minimum grade of 'C' in Course SGT115

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT115 - Surgical Procedures I

SGT115 - Surgical Procedures I

Overview

Department
Health Sciences

Course Description
Coordinates study of theoretical and practical applications of various surgical procedures. Emphasis is placed on pathology, a methodical approach to surgical procedures and preparation and application of aseptic techniques with extensive laboratory experience to develop critical skills that are required to function in the operating room environment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Explain and apply foundational robotics concepts in the OR

Objective
Differentiate major robotic platforms and components; outline room set-up, docking/undocking workflows, and emergency conversion; anticipate the ST's role (instrument exchange, troubleshooting, fire/electrosurgical safety, ergonomics) for common robotic procedures.

Name
Select, describe, and assist with surgical incisions across specialties

Objective
Correlate incision choice to regional anatomy, exposure, and procedure goals; identify tissue layers traversed; assist with marking, draping considerations, retraction strategies, wound classification, and factors influencing closure and postoperative healing.

Name
Integrate surgical anatomy and pathophysiology into case planning

Objective
Map key anatomical landmarks and disease processes to operative steps, positioning, prepping, and potential complications; interpret how imaging/labs/pathology guide intraoperative decisions and specimen handling for each specialty.

Name
Prepare, operate, and troubleshoot endoscopic systems to curriculum depth

Objective
Assemble and function-check endoscopes, cameras, light sources, insufflators/irrigators, and energy devices; maintain image quality and pneumoperitoneum; apply safe entry techniques, manage exposure and smoke/steam, and retrieve/specimen-bag tissues per protocol.

Name
Execute procedural knowledge for open, laparoscopic, endoscopic, and robotic cases

Objective
Sequence operative steps; select and pass instruments, sutures, staplers, and implants; maintain asepsis and accurate counts; anticipate surgeon needs; coordinate positioning, tourniquets, traction, implants, and imaging to support efficient case flow.

Name
Apply comprehensive intraoperative risk-reduction measures

Objective
Implement electrical/laser safety, fire triangle prevention, smoke evacuation, sharps safety, patient positioning and pressure-injury prevention, thromboprophylaxis considerations, and immediate response to equipment failure or adverse events.

Name
Document and communicate effectively within the perioperative team

Objective
Complete accurate count sheets, preference cards, implant logs, labels, and pathology requisitions; use concise handoff frameworks (e.g., SBAR); reflect on quality metrics and near-misses to propose actionable improvements.

Requirements

Simple Requirements

Enrolled in Course SGT120

Type
Corequisite

Enroll in the following Courses:
- SGT120 - Principles and Practices in Surgical Technology

SGT119 - Surgical Technology - Clinical Experience I

Overview

Department
Health Sciences

Course Description
Coordinates study of theoretical and practical applications of various surgical procedures. Emphasis is placed on pathology, a methodical approach to surgical procedures and preparation and application of aseptic techniques with extensive laboratory experience to develop critical skills that are required to function in the operating room environment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
6

Contact Hours

Contact Hours
Min:
270

Billing Hours

Billing Hours
Min:
6

Other Hours

Other Hours
Min:
270

Course Learning Outcomes

Learning Outcomes

Name
Explain the purpose and responsibilities of the observation role within the surgical team.

Objective
Describe the purpose of the observation role

Name
Demonstrate professional competency and procedural proficiency by performing in the scrub role and successfully completing a variety of surgical cases

Objective
Develop professional competency by performing in the scrub role during an arranged clinical experience, Demonstrate procedural proficiency by completing a minimum of 120 surgical cases

Name
Evaluate personal and professional growth by maintaining accurate documentation of clinical experiences and reflecting on professionalism development.

Objective
Evaluate the development of professionalism throughout clinical experiences using various methods, Utilize sufficient documentation for verifying cases and roles performed.

Requirements

Simple Requirements

A minimum grade of 'C' in Course SGT101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT101 - Introduction to Surgical Technology

A minimum grade of 'C' in Course SGT140

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT140 - Principles and Practices in Surgical Technology Lab

A minimum grade of 'C' in Course SGT120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT120 - Principles and Practices in Surgical Technology

A minimum grade of 'C' in Course SGT115

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT115 - Surgical Procedures I

SGT120 - Principles and Practices in Surgical Technology

Overview

Department
Health Sciences

Course Description
Presents concepts necessary to prepare students for clinical experience. Aseptic technique and supplies and equipment are major components of this course.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
75

Course Learning Outcomes

Learning Outcomes

Name
Apply the principles of surgical asepsis and sterility to maintain a sterile field and prevent perioperative infection in accordance with professional standards.

Objective
Discuss terms related to asepsis and sources of contamination, Describe the appropriate technique of the surgical hand scrub, Describe the proper technique for gowning and gloving self, open gloving, and gowning and gloving another.

Name
Identify, select, and prepare surgical instruments, equipment, and supplies for a variety of surgical specialties, ensuring safe handling and proper function.

Objective
Identify proper technique in storing, handling, and distributing sterile supplies, Identify the classifications, names, parts, materials, finishes and uses of basic surgical instrumentation, Identify techniques for preparing instruments and supplies on the sterile field, Identify sources of information for gathering the required instruments, supplies and equipment needed for a surgical procedure, Identify types of catheters and drains and their uses on the surgical patient, Describe/discuss tissue replacement materials.

Name
Demonstrate techniques for achieving hemostasis, supporting wound healing, and performing wound closure in simulated or supervised clinical settings.

Objective
Identify proper selection, preparation, handling techniques for the various methods of tissue approximation, Identify the principles and methods of hemostasis, Evaluate the classifications of surgical wounds, Identify factors that influence wound healing.

Name
Plan and implement preoperative, intraoperative, and postoperative case management strategies that support surgical team efficiency and positive patient outcomes.

Objective
Identify proper technique for post operative management duties, Explain basic surgical positioning and the components needed for safe positioning, Describe the steps and rationales for surgical skin preparation, Recognize common pre-operative lab tests and appropriate documentation, Describe the general principles of draping the patient, equipment and furniture, Identify equipment and technique utilized for safe transfer of the surgical patient, Describe the procedures for counting instruments, sponges, needles and other items on the field, Describe the handling of tissue specimens, Identify methods of patient transportation, Discuss the basic considerations for urinary catheterization.

Name
Interpret and apply surgical pharmacology concepts and anesthesia principles to the safe handling, labeling, and administration of medications within the scope of practice.

Objective
Describe various methods of blood and fluid volume replacement.

Name
Respond appropriately to emergency situations and all-hazards scenarios using established protocols for patient safety and environmental control.

Objective
Describe the procedures carried out in the OR related to emergency procedures (hemolytic reactions, anaphylactic reaction, malignant hypothermia, cardiac arrest).

Name
Integrate technological science concepts such as electricity, robotics, and imaging into safe and effective surgical practice.

Objective
Identify the use of various supplies and equipment in the operative environment.

Name
Apply principles of microbiology to infection prevention, instrument processing, and environmental controls in the surgical setting.

Objective
Describe the homeostatic parameters monitored in the OR setting, Recognize appropriate surgical attire, Discuss the factors and variables of disinfection and decontamination of the OR environment and instruments, Identify the methods of processing items during terminal sterilization and/or disinfection.

Requirements

Simple Requirements

Enrolled in Course SGT115

Type
Prerequisite

Enroll in the following Courses:
- SGT115 - Surgical Procedures I

SGT125 - Surgical Procedures II

Overview

Department
Health Sciences

Course Description
Coordinates study of theoretical and practical applications of various surgical procedures. Emphasis is placed on pathology, a methodical approach to surgical procedures and preparation and application of aseptic techniques with extensive laboratory experience to develop critical skills that are required to function in the operating room environment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Produce professional employment materials and demonstrate job-readiness skills

Objective
Create a targeted résumé and tailored application correspondence (cover letters, thank-you notes); articulate qualifications using industry language; and demonstrate effective interview strategies (STAR responses, portfolio use, scenario questions, salary/shift discussions) appropriate to surgical technology roles.

Name
Apply specialty surgical anatomy and pathophysiology to case planning

Objective
Map key anatomical structures, common pathologies, and expected physiologic responses to operative steps, positioning, prepping/draping, and complication prevention in ophthalmic, oral/maxillofacial, cardiothoracic, peripheral vascular, neurosurgery, and plastic/reconstructive procedures.

Name
Set up, operate, and troubleshoot specialty equipment and instrumentation

Objective
Select and assemble microscopes, micro-instruments, microsuture, ophthalmic packs, vascular sets (clamps, shunts, grafts), neuro navigation/ monitoring adjuncts, cardiothoracic cannulation and suction devices, and validate readiness via function checks and sterile workflow.

Name
Sequence and support specialty procedures to Core Curriculum depth Outline procedural steps

Objective
anticipate surgeon needs; manage sutures, grafts, implants, and tissue handling (e.g., nerve, vessel, cornea, bone); maintain aseptic technique and counts; and coordinate imaging/fluoro, hemostasis strategies, and specimen handling per specialty protocols.

Name
Implement risk-reduction strategies specific to high-acuity specialties

Objective
Apply fire/electrosurgical and laser safety (ophthalmic/ENT), ocular surface protection, anticoagulation and hemodynamic considerations (CT/Vascular), temperature and pressure-injury prevention, brain/spinal cord protection and neuromonitoring communication (Neuro), and flap/skin graft viability measures (Plastics).

Name
Document and communicate effectively in specialty contexts

Objective
Complete accurate implant logs, graft/lot tracking, and pathology requisitions; label/transport specimens correctly (including frozen, permanent, and micro samples); update preference cards; and conduct concise intra- and post-case handoffs using structured tools (e.g., SBAR).

Requirements

Simple Requirements

A minimum grade of 'C' in Course SGT140

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT140 - Principles and Practices in Surgical Technology Lab

A minimum grade of 'C' in Course SGT101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT101 - Introduction to Surgical Technology

A minimum grade of 'C' in Course SGT120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT120 - Principles and Practices in Surgical Technology

A minimum grade of 'C' in Course SGT115

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT115 - Surgical Procedures I

SGT129 - Surgical Technology - Clinical Experience II

Overview

Department
Health Sciences

Course Description
Students are assigned to supervised, non-remunerative clinical practice in hospital operating rooms approximately 24-27 hours per week. Emphasis is placed on basic and intermediate surgical interventions. Includes rotations through endoscopy and pre-operative holding units.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
7

Contact Hours

Contact Hours
Min:
315

Billing Hours

Billing Hours
Min:
7

Other Hours

Other Hours
Min:
315

Course Learning Outcomes

Learning Outcomes

Name
Explain the purpose and responsibilities of the observation role within the surgical team.

Objective
Describe the purpose of the observation role

Name
Demonstrate professional competency and procedural proficiency by performing in the scrub role and successfully completing a variety of surgical cases.

Objective
Develop professional competency by performing in the scrub role during an arranged clinical experience, Demonstrate procedural proficiency by completing a minimum of 120 surgical cases

Name
Evaluate personal and professional growth by maintaining accurate documentation of clinical experiences and reflecting on professionalism development.

Objective
Assists with room turnover', Returns instrumentation to SPD in appropriate manner

Name
The student will be able to preparation and maintenance of instrumentation with supervision

Objective
Cleans instrumentsscopes thoroughly using appropriate cleaning tools', Operates Steris unit using approved quick connect and leak test with accuracy', Operates autoclave unit with accuracy', Documents all required information in Steris and autoclave log with 100 accuracy

Name
The student will be able to maintain orderliness and cleanliness of assigned area with supervision

Objective
Promptly returns suppliesequipment to correct location', Checks and restocks assigned surgical suites by end of shift', Dispose of trash and linen after each case', Usereturn sharps containers per policy', Replace suction liners andor bubble tubing as needed

Name
The student will be able to prepare for daily cases with supervision

Objective
Assures that cases have complete case cart supplies and equipment', Plans ahead for instrumentation needs

Name
The student will be able to discuss department count policies with supervision

Objective
Inventory andor cavity counts of instruments on all cases per policy and sponge and sharps on all cases per policy

Requirements

Simple Requirements

A minimum grade of 'C' in Course SGT107

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT107 - Pharmacology for Surgical Technology

A minimum grade of 'C' in Course SGT119

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT119 - Surgical Technology - Clinical Experience I

A minimum grade of 'C' in Course SGT125

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT125 - Surgical Procedures II

SGT140 - Principles and Practices in Surgical Technology Lab

Overview

Department
Health Sciences

Course Description
Students will demonstrate concepts necessary to prepare students for clinical experience. Aseptic technique and supplies and equipment are major components of this course.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
3

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate safe patient care practices in the perioperative environment by performing proper transportation, transfer, positioning, and urinary catheterization techniques in simulated settings.

Objective
Demonstrate the principles of safe transportation for each method of patient transportation, Demonstrate safe transfer of the surgical patient, Perform basic surgical patient positioning, Urinary catheterization – Demonstrate urinary catheterization in a simulation setting.

Name
Apply principles of aseptic technique and surgical attire by correctly performing the surgical hand scrub, self and assisted gowning and gloving, preparing and monitoring the sterile field, and employing draping procedures for patients, equipment, and furniture.

Objective
Employ principles involved in donning surgical attire, Demonstrate application of the principles of aseptic technique including monitoring the sterile field, Demonstrate correct technique for the surgical hand scrub, Employ sterile technique when self gowning and gloving and when assisting other team members, Demonstrate general principles of draping patient, equipment and furniture.

Name
Prepare and manage surgical cases by selecting and organizing instruments, supplies, and equipment; positioning operative furniture; performing counts; and assisting in preoperative and intraoperative case management.

Objective
Gather the instruments, supplies, and equipment needed for a surgical procedure, Apply knowledge of surgical instrumentation categories and application to specific surgical procedures, Demonstrate techniques for initiating a surgical procedure including preparing instruments and supplies and positioning furniture and equipment, Demonstrate the procedures for counting instruments, sponges, needles and other items on the field, Demonstrate basic routines of intraoperative case management.

Name
Safely handle surgical instrumentation and materials by preparing catheters and drains, monitoring patient homeostasis, and demonstrating proper selection, handling, and cutting techniques for tissue approximation.

Objective
Perform basic monitoring of patient homeostatic parameters, Prepare catheters and drains for use, Demonstrate proper selection, preparation, handling and cutting techniques for the various methods of tissue approximation.

Name
Apply surgical wound management techniques by maintaining aseptic technique during the application of surgical and specialty dressings in simulated operative procedures.

Objective
Apply principles of aseptic technique and demonstrate the application of commonly used types of surgical and specialty dressings.

Requirements

Simple Requirements

Enrolled in Course SGT120

Type
Prerequisite

Enroll in the following Courses:
- SGT120 - Principles and Practices in Surgical Technology

SGT145 - ST Certification Review

Overview

Department
Health Sciences

Course Description
This course provides a comprehensive review of surgical technology concepts and practical preparation for the national certification examination.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate comprehensive knowledge of surgical technology by integrating preoperative, intraoperative, and postoperative procedures; administrative and personnel responsibilities; equipment sterilization and maintenance; and foundational principles of anatomy, physiology, microbiology, and surgical pharmacology in preparation for the national certification examination.

Objective
Compare and contrast the roles of surgical team members and hospital departments involved in direct and indirect patient care, Follow the proper chain of command in the operating room, Explain and perform methods of disinfection and sterilization, including preparation, packaging, microbial barriers, sealing, and storage, Compare and contrast sterilization methods, materials, and processing variables, Describe the organization of the human body, including body planes, cellular structure, tissues, and organs, Compare and contrast body systems, relating structure and function to surgical interventions, Correlate pathophysiology, hemodynamic disorders, inflammation, infections, and surgical pathology with operative care, Apply microbiological principles to sterile technique and infection control, Identify microorganisms by structure and characteristics, relating them to immune responses and the infectious process in surgery, Use and identify the parts of the compound microscope for microorganism observation, Apply pharmacological principles in anesthesia and surgical care, including drug preparation, administration, monitoring, and dosage calculation, Compare methods, agents, and techniques of anesthesia, correlating devices with patient homeostasis and managing complications.

Name
Demonstrate proficiency in applying surgical technology skills through safe and effective patient care, equipment management, and procedural techniques across the perioperative continuum.

Objective
Apply nonsterile and sterile techniques for patient preparation, including attire, identification, transport, chart review, surgical consent, positioning, skin preparation, and urinary catheterization, Prepare surgical equipment and instrumentation for use, Perform surgical hand scrub, gowning, gloving, counts, and draping according to aseptic principles, Apply sterile technique in specimen care, incision management, hemostasis, exposure, catheter and drain placement, wound closure, surgical dressing application, and use of tissue replacement materials, Respond effectively to intraoperative emergencies, Provide patient care in the post-anesthesia care unit (PACU) according to established protocols, Apply methods of environmental disinfection and OR turnover, Use proper procedures for postoperative equipment cleaning, sterile storage, and distribution, Use medications and solutions appropriately in surgical procedures.

Requirements

Simple Requirements

A minimum grade of 'C' in Course SGT140

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT140 - Principles and Practices in Surgical Technology Lab

A minimum grade of 'C' in Course SGT101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT101 - Introduction to Surgical Technology

A minimum grade of 'C' in Course SGT129

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT129 - Surgical Technology - Clinical Experience II

A minimum grade of 'C' in Course SGT107

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT107 - Pharmacology for Surgical Technology

A minimum grade of 'C' in Course SGT115

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT115 - Surgical Procedures I

A minimum grade of 'C' in Course SGT119

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT119 - Surgical Technology - Clinical Experience I

A minimum grade of 'C' in Course SGT120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT120 - Principles and Practices in Surgical Technology

A minimum grade of 'C' in Course SGT125

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SGT125 - Surgical Procedures II

SMA225 - Sheetmetal Technology Apprenticeship

Overview

Department
Apprenticeship & Appl Learning

Course Description
This course serves as a credit placeholder for students participating in the Sheetmetal Technology Apprenticeship program in partnership with WSU Tech, industry partners, and the Kansas Office of Apprenticeships. Students who have successfully completed the approved apprenticeship training may receive 45 credit hours of prior learning. Students must provide approved documentation outlining successful completion of apprenticeship training.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
45

Contact Hours

Contact Hours
Min:
2025

Billing Hours

Billing Hours
Min:
45

Other Hours

Other Hours
Min:
2025

Course Learning Outcomes

Learning Outcomes

Name
Students will demonstrate mastery of technical competencies gained through the Sheetmetal Technology Apprenticeship program

SOC001 - Social Science Elective

Overview

Department
General Education

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2009

Credits

Credit Hours

Credit Hours Min:
1

Credit Hours Max:
5

Credit Hours Operator:
TO

Billing Hours

Billing Hours Min:
1

Billing Hours Max:
5

Billing Hours Operator:
TO

SOC101 - Principles of Sociology

Overview

Department
General Education

Course Description
An introductory study of human society to acquaint students with the influence and patterns of individual and group interaction by exploring the development, characteristics, and functioning of human groups; the relationships between groups, and group influences on individual behavior.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Define and describe the role of social institutions in contemporary societies (e.g., Family, State, Economy, Religion, Education, Media, Healthcare).

Name
Differentiate and apply the main ideas of Functionalism, Conflict theory, and Symbolic Interactionism.

Name
Give an example of how systems of social stratification (e.g., class, race and ethnicity, gender, sexuality, age) organize the distribution of social advantages and disadvantages.

Name
Describe the relationship between social structure and individual behavior.

Name
Distinguish between qualitative and quantitative approaches to conducting sociological research.

Name
Define the major components of culture, including the role of socialization, social norms and deviance.

Name
Give an example of the social causes and consequences of a major social change (e.g., globalization, environment, technology, population shifts, social movements, pandemics).

Name
Critically examine common assumptions about how society works using the sociological imagination.

SOC115 - Social Problems

Overview

Department
General Education

Course Description
This course will examine the major problems of contemporary society, the social causes, potential solutions, and impact on public policy utilizing sociological theories and perspectives. Students will acquire an understanding of unique issues such as, inequality, crime, deviance, violence, substance abuse, and problems within socialization institutions.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Differentiate sociological theories and research methods in examining social problems

Objective
Gain an appreciation of the scientific method used to study social problems', Identify the various sociological theories used to help explain social problems', Be familiar with research methods used in examining social problems', Identify and understand differences and commonalities within diverse cultures', Evaluate the validity of historical evidence and social research as it applies to understanding social problems', Differentiate between what constitutes a social problem versus an individual problem', Analyze the micro and macro dimensions of social problems utilizing sociological theories and methods', Describe how social problems are associated with patterns of social inequality', Assess the strengths and weaknesses of solutions to a social problem utilizing a sociological perspective', Evaluate the relationships between social problems and the policies and practices of social institutions

Name
Gain an understanding of poverty and social inequality

Objective
Explore social class and poverty', Be familiar with the different sociological perspectives and how they view poverty and social inequality', Gain a deeper appreciation for the consequences of poverty', Examine the social problems in the United States linked to poverty', Identify the different responses to class inequality

Name
Explore patterns of inequality based on race and ethnicity

Objective
Be able to define race and ethnicity demographics and patterns of integration', Examine how the sociological perspectives understand and explain racial and ethnic inequalities', Appraise the consequences of racial and ethnic inequality and identify potential responses for this inequality', Examine the patterns of racial and ethnic integration

Name
Examine inequalities inherent in gender and sexual orientation

Objective
Identify the sociological perspectives views on gender and sexual orientation inequality', Examine the consequences of gender and sexual orientation inequality and its impact on social policy and social institutions', Be familiar with the difference between sex and gender', Discuss gender and sexual orientation bias in the media', Define sexual harassment and be familiar with its different forms

Name
Assess the impact of aging and inequalities related to age in societies

Objective
Be familiar with concepts of aging and how different societies define aging', Explore the sociological perspectives on age aging and inequality', Identify the consequences and responses to age inequality', Examine the unique discrimination the aging face with access to medical care employment and social class

Name
Explore concepts related to the changing family in society

Objective
Be able to define family and explore the myths surrounding families', Examine the sociological perspectives on family', Identify and become familiar with the unique problems experienced by families such as divorce violence and neglect teen pregnancy etc', Describe the community social policy and social action responses to issues experienced by families', Explore the diverse forms of family

Name
Assess the impact of education on society and the challenges of education in the United States

Objective
Discuss educational standards', Explore the sociological perspectives on education', Describe the challenges experienced in American Education Systems', Examine the issues of inequality in educational access and achievement', Identify the community policy and social actions related to education such as intervention programs antibullying programs school safety etc

Name
Explore the challenges of work and the economy

Objective
Be familiar with the changing nature of work', Define globalization and the unique challenges of globalization', Examine the sociological perspectives on work', Discuss the problems in work and the economy such as unemployment livable wages stress and discrimination in the workplace etc', Identify the policies related to work and expanding employment opportunities to minority groups', Describe community and social actions in response to the inequalities of work and the economy

Name
Gain an understanding of the inequalities in health and medicine

Objective
Explore the sociological perspectives on health illness and medicine', Describe the inequalities of health related to gender social class and education', Examine the rising costs of health care and inequalities of health insurance', Assess the community policies and social actions related to health and medicine

Name
Explore the role of media in social problems

Objective
Understand the sociological perspectives on the media', Be familiar with how media influences our lives', Assess the community policies and social actions related to the media

Name
Examine the impact of alcohol and drugs on society

Objective
Be able to define alcohol and drug abuse', Be familiar with the sociological perspectives on alcohol and drug use', Explore the problems of alcohol and drug abuse as they relate to crime violence problem drinking in teens etc', Describe the programs and policies developed to address alcohol and drug use

Name
Assess the impact of crime and explore the inequalities related to crime and the criminal justice system

Objective
Be able to define crime and describe the different forms of crime', Examine the sociological perspectives on crime', Become familiar with the inequalities of crime related to offenders and victims', Describe the current responses to crime and criminals by criminal justice agencies and communities', Explore the different policies implemented to prevent and rehabilitate criminals

Name
Explore the impact of cities and suburbs on social problems

Objective
Describe the demography of urban areas', Be familiar with the processes of urbanization and suburbanization', Describe current demographic trends and consequences of urbanization and suburbanization', Explore the sociological perspectives on Urbanization', Examine policies and social actions to address the issues of urbanization and suburbanization

Name
Gain an understanding of the environmental crisis

Objective
Examine the sociological perspectives on environmental problems', Explore the different environmental problems such as climate change air and water quality pollution etc', Describe the policies and social action responses to the environmental crises faced today

Name
Examine war, terrorism and the balance of power

Objective
Define conflict', Understand the sociological perspectives on war and terrorism', Examine the impact of war and terrorism', Explore the different policies and social action responses to war and terrorism

Name
Assess the relationship between social problems and social actions

Objective
Identify the relationship between social problems and social actions', Understand social movements and how they begin', Explore how social reform movements make a difference

Requirements

Simple Requirements

A minimum grade of 'C' in Course SOC101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SOC101 - Principles of Sociology

SPH101 - Public Speaking

Overview

Department
General Education

Course Description
Covers fundamental basics to all good private and public speaking experiences and elements in voice production and improvement, bodily movement, confidence, poise and understanding of all types of public speeches. Required of all transfer curricula.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Determine the Purpose of Oral Discourse

Objective
Identify the various purposes for discourse', Identify the similarities and differences among various purposes', Understand that different contexts require differing purposes', Generate a specific purpose relevant to the context when given a general purpose

Name
Choose a Topic and Restrict It According to the Purpose and the Audience

Objective
Identify a subject that is relevant to the speakers role knowledge concerns and interests', Narrow the topic adapting it to the purpose and time constraints for communicating', Adapt the treatment of the topic to the context for communication

Name
Fulfill the Purpose of Oral Discourse - Formulate a thesis statement

Objective
Use a thesis as a planning tool', Summarize the central message in a manner consistent with the purpose

Name
Fulfill the Purpose of Oral Discourse -Provide adequate support materials

Objective
Demonstrate awareness of available types of support', Locate appropriate support materials', Select appropriate support based on the topic audience setting and purpose

Name
Fulfill the Purpose of Oral Discourse -Select a suitable organizational pattern

Objective
Demonstrate awareness of alternative organizational patterns', Demonstrate understanding of the functions of organizational pattern including the following 1Clarification of information 2Facilitation of listener comprehension 3Change of attitude4Relational interaction5Selection of organizational patterns that are appropriate to the topic audience context and purpose

Name
Fulfill the Purpose of Oral Discourse -Demonstrate careful choice of words

Objective
Demonstrate understanding of the power of language', Select words that are appropriate to the topic audience purpose context and speaker', Use word choice in order to express ideas clearly to create and maintain interest and to enhance the speakers credibility', Select words that avoid sexism racism and other forms of prejudice

Name
Fulfill the Purpose of Oral Discourse - Provide effective transitions

Objective
Demonstrate understanding of the types and functions of transitions', Use transitions to accomplish the following 1Establish connectedness 2Signal movement from one idea to another 3Clarify relationships among ideas

Name
Employ Vocal Variety in Rate, Pitch, and Intensity

Objective
Use vocal variety to heighten and maintain interest', Use a rate that is suitable to the message occasion and receiver', Use pitch within the speakers optimum range to clarify and to emphasize', Use intensity appropriate for the message and audible to the audience

Name
Articulate Clearly

Objective
Demonstrate knowledge of the sounds of the American English language', Use the sounds of the American English language

Name
Employ Language Appropriate to the Designated Audience

Objective
Employ language that enhances the speakers credibility promotes the purpose and the receivers understanding', Demonstrate that the use of technical vocabularies slang idiomatic language and regionalisms may facilitate understanding when communicating with others who share meanings for those terms but can hinder can hinder understanding in those situations where meanings are not shared', Use standard pronunciatin', Use standard grammar', Use language at the appropriate level of abstraction or generality', Use a conversational mode through selfpresentation and response to feedback

Name
Demonstrate Nonverbal Behavior that Supports the Verbal Message

Objective
Use appropriate paralanguage extra verbal elements of voice such as emphasis pause tone etc that achieves congruence and enhances the verbal intent', Use appropriate kinesic elements posture gesture and facial expression that achieve congruence and enhance the verbal intent', Use appropriate proxemic elements interpersonal distance and spatial arrangement that achieve congruence and enhance the verbal intent', Use appropriate clothing and ornamentation that achieve congruence and enhance the verbal intent', Select and use an appropriate presentational aid to enhance audience understanding and increase impact of spoken message

Name
Recognize Main Ideas

Objective
Distinguish ideas fundamental to the thesis from material that supports those ideas', Identify transitional organizational and nonverbal cues that direct the listener to the main ideas', Identify the main ideas in structured and unstructured discourse

Name
Identify Supporting Details

Objective
Identify supporting details in spoken messages', Distinguish between those ideas that support the main ideas and those that do not', Determine whether the number of supporting details adequately develops each main idea

Name
Recognize Explicit Relationships among Ideas

Objective
Demonstrate an understanding of the types of organizational or logical relationships', Identify transitions that suggest relationships', Determine whether the asserted relationship exists

Name
Recall Basic Ideas and Details

Objective
Determine the goal for listening', State the basic cognitive and affective contents after listening

Name
Attend with an Open Mind

Objective
Demonstrate an awareness of personal ideological and emotional biases', Demonstrate awareness that each person has a unique perspective', Demonstrate awareness that ones knowledge experience and emotions affect listening', Use verbal and nonverbal behaviors that demonstrate willingness to listen to messages when variables such as setting speaker or topic may not be conducive to listening

Name
Perceive the speaker's Purpose and Organization of Ideas and Information

Objective
Identify the speakers purpose', Identify the organization of the speakers ideas and information

Name
Discriminate between Statements of Fact and Statements of Opinion

Objective
Distinguish between assertions that are verifiable and those that are not

Name
Distinguish Between emotional and Logical Arguments

Objective
Demonstrate an understanding that arguments have both emotional and logical dimensions', Identify the logical characteristics of an argument', Identify the emotional characteristics of an argument', Determine whether the argument is predominantly emotional or logical

Name
Detect Bias and Prejudice

Objective
Identify instances of bias and prejudice in a spoken message', Specify how bias and prejudice may affect the impact of a spoken message

Name
Recognize the Speaker's Attitude

Objective
Identify the direction intensity and salience of the speakers attitude as reflected by the verbal messages', Identify the direction intensity and salience of the speakers attitude as reflected by the nonverbal messages

Name
Synthesize and Evaluate by Drawing logical Inferences and Conclusions

Objective
Draw relationships between prior knowledge and the information provided by the speaker', Demonstrate an understanding of the nature of inference', Identify the types of verbal and nonverbal information', Draw valid inferences from the information', Identify the information as evidence to support views', Assess the acceptability of evidence', Identify patterns of reasoning and judge the validity of arguments', Analyze the information and inferences in order to draw conclusions

Name
Recall the Implications and Arguments

Objective
Identify the arguments used to justify the speakers position', State both the overt and implied arguments', Specify the implications of these arguments for the speaker audience and society at large

Name
Recognize Discrepancies between the Speaker's Verbal and Nonverbal Messages

Objective
Identify when the nonverbal signals contradict the verbal message', Identify when the nonverbal signals understate or exaggerate the verbal message', Identify when the nonverbal message is irrelevant to the verbal message

Name
Employ Active Listening Techniques When Appropriate

Objective
Identify the cognitive and affective dimensions of a message', Demonstrate comprehension by formulating questions that clarify or qualify the speakers content and affective intent', Demonstrate comprehension by paraphrasing the speakers message

SPH111 - Interpersonal Communication

Overview

Department
General Education

Course Description
Improves individual communication skills. By understanding the elements of effective communication, students are able to create environments that bring out the best in themselves and others. In addition, students learn how to better turn ideas and feelings into words, how to listen more effectively, respond more appropriately to what others have said and, most important of all, how to maintain and develop good interpersonal relationships with their families, their peers and fellow workers. Emphasis is placed on small-group activities, interviewing skills and verbal and non-verbal communication.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate an ability to apply effective communication techniques within a variety of contexts

Objective
Define basic principles of interpersonal communication', Differentiate between appropriate and inappropriate messages', Participate in feedback activities', Evaluate the factors affecting the accuracy of others communication', Explain methods of improving social perception including cultural and social considerations

Name
Demonstrate an understanding of various effective conflict management skills

Objective
Summarize the basic types of conflict', Recognize inappropriate methods of addressing conflict', Examine the guidelines for successfully managing conflict

Name
Demonstrate an understanding of the impact of gender and culture on interpersonal communication

Objective
Identify different types of relationships', Discover appropriate ways of establishing maintaining and ending relationships', Cite guidelines of disclosing and describing feelings

Name
Demonstrate an ability to analyze effective listening habits and skills

Objective
Practice focusing attention through active listening skills', Employ devices for remembering information', Distinguish between fact and inference

Name
Evaluate the role of verbal and nonverbal messages in interpersonal communication

Objective
Discover the functions of nonverbal communication', Point out how clothing color touch and other factors affect self presentation', Explain ways to implement cultural and gender considerations into verbal and nonverbal communication

Name
Recognize the role of perception of self and others in interpersonal communication

Objective
Trace analyze and evaluate selfconcept formation', Recognize the uses of language in human communication', Utilize emphatic response skills - clarifying and helping responses - while eliminating inappropriate ones

TAS105 - Orientation to the Transportation Industry

Overview

Department
Applied Technologies

Course Description
This foundational course provides students with a comprehensive introduction to the dynamic and diverse world of the transportation industry.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
Explore the history and evolution of the transportation industry, including its impact on society and the global economy.

Name
Examine the various sectors within the transportation industry.

Name
Investigate the diverse career paths available in the transportation sector.

Name
Understand the qualifications, certifications, and skills required for success in these careers.

Name
Learn about safety protocols, regulations, and compliance standards that govern the transportation industry.

Name
Gain an appreciation for the importance of safety in all aspects of transportation, from vehicle maintenance to passenger and cargo handling.

Name
Examine the environmental challenges faced by the transportation industry, such as emissions, sustainability, and alternative fuels.

Name
Explore the industry's efforts to reduce its environmental footprint and meet evolving sustainability goals.

Name
Stay up-to-date with the latest technological advancements in transportation, including electric vehicles, autonomous systems, and digital logistics solutions.

Name
Understand how technology is reshaping the industry and creating new opportunities for innovation.

Name
Analyze current trends, challenges, and opportunities within the transportation sector, such as the shift toward electrification, the integration of artificial intelligence, and the impacts of global supply chain disruptions.

Name
Develop essential skills for success in the transportation industry, including communication, teamwork, problem-solving, and customer service.

Name
Learn about networking opportunities, internships, and professional organizations relevant to the field.

TAS121 - Engine Repair

Overview

Department
Applied Technologies

Course Description
This course contains competencies that can be used in their entirety within a single course or as needed for courses designed by a Kansas institution as Institutional Flexible Credit. Through a variety of learning and assessment activities students can: explore the theory and operation of internal combustion engine; demonstrate the ability to remove an automotive engine; demonstrate the ability to install an automotive engine; demonstrate the basic ability to inspect and repair cylinder head, valve trains and timing defects; demonstrate the ability to disassemble short block; demonstrate the ability to inspect short block; demonstrate the ability to repair short block; demonstrate the ability to reassemble short block; demonstrate the basic ability to inspect and repair engine lubrication; demonstrate the basic ability to inspect and repair engine cooling systems; inspect a cylinder head and valve train; repair a cylinder head and valve train; perform advanced level engine diagnosis.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Explore the theory and operation of internal combustion engine

Name
Demonstrate the ability to remove an automotive engine

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Identify and interpret engine concern determine necessary action', Research applicable vehicle and service information such as internal engine operation vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers', Inspect engine assembly for fuel oil coolant and other leaks determine necessary action', Diagnose engine noises and vibrations determine necessary action', Perform cylinder cranking and running compression tests determine necessary action', Install engine covers using gaskets seals and sealers as required', Perform common fastener and thread repair to include remove broken bolt restore internal and external threads and repair internal threads with thread insert', Inspect remove and replace engine mounts

Name
Demonstrate the ability to install an automotive engine

Objective
Remove and reinstall engine in OBDII or newer vehicle reconnect all attaching components and restore the vehicle to running condition', Install engine covers using gaskets seals and sealers as required', Inspect remove and replace engine mounts

Name
Demonstrate the basic ability to inspect and repair cylinder head, valve trains and timing defects

Objective
Remove cylinder heads inspect gasket condition install cylinder head and gasket tighten according to manufacturers specifications and procedures', Clean and visually inspect a cylinder head for cracks check gasket surface areas for warpage and surface finish check passage condition', Inspect valve springs for squareness and free height comparison determine necessary action', Replace valve stem seals on an assembled engine inspect valve spring retainers lockskeepers and valve lockkeeper grooves determine necessary action', Inspect valve guides for wear check valve stemtoguide clearance determine necessary action', Inspect valves and valve seats determine necessary action', Check valve spring assembled height and valve stem height determine necessary action', Inspect pushrods rocker arms rocker arm pivots and shafts for wear bending cracks looseness and blocked oil passages orifices determine necessary action', Inspect valve lifters determine necessary action', Adjust valves mechanical or hydraulic lifters', Inspect and replace camshaft and drive beltchain includes checking drive gear wear and backlash end play sprocket and chain wear overhead cam drive sprockets drive belts belt tension tensioners camshaft reluctor ringtonewheel and variable valve timing components', Inspect andor measure camshaft for runout journal wear and lobe wear', Inspect camshaft bearing surface for wear damage outofround and alignment determine necessary action', Establish camshaft position sensor indexing', Adjust valves on engines with mechanical or hydraulic lifters', Remove and replace timing belt verify correct camshaft timing', Perform engine oil and filter change

Name
Demonstrate the ability to disassemble short block

Objective
Disassemble engine block clean and prepare components for inspection and reassembly', Inspect engine block for visible cracks passage condition core and gallery plug condition and surface warpage determine necessary action', Inspect and measure cylinder wallssleeves for damage wear and ridges determine necessary action', Deglaze and clean cylinder walls', Inspect and measure camshaft bearings for wear damage outofround and alignment determine necessary action', Inspect crankshaft for straightness journal damage keyway damage thrust flange and sealing surface condition and visual surface cracks check oil passage condition measure end play and journal wear check crankshaft position sensor reluctor ring where applicable determine necessary action', Inspect main and connecting rod bearings for damage and wear determine necessary action', Identify piston and bearing wear patterns that indicate connecting rod alignment and main bearing bore problems determine necessary action', Inspect and measure piston skirts and ring lands determine necessary action', Remove and replace piston pin', Determine pistontobore clearance', Inspect measure and install piston rings', Inspect auxiliary shafts balance intermediate idler counterbalance or silencer inspect shafts and support bearings for damage and wear determine necessary action reinstall and time', Remove inspect or replace crankshaft vibration damper harmonic balancer', Determine pistontobore clearance', Inspect measure and install piston rings', Inspect auxiliary shafts balance intermediate idler counterbalance or silencer inspect shafts and support bearings for damage and wear determine necessary action reinstall and time', Remove inspect or replace crankshaft vibration damper harmonic balancer

Name
Demonstrate the ability to inspect short block

Objective
Disassemble engine block clean and prepare components for inspection and reassembly', Inspect engine block for visible cracks passage condition core and gallery plug condition and surface warpage determine necessary action', Inspect and measure cylinder wallssleeves for damage wear and ridges determine necessary action', Deglaze and clean cylinder walls', Inspect and measure camshaft bearings for wear damage outofround and alignment determine necessary action', Inspect crankshaft for straightness journal damage keyway damage thrust flange and sealing surface condition and visual surface cracks check oil passage condition measure end play and journal wear check crankshaft position sensor reluctor ring where applicable determine necessary action', Inspect main and connecting rod bearings for damage and wear determine necessary action', Identify piston and bearing wear patterns that indicate connecting rod alignment and main bearing bore problems determine necessary action', Inspect and measure piston skirts and ring lands determine necessary action', Remove and replace piston pin', Determine pistontobore clearance', Inspect measure and install piston rings', Inspect auxiliary shafts balance intermediate idler counterbalance or silencer inspect shafts and support bearings for damage and wear determine necessary action reinstall and time', Remove inspect or replace crankshaft vibration damper harmonic balancer

Name
Demonstrate the ability to repair short block

Objective
Disassemble engine block clean and prepare components for inspection and reassembly', Inspect engine block for visible cracks passage condition core and gallery plug condition and surface warpage determine necessary action', Inspect and measure cylinder wallssleeves for damage wear and ridges determine necessary action', Deglaze and clean cylinder walls', Inspect and measure camshaft bearings for wear damage outofround and alignment determine necessary action', Inspect crankshaft for straightness journal damage keyway damage thrust flange and sealing surface condition and visual surface cracks check oil passage condition measure end play and journal wear check crankshaft position sensor reluctor ring where applicable determine necessary action', Inspect main and connecting rod bearings for damage and wear determine necessary action', Identify piston and bearing wear patterns that indicate connecting rod alignment and main bearing bore problems determine necessary action', Inspect and measure piston skirts and ring lands determine necessary action', Remove and replace piston pin', Determine pistontobore clearance', Inspect measure and install piston rings', Inspect auxiliary shafts balance intermediate idler counterbalance or silencer inspect shafts and support bearings for damage and wear determine necessary action reinstall and time', Remove inspect or replace crankshaft vibration damper harmonic balancer', Assemble engine block

Name
Demonstrate the ability to reassemble short block

Objective
Disassemble engine block clean and prepare components for inspection and reassembly', Inspect engine block for visible cracks passage condition core and gallery plug condition and surface warpage determine necessary action', Inspect and measure cylinder wallssleeves for damage wear and ridges determine necessary action', Deglaze and clean cylinder walls', Inspect and measure camshaft bearings for wear damage outofround and alignment determine necessary action', Inspect crankshaft for straightness journal damage keyway damage thrust flange and sealing surface condition and visual surface cracks check oil passage condition measure end play and journal wear check crankshaft position sensor reluctor ring where applicable determine necessary action', Inspect main and connecting rod bearings for damage and wear determine necessary action', Identify piston and bearing wear patterns that indicate connecting rod alignment and main bearing bore problems determine necessary action', Inspect and measure piston skirts and ring lands determine necessary action', Remove and replace piston pin', Determine pistontobore clearance', Inspect measure and install piston rings', Inspect auxiliary shafts balance intermediate idler counterbalance or silencer inspect shafts and support bearings for damage and wear determine necessary action reinstall and time', Remove inspect or replace crankshaft vibration damper harmonic balancer', Assemble engine block

Name
Demonstrate the basic ability to inspect and repair engine lubrication

Objective
Perform oil pressure tests determine necessary action', Inspect oil pump gears or rotors housing pressure relief devices and pump drive perform necessary action', Inspect auxiliary coolers determine necessary action', Inspect test and replace oil temperature and pressure switches and sensors', Perform oil and filter change', Identify causes of engine overheating

Name
Demonstrate the basic ability to inspect and repair engine cooling systems

Objective
Perform cooling system pressure tests check coolant condition inspect and test radiator pressure cap coolant recovery tank and hoses determine necessary action', Inspect replace and adjust drive belts tensioners and pulleys check pulley and belt alignment', Inspect and replace engine cooling and heater system hoses', Inspect test and replace thermostat and gasketseal', Test coolant drain and recover coolant flush and refill cooling system with recommended coolant bleed air as required', Inspect remove and replace water pump', Remove and replace radiator', Inspect and test fanss electrical or mechanical fan clutch fan shroud and air dams', Identify causes of engine overheating', Remove and replace thermostat and gasketseal

Name
Inspect a cylinder head and valve train

Objective
Remove cylinder heads inspect gasket condition install cylinder head and gasket tighten according to manufacturers specifications and procedures', Clean and visually inspect a cylinder head for cracks check gasket surface areas for warpage and surface finish check passage condition', Inspect valve springs for squareness and free height comparison determine necessary action', Replace valve stem seals on an assembled engine inspect valve spring retainers lockskeepers and valve lockkeeper grooves determine necessary action', Inspect valve guides for wear check valve stemtoguide clearance determine necessary action', Inspect valves and valve seats determine necessary action', Check valve spring assembled height and valve stem height determine necessary action', Inspect pushrods rocker arms rocker arm pivots and shafts for wear bending cracks looseness and blocked oil passages orifices determine necessary action', Inspect valve lifters determine necessary action', Adjust valves mechanical or hydraulic lifters', Inspect and replace camshaft and drive beltchain includes checking drive gear wear and backlash end play sprocket and chain wear overhead cam drive sprockets drive belts belt tension tensioners camshaft reluctor ringtonewheel and variable valve timing components', Inspect andor measure camshaft for runout journal wear and lobe wear', Inspect camshaft bearing surface for wear damage outofround and alignment determine necessary action', Establish camshaft position sensor indexing', Adjust valves on engines with mechanical or hydraulic lifters', Remove and replace timing belt verify correct camshaft timing', Remove and replace thermostat and gasketseal', Perform common fastener and thread repairs to include remove broken bolt restore internal and external threads and repair internal threads with a threaded insert

Name
Repair a cylinder head and valve train

Objective
Remove cylinder heads inspect gasket condition install cylinder head and gasket tighten according to manufacturers specifications and procedures', Clean and visually inspect a cylinder head for cracks check gasket surface areas for warpage and surface finish check passage condition', Inspect valve springs for squareness and free height comparison determine necessary action', Replace valve stem seals on an assembled engine inspect valve spring retainers lockskeepers and valve lockkeeper grooves determine necessary action', Inspect valve guides for wear check valve stemtoguide clearance determine necessary action', Inspect valves and valve seats determine necessary action', Check valve spring assembled height and valve stem height determine necessary action', Inspect pushrods rocker arms rocker arm pivots and shafts for wear bending cracks looseness and blocked oil passages orifices determine necessary action', Inspect valve lifters determine necessary action', Adjust valves mechanical or hydraulic lifters', Inspect and replace camshaft and drive beltchain includes checking drive gear wear and backlash end play sprocket and chain wear overhead cam drive sprockets drive belts belt tension tensioners camshaft reluctor ringtonewheel and variable valve timing components', Inspect andor measure camshaft for runout journal wear and lobe wear', Inspect camshaft bearing surface for wear damage outofround and alignment determine necessary action', Establish camshaft position sensor indexing', Adjust valves on engines with mechanical or hydraulic lifters', Remove and replace timing belt verify correct camshaft timing', Remove and replace thermostat and gasketseal', Inspect and test mechanicalelectrical fans fan clutch fan shroudducting air dams and fan control devices perform necessary action', Perform common fastener and thread repairs to include remove broken bolt restore internal and external threads and repair internal threads with a threaded insert', Perform engine oil and filter change', Identify hybrid vehicle internal combustion engine service precautions

Name
Perform advanced level engine diagnosis

Objective
Diagnose engine noises and vibrations determine necessary action', Inspect and test mechanicalelectrical fans fan clutch fan shroudducting air dams and fan control devices perform necessary action', Identify hybrid vehicle internal combustion engine service precautions', Diagnose the cause of excessive oil consumption coolant consumption unusual engine exhaust color and odor determine necessary action', Perform engine vacuum tests determine necessary action', Perform cylinder power balance tests determine necessary action', Perform cylinder cranking and running compression tests determine necessary action', Perform cylinder leakage tests determine necessary action', Remove and reinstall engine in OBDII or newer vehicle reconnect all attaching components and restore the vehicle to running condition', Install engine covers using gaskets seals and sealers as required', Perform common fastener and thread repair to include remove broken bolt restore internal and external threads and repair internal threads with thread insert', Inspect remove and replace engine mounts', Perform active tests of actuators using a scan tool determine necessary action

TAS124 - Electrical I

Overview

Department
Applied Technologies

Course Description
In this course students will: Complete service work orders; describe the relationship between voltage, ohms and amperage; perform basic electrical circuit repairs; identify electrical system faults; identify basic wiring diagram symbols, components, and legend information; perform basic electrical circuit measurements using a DVOM; describe basic circuit characteristics of series, parallel and series parallel circuits through a variety of classroom and shop learning and assessment activities.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to complete service work orders.

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Research applicable vehicle and service information such as electricalelectronic system operation vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers

Name
The student will be able to describe the relationship between voltage, ohms and amperage.

Objective
Diagnose electricalelectronic integrity for series parallel and seriesparallel circuits using principles of electricity Ohms Law', Demonstrate the proper use of a digital multimeter DMM during diagnosis of electrical circuit problems including source voltage voltage drop current flow and resistance

Name
The student will be able to perform basic electrical circuit repairs.

Objective
Remove and replace terminal end from connector replace connectors and terminal ends', Perform solder repair of electrical wiring

Name
The student will be able to identify electrical system faults.

Objective
Identify and interpret electrical/electronic system concern determine necessary action', Check electrical circuits with a test light determine necessary action', Check electrical circuits using fused jumper wires determine necessary action', Inspect and test fusible links circuit breakers and fuses determine necessary action', Inspect and test switches connectors relays solid state devices and wires of electricalelectronic circuits perform necessary action

Name
The student will be able to identify basic wiring diagram symbols, components, and legend information.

Objective
Use wiring diagrams during diagnosis of electrical circuit problems

Name
The student will be able to perform basic electrical circuit measurements using a DVOM.

Objective
Demonstrate the proper use of a digital multimeter DMM during diagnosis of electrical circuit problems including source voltage voltage drop current flow and resistance', Check electrical circuits with a test light determine necessary action', Check electrical circuits using fused jumper wires determine necessary action', Inspect and test fusible links circuit breakers and fuses determine necessary action', Inspect and test switches connectors relays solid state devices and wires of electricalelectronic circuits perform necessary action

Name
The student will be able to describe basic circuit characteristics of series, parallel and series parallel circuits.

Objective
Identify and interpret electricalelectronic system concern determine necessary action', Diagnose electricalelectronic integrity for series parallel and seriesparallel circuits using principles of electricity Ohms Law

TAS125 - Electrical II

Overview

Department
Applied Technologies

Course Description
In this course students will: Perform battery diagnosis; perform battery service; perform starting system diagnosis; perform starting system repair.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Perform battery diagnosis

Objective
Perform battery stateofcharge test determine necessary action', Perform battery capacity test confirm proper battery capacity for vehicle application determine necessary action', Maintain or restore electronic memory functions', Inspect clean fill andor replace battery battery cables connectors clamps and holddowns', Perform battery charge', Start a vehicle using jumper cables or an auxiliary power supply', Measure and diagnose the causes of excessive parasitic draw determine necessary action

Name
Perform battery service

Objective
Perform battery stateofcharge test determine necessary action', Perform battery capacity test confirm proper battery capacity for vehicle application determine necessary action', Maintain or restore electronic memory functions', Inspect clean fill andor replace battery battery cables connectors clamps and holddowns', Perform battery charge', Start a vehicle using jumper cables or an auxiliary power supply', Measure and diagnose the causes of excessive parasitic draw determine necessary action

Name
Perform starting system diagnosis

Objective
Perform starter current draw tests determine necessary action', Perform starter circuit voltage drop tests determine necessary action', Inspect and test starter relays and solenoids determine necessary action', Remove and install starter in a vehicle', Inspect and test switches connectors and wires of starter control circuits perform necessary action', Differentiate between electrical and engine mechanical problems that cause a slowcrank or nocrank condition

Name
Perform starting system repair

Objective
Perform starter current draw tests determine necessary action', Perform starter circuit voltage drop tests determine necessary action', Inspect and test starter relays and solenoids determine necessary action', Remove and install starter in a vehicle', Inspect and test switches connectors and wires of starter control circuits perform necessary action', Differentiate between electrical and engine mechanical problems that cause a slowcrank or nocrank condition

Requirements

Simple Requirements

A minimum grade of 'C' in Course TAS124

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- TAS124 - Electrical I

TAS127 - Automatic Transmission Repair

Overview

Department
Applied Technologies

Course Description
This course contains competencies that can be used in their entirety within a single course or as needed for courses designed by a Kansas institution as Institutional Flexible Credit. Through a variety of learning and assessment activities students can: explore the concept of theory and operation of automatic transmissions/transaxles; perform maintenance on an automatic transmission/transaxle; perform service on an automatic transmission/transaxle; diagnose automatic transmission/transaxles; inspect automatic transmission/transaxles; remove and reinstall automatic transmission; remove and reinstall automatic transaxles; disassemble automatic transmission and components; disassemble automatic transaxles and components; inspect automatic transmission components; inspect automatic transaxles and components; repair automatic transmission and components; repair automatic transaxles and components; reassemble automatic transmission and components; reassemble automatic transaxles and components.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explore the concept of theory and operation of automatic transmissions/transaxles

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Identify and interpret transmissiontransaxle concern differentiate between engine performance and transmissiontransaxle concerns determine necessary action', Research applicable vehicle and service information such as transmissiontransaxle system operation fluid type vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers', Diagnose transmissiontransaxle gear reductionmultiplication concerns using driving driven and held member power flow principles', Inspect measure clean and replace valve body includes surfaces bores springs valves sleeves retainers brackets checkvalvesballs screens spacers and gaskets', Inspect servo and accumulator bores pistons seals pins springs and retainers determine necessary action', Assemble transmissiontransaxle', Inspect leak test and flush or replace transmissiontransaxle oil cooler lines and fittings', Inspect converter flex drive plate converter attaching bolts converter pilot converter pump drive surfaces converter end play and crankshaft pilot bore', Install and seat torque converter to engage drivesplines', Inspect measure and reseal oil pump assembly and components', Measure transmissiontransaxle end play or preload determine necessary action', Inspect measure and replace thrust washers and bearings', Inspect oil delivery circuits including seal rings ring grooves and sealing surface areas feed pipes orifices and check valvesballs', Inspect bushings determine necessary action', Inspect and measure planetary gear assembly components determine necessary action', Inspect case bores passages bushings vents and mating surfaces determine necessary action', Inspect transaxle drive link chains sprockets gears bearings and bushings perform necessary action', Inspect measure repair adjust or replace transaxle final drive components', Inspect clutch drum piston checkballs springs retainers seals and friction and pressure plates determine necessary action', Measure clutch pack clearance determine necessary action', Air test operation of clutch and servo assemblies', Inspect roller and sprag clutch races rollers sprags springs cages and retainers determine necessary action', Inspect bands and drums determine necessary action', Describe the operational characteristics of a continuously variable transmission CVT', Describe the operational characteristics of a hybrid vehicle drive train

Name
The student will be able to perform maintenance on an automatic transmission/transaxle

Objective
Diagnose fluid loss and condition concerns check fluid level in transmissions with and without dipstick determine necessary action', Inspect adjust and replace manual valve shift linkage transmission range sensorswitch and parkneutral position switch', Inspect and replace external seals gaskets and bushings', Inspect test adjust repair or replace electricalelectronic components and circuits including computers solenoids sensors relays terminals connectors switches and harnesses', Diagnose electronic transmission control systems using a scan tool determine necessary action', Inspect replace and align powertrain mounts', Service transmission perform visual inspection replace fluids and filters', Inspect leak test and flush or replace transmissiontransaxle oil cooler lines and fittings

Name
The student will be able to perform service on an automatic transmission/ transaxle

Objective
Diagnose fluid loss and condition concerns check fluid level in transmissions with and without dipstick determine necessary action', Inspect adjust and replace manual valve shift linkage transmission range sensorswitch and parkneutral position switch', Inspect and replace external seals gaskets and bushings', Inspect test adjust repair or replace electricalelectronic components and circuits including computers solenoids sensors relays terminals connectors switches and harnesses', Diagnose electronic transmission control systems using a scan tool determine necessary action', Inspect replace and align powertrain mounts', Service transmission perform visual inspection replace fluids and filters', Inspect leak test and flush or replace transmissiontransaxle oil cooler lines and fittings

Name
The student will be able to diagnose automatic transmission/transaxles

Objective
Perform pressure tests including transmissiontransaxles equipped with electronic pressure control determine necessary action', Perform stall test determine necessary action', Perform lockup converter system tests determine necessary action', Diagnose noise and vibration concerns determine necessary action', Diagnose transmissiontransaxle gear reductionmultiplication concerns using driving driven and held member power flow principles', Diagnose pressure concerns in a transmission using hydraulic principles Pascals Law', Diagnose electronic transmissiontransaxle control systems using appropriate test equipment and service information', Inspect adjust and replace manual valve shift linkage transmission range sensorswitch and parkneutral position switch', Inspect and replace external seals gaskets and bushings', Inspect test adjust repair or replace electricalelectronic components and circuits including computers solenoids sensors relays terminals connectors switches and harnesses

Name
The student will be able to inspect automatic transmission/transaxles

Objective
Perform pressure tests including transmissiontransaxles equipped with electronic pressure control determine necessary action', Perform stall test determine necessary action', Perform lockup converter system tests determine necessary action', Diagnose noise and vibration concerns determine necessary action', Diagnose transmissiontransaxle gear reductionmultiplication concerns using driving driven and held member power flow principles', Diagnose pressure concerns in a transmission using hydraulic principles Pascals Law', Diagnose electronic transmissiontransaxle control systems using appropriate test equipment and service information', Inspect adjust and replace manual valve shift linkage transmission range sensorswitch and parkneutral position switch', Inspect and replace external seals gaskets and bushings', Inspect test adjust repair or replace electricalelectronic components and circuits including computers solenoids sensors relays terminals connectors switches and harnesses

Name
The student will be able to remove and reinstall automatic transaxles

Objective
Remove and reinstall transmissiontransaxle and torque converter inspect engine core plugs rear crankshaft seal dowel pins dowel pin holes and mating surfaces', Inspect replace and align powertrain mounts

Name
The student will be able to disassemble automatic transmission and components

Objective
Diagnose electronic transmission control systems using a scan tool determine necessary action', Disassemble clean and inspect transmissiontransaxle', Inspect measure clean and replace valve body includes surfaces bores springs valves sleeves retainers brackets checkvalvesballs screens spacers and gaskets', Inspect servo and accumulator bores pistons seals pins springs and retainers determine necessary action', Assemble transmissiontransaxle', Inspect converter flex drive plate converter attaching bolts converter pilot converter pump drive surfaces converter end play and crankshaft pilot bore', Install and seat torque converter to engage drivesplines', Inspect measure and reseal oil pump assembly and components', Measure transmissiontransaxle end play or preload determine necessary action', Inspect measure and replace thrust washers and bearings', Inspect oil delivery circuits including seal rings ring grooves and sealing surface areas feed pipes orifices and check valvesballs', Inspect bushings determine necessary action', Inspect and measure planetary gear assembly components determine necessary action', Inspect case bores passages bushings vents and mating surfaces determine necessary action', Inspect transaxle drive link chains sprockets gears bearings and bushings perform necessary action', Inspect measure repair adjust or replace transaxle final drive components', Inspect clutch drum piston checkballs springs retainers seals and friction and pressure plates determine necessary action', Measure clutch pack clearance determine necessary action', Air test operation of clutch and servo assemblies', Inspect roller and sprag clutch races rollers sprags springs cages and retainers determine necessary action', Inspect bands and drums determine necessary action

Name
The student will be able to disassemble automatic transaxles and components

Objective
Diagnose electronic transmission control systems using a scan tool determine necessary action', Disassemble clean and inspect transmissiontransaxle', Inspect measure clean and replace valve body includes surfaces bores springs valves sleeves retainers brackets checkvalvesballs screens spacers and gaskets', Inspect servo and accumulator bores pistons seals pins springs and retainers determine necessary action', Assemble transmissiontransaxle', Inspect converter flex drive plate converter attaching bolts converter pilot converter pump drive surfaces converter end play and crankshaft pilot bore', Install and seat torque converter to engage drivesplines', Inspect measure and reseal oil pump assembly and components', Measure transmissiontransaxle end play or preload determine necessary action', Inspect measure and replace thrust washers and bearings', Inspect oil delivery circuits including seal rings ring grooves and sealing surface areas feed pipes orifices and check valvesballs', Inspect bushings determine necessary action', Inspect and measure planetary gear assembly components determine necessary action', Inspect case bores passages bushings vents and mating surfaces determine necessary action', Inspect transaxle drive link chains sprockets gears bearings and bushings perform necessary action', Inspect measure repair adjust or replace transaxle final drive components', Inspect clutch drum piston checkballs springs retainers seals and friction and pressure plates determine necessary action', Measure clutch pack clearance determine necessary action', Air test operation of clutch and servo assemblies', Inspect roller and sprag clutch races rollers sprags springs cages and retainers determine necessary action', Inspect bands and drums determine necessary action

Name
The student will be able to inspect automatic transmission components

Objective
Diagnose electronic transmission control systems using a scan tool determine necessary action', Disassemble clean and inspect transmissiontransaxle', Inspect measure clean and replace valve body includes surfaces bores springs valves sleeves retainers brackets checkvalvesballs screens spacers and gaskets', Inspect servo and accumulator bores pistons seals pins springs and retainers determine necessary action', Assemble transmissiontransaxle', Inspect converter flex drive plate converter attaching bolts converter pilot converter pump drive surfaces converter end play and crankshaft pilot bore', Install and seat torque converter to engage drivesplines', Inspect measure and reseal oil pump assembly and components', Measure transmissiontransaxle end play or preload determine necessary action', Inspect measure and replace thrust washers and bearings', Inspect oil delivery circuits including seal rings ring grooves and sealing surface areas feed pipes orifices and check valvesballs', Inspect bushings determine necessary action', Inspect and measure planetary gear assembly components determine necessary action', Inspect case bores passages bushings vents and mating surfaces determine necessary action', Inspect transaxle drive link chains sprockets gears bearings and bushings perform necessary action', Inspect measure repair adjust or replace transaxle final drive components', Inspect clutch drum piston checkballs springs retainers seals and friction and pressure plates determine necessary action', Measure clutch pack clearance determine necessary action', Air test operation of clutch and servo assemblies', Inspect roller and sprag clutch races rollers sprags springs cages and retainers determine necessary action', Inspect bands and drums determine necessary action

Name
The student will be able to inspect automatic transaxles and components

Objective
Diagnose electronic transmission control systems using a scan tool determine necessary action', Disassemble clean and inspect transmissiontransaxle', Inspect measure clean and replace valve body includes surfaces bores springs valves sleeves retainers brackets checkvalvesballs screens spacers and gaskets', Inspect servo and accumulator bores pistons seals pins springs and retainers determine necessary action', Assemble transmissiontransaxle', Inspect converter flex drive plate converter attaching bolts converter pilot converter pump drive surfaces converter end play and crankshaft pilot bore', Install and seat torque converter to engage drivesplines', Inspect measure and reseal oil pump assembly and components', Measure transmissiontransaxle end play or preload determine necessary action', Inspect measure and replace thrust washers and bearings', Inspect oil delivery circuits including seal rings ring grooves and sealing surface areas feed pipes orifices and check valvesballs', Inspect bushings determine necessary action', Inspect and measure planetary gear assembly components determine necessary action', Inspect case bores passages bushings vents and mating surfaces determine necessary action', Inspect transaxle drive link chains sprockets gears bearings and bushings perform necessary action', Inspect measure repair adjust or replace transaxle final drive components', Inspect clutch drum piston checkballs springs retainers seals and friction and pressure plates determine necessary action', Measure clutch pack clearance determine necessary action', Air test operation of clutch and servo assemblies', Inspect roller and sprag clutch races rollers sprags springs cages and retainers determine necessary action', Inspect bands and drums determine necessary action

Name
The student will be able to repair automatic transmission and components

Objective
Disassemble clean and inspect transmissiontransaxle', Inspect measure clean and replace valve body includes surfaces bores springs valves sleeves retainers brackets checkvalvesballs screens spacers and gaskets', Inspect servo and accumulator bores pistons seals pins springs and retainers determine necessary action', Assemble transmissiontransaxle', Inspect converter flex drive plate converter attaching bolts converter pilot converter pump drive surfaces converter end play and crankshaft pilot bore', Install and seat torque converter to engage drivesplines', Inspect measure and reseal oil pump assembly and components', Measure transmissiontransaxle end play or preload determine necessary action', Inspect measure and replace thrust washers and bearings', Inspect oil delivery circuits including seal rings ring grooves and sealing surface areas feed pipes orifices and check valvesballs', Inspect bushings determine necessary action', Inspect and measure planetary gear assembly components determine necessary action', Inspect case bores passages bushings vents and mating surfaces determine necessary action', Inspect transaxle drive link chains sprockets gears bearings and bushings perform necessary action', Inspect measure repair adjust or replace transaxle final drive components', Inspect clutch drum piston checkballs springs retainers seals and friction and pressure plates determine necessary action', Measure clutch pack clearance determine necessary action', Air test operation of clutch and servo assemblies', Inspect roller and sprag clutch races rollers sprags springs cages and retainers determine necessary action', Inspect bands and drums determine necessary action

Name
The student will be able to repair automatic transaxles and components

Objective
Disassemble clean and inspect transmissiontransaxle', Inspect measure clean and replace valve body includes surfaces bores springs valves sleeves retainers brackets checkvalvesballs screens spacers and gaskets', Inspect servo and accumulator bores pistons seals pins springs and retainers determine necessary action', Assemble transmissiontransaxle', Inspect converter flex drive plate converter attaching bolts converter pilot converter pump drive surfaces converter end play and crankshaft pilot bore', Install and seat torque converter to engage drivesplines', Inspect measure and reseal oil pump assembly and components', Measure transmissiontransaxle end play or preload determine necessary action', Inspect measure and replace thrust washers and bearings', Inspect oil delivery circuits including seal rings ring grooves and sealing surface areas feed pipes orifices and check valvesballs', Inspect bushings determine necessary action', Inspect and measure planetary gear assembly components determine necessary action', Inspect case bores passages bushings vents and mating surfaces determine necessary action', Inspect transaxle drive link chains sprockets gears bearings and bushings perform necessary action', Inspect measure repair adjust or replace transaxle final drive components', Inspect clutch drum piston checkballs springs retainers seals and friction and pressure plates determine necessary action', Measure clutch pack clearance determine necessary action', Air test operation of clutch and servo assemblies', Inspect roller and sprag clutch races rollers sprags springs cages and retainers determine necessary action', Inspect bands and drums determine necessary action

Name
The student will be able to reassemble automatic transmission and components

Objective
Diagnose electronic transmission control systems using a scan tool determine necessary action', Disassemble clean and inspect transmissiontransaxle', Inspect measure clean and replace valve body includes surfaces bores springs valves sleeves retainers brackets checkvalvesballs screens spacers and gaskets', Inspect servo and accumulator bores pistons seals pins springs and retainers determine necessary action', Assemble transmissiontransaxle', Inspect converter flex drive plate converter attaching bolts converter pilot converter pump drive surfaces converter end play and crankshaft pilot bore', Install and seat torque converter to engage drivesplines', Inspect measure and reseal oil pump assembly and components', Measure transmissiontransaxle end play or preload determine necessary action', Inspect measure and replace thrust washers and bearings', Inspect oil delivery circuits including seal rings ring grooves and sealing surface areas feed pipes orifices and check valvesballs', Inspect bushings determine necessary action', Inspect and measure planetary gear assembly components determine necessary action', Inspect case bores passages bushings vents and mating surfaces determine necessary action', Inspect transaxle drive link chains sprockets gears bearings and bushings perform necessary action', Inspect measure repair adjust or replace transaxle final drive components', Inspect clutch drum piston checkballs springs retainers seals and friction and pressure plates determine necessary action', Measure clutch pack clearance determine necessary action', Air test operation of clutch and servo assemblies', Inspect roller and sprag clutch races rollers sprags springs cages and retainers determine necessary action', Inspect bands and drums determine necessary action

Name
The student will be able to reassemble automatic transmission and components

Objective
Diagnose electronic transmission control systems using a scan tool determine necessary action', Disassemble clean and inspect transmissiontransaxle', Inspect measure clean and replace valve body includes surfaces bores springs valves sleeves retainers brackets checkvalvesballs screens spacers and gaskets', Inspect servo and accumulator bores pistons seals pins springs and retainers determine necessary action', Assemble transmissiontransaxle', Inspect converter flex drive plate converter attaching bolts converter pilot converter pump drive surfaces converter end play and crankshaft pilot bore', Install and seat torque converter to engage drivesplines', Inspect measure and reseal oil pump assembly and components', Measure transmissiontransaxle end play or preload determine necessary action', Inspect measure and replace thrust washers and bearings', Inspect oil delivery circuits including seal rings ring grooves and sealing surface areas feed pipes orifices and check valvesballs', Inspect bushings determine necessary action', Inspect and measure planetary gear assembly components determine necessary action', Inspect case bores passages bushings vents and mating surfaces determine necessary action', Inspect transaxle drive link chains sprockets gears bearings and bushings perform necessary action', Inspect measure repair adjust or replace transaxle final drive components', Inspect clutch drum piston checkballs springs retainers seals and friction and pressure plates determine necessary action', Measure clutch pack clearance determine necessary action', Air test operation of clutch and servo assemblies', Inspect roller and sprag clutch races rollers sprags springs cages and retainers determine necessary action', Inspect bands and drums determine necessary action

TAS128 - Heating & Air Conditioning

Overview

Department
Applied Technologies

Course Description
This course contains competencies that can be used in their entirety within a single course or as needed for courses designed by a Kansas institution as Institutional Flexible Credit. Through a variety of learning and assessment activities students can: explore the fundamentals of automotive HVAC operations and environmental concerns, identify the appropriate refrigerant recovery and recycling guidelines; service refrigerant, recycling and handling systems; document fundamental heating and air conditioning system concerns; perform fundamental diagnostics of A/C systems; perform fundamental diagnostics of refrigeration systems components; perform fundamental repairs of refrigeration systems components; perform fundamental diagnostics of heating, ventilation, and engine cooling systems; perform fundamental repairs of heating, ventilation, and engine cooling systems; perform fundamental diagnostics of operating systems and related controls; perform fundamental repairs of operating systems and related controls; perform complex diagnostics of A/C Systems; document complex heating and air conditioning system concerns; perform complex diagnostics of refrigeration system components; perform complex repairs of refrigeration system components; perform complex diagnostics of heating, ventilation, and engine cooling systems.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to explore the fundamentals of automotive HVAC operations and environmental concerns

Name
The student will be able to identify the appropriate refrigerant recovery and recycling guidelines

Objective
Perform correct use and maintenance of refrigerant handling equipment according to equipment manufacturers standards', Identify and recover AC system refrigerant', Recycle label and store refrigerant', Evacuate and charge AC system add refrigerant oil as required

Name
The student will be able to service refrigerant, recycling and handling systems

Objective
Perform correct use and maintenance of refrigerant handling equipment according to equipment manufacturers standards', Identify and recover AC system refrigerant', Recycle label and store refrigerant', Evacuate and charge AC system add refrigerant oil as required

Name
The student will be able to document fundamental heating and air conditioning system concerns

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Identify and interpret heating and air conditioning concern determine necessary action', Research applicable vehicle and service information such as heating and air conditioning system operation vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers

Name
The student will be able to perform fundamental diagnostics of A/C systems

Objective
Performance test AC system identify AC system malfunctions', Identify abnormal operating noises in the AC system determine necessary action', Identify refrigerant type select and connect proper gauge set record temperature and pressure readings', Leak test AC system determine necessary action', Inspect the condition of refrigerant oil removed from the system determine necessary action', Determine recommended oil and oil capacity for system application', Using scan tool observe and record related HVAC data and trouble codes

Name
The student will be able to perform fundamental diagnostics of refrigeration systems components

Objective
Diagnose AC system conditions that cause the protection devices pressure thermal and PCM to interrupt system operation determine necessary action', Remove inspect and reinstall AC compressor and mountings determine required oil quality', Identify hybrid vehicle AC system electrical circuits service and safety precautions', Determine the need for an additional AC system filter perform necessary action', Inspect AC condenser for airflow restrictions perform necessary action', Inspect evaporator housing water drain perform necessary action

Name
The student will be able to perform fundamental repairs of refrigeration systems components

Objective
Inspect and replace AC compressor drive belts pulleys and tensioners determine necessary action', Inspect test and replace AC compressor clutch components andor assembly check compressor clutch air gap and adjust as needed', Remove and inspect AC system mufflers hoses lines fittings Orings seals and service valves perform necessary action', Inspect AC condenser for airflow restrictions perform necessary action', Remove inspect and install receiverdrier or accumulatordrier determine required oil quantity', Remove inspect and install expansion valve or orifice expansion tube', Inspect evaporator housing water drain perform necessary action', Remove inspect and reinstall evaporator determine required oil quantity', Remove inspect and reinstall condenser determine required oil quantity

Name
The student will be able to perform fundamental diagnostics of heating, ventilation, and engine cooling systems

Objective
Diagnose temperature control problems in the heaterventilation system determine necessary action', Perform cooling system pressure tests check coolant condition inspect and test radiator cap pressurevacuum coolant recovery tank and hoses perform necessary action', Inspect engine cooling and heater system hoses and belts perform necessary action', Inspect test and replace thermostat and gasketseal', Determine coolant condition and coolant type for vehicle application drain and recover coolant', Inspect and test cooling fan fan clutch fan shroud and air dams perform necessary action', Inspect and test electric cooling fan fan control system and circuits determine necessary action', Inspect and test heater control valves perform necessary action

Name
The student will be able to perform fundamental repairs of heating, ventilation, and engine cooling systems

Objective
Perform cooling system pressure tests check coolant condition inspect and test radiator cap pressurevacuum coolant recovery tank and hoses perform necessary action', Inspect engine cooling and heater system hoses and belts perform necessary action', Inspect test and replace thermostat and gasketseal', Determine coolant condition and coolant type for vehicle application drain and recover coolant', Flush system refill system with recommended coolant bleed system', Inspect and test cooling fan fan clutch fan shroud and air dams perform necessary action', Inspect and test electric cooling fan fan control system and circuits determine necessary action', Inspect and test heater control valves perform necessary action', Remove and reinstall heater core

Name
The student will be able to perform fundamental diagnostics of operating systems and related controls

Objective
Diagnose malfunctions in the electrical controls of heating ventilation and AC HVAC systems determine necessary action', Inspect and test ACheater blower motors resistors switches relays wiring and protection devices perform necessary action', Test and diagnose AC compressor clutch control systems determine necessary action', Diagnose malfunctions in the vacuum mechanical and electrical components and controls of the heating ventilation and AC HVAC system determine necessary action', Inspect and test ACheater control panel assembly determine necessary action', Inspect and test ACheater control cables motors and linkages perform necessary action', Inspect ACheater ducts doors hoses cabin filters and outlets perform necessary action', Identify the source of AC system odors', Check operation of automatic or semiautomatic heating ventilation and airconditioning HVAC control systems determine necessary action

Name
The student will be able to perform fundamental repairs of operating systems and related controls

Objective
Inspect and test ACheater blower motors resistors switches relays wiring and protection devices perform necessary action', Inspect and test ACheater control cables motors and linkages perform necessary action', Inspect ACheater ducts doors hoses cabin filters and outlets perform necessary action

Name
The student will be able to perform complex diagnostics of A/C Systems

Objective
Performance test AC system identify AC system malfunctions', Identify abnormal operating noises in the AC system determine necessary action', Identify refrigerant type select and connect proper gauge set record temperature and pressure readings', Leak test AC system determine necessary action', Inspect the condition of refrigerant oil removed from the system determine necessary action', Determine recommended oil and oil capacity for system application', Using scan tool observe and record related HVAC data and trouble codes

Name
The student will be able to document complex heating and air conditioning system concerns

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Identify and interpret heating and air conditioning concern determine necessary action', Research applicable vehicle and service information such as heating and air conditioning system operation vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers

Name
The student will be able to perform complex diagnostics of refrigeration system components

Objective
Diagnose AC system conditions that cause the protection devices pressure thermal and PCM to interrupt system operation determine necessary action', Remove inspect and reinstall AC compressor and mountings determine required oil quality', Identify hybrid vehicle AC system electrical circuits service and safety precautions', Determine the need for an additional AC system filter perform necessary action', Inspect AC condenser for airflow restrictions perform necessary action', Inspect evaporator housing water drain perform necessary action

Name
The student will be able to perform complex repairs of refrigeration system components

Objective
Inspect and replace AC compressor drive belts pulleys and tensioners determine necessary action', Inspect test and replace AC compressor clutch components andor assembly check compressor clutch air gap and adjust as needed', Remove and inspect AC system mufflers hoses lines fittings Orings seals and service valves perform necessary action', Inspect AC condenser for airflow restrictions perform necessary action', Remove inspect and install receiverdrier or accumulatordrier determine required oil quantity', Remove inspect and install expansion valve or orifice expansion tube', Inspect evaporator housing water drain perform necessary action', Remove inspect and reinstall evaporator determine required oil quantity', Remove inspect and reinstall condenser determine required oil quantity

Name
The student will be able to perform complex diagnostics of heating, ventilation, and engine cooling systems

Objective
Diagnose temperature control problems in the heaterventilation system determine necessary action', Perform cooling system pressure tests check coolant condition inspect and test radiator cap pressurevacuum coolant recovery tank and hoses perform necessary action', Inspect engine cooling and heater system hoses and belts perform necessary action', Inspect test and replace thermostat and gasketseal', Determine coolant condition and coolant type for vehicle application drain and recover coolant', Inspect and test cooling fan fan clutch fan shroud and air dams perform necessary action', Inspect and test electric cooling fan fan control system and circuits determine necessary action', Inspect and test heater control valves perform necessary action

Name
The student will be able to perform complex repairs of heating, ventilation, and engine cooling systems

Objective
Perform cooling system pressure tests check coolant condition inspect and test radiator cap pressurevacuum coolant recovery tank and hoses perform necessary action', Inspect engine cooling and heater system hoses and belts perform necessary action', Inspect test and replace thermostat and gasketseal', Determine coolant condition and coolant type for vehicle application drain and recover coolant', Flush system refill system with recommended coolant bleed system', Inspect and test cooling fan fan clutch fan shroud and air dams perform necessary action', Inspect and test electric cooling fan fan control system and circuits determine necessary action', Inspect and test heater control valves perform necessary action', Remove and reinstall heater core

Name
The student will be able to perform complex diagnostics of operating systems and related controls

Objective
Diagnose malfunctions in the electrical controls of heating ventilation and AC HVAC systems determine necessary action', Inspect and test ACheater blower motors resistors switches relays wiring and protection devices perform necessary action', Test and diagnose AC compressor clutch control systems determine necessary action', Diagnose malfunctions in the vacuum mechanical and electrical components and controls of the heating ventilation and AC HVAC system determine necessary action', Inspect and test ACheater control panel assembly determine necessary action', Inspect and test ACheater control cables motors and linkages perform necessary action', Inspect ACheater ducts doors hoses cabin filters and outlets perform necessary action', Identify the source of AC system odors', Check operation of automatic or semiautomatic heating ventilation and airconditioning HVAC control systems determine necessary action

Name
The student will be able to perform complex repairs of operating systems and related controls

Objective
Inspect and test AC-heater blower motors resistors switches relays wiring and protection devices perform necessary action', Inspect and test ACheater control cables motors and linkages perform necessary action', Inspect ACheater ducts doors hoses cabin filters and outlets perform necessary action

TAS131 - Engine Performance I

Overview

Department
Applied Technologies

Course Description
In this learning plan students will: complete work order and check history; identify engine mechanical integrity; explore the fundamentals of fuel system theory; identify fuel system concerns; explore the fundamentals of ignition theory; identify ignition system concerns; identify induction system concerns; identify exhaust system concerns; identify engine mechanical integrity through a variety of learning and assessment activities.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able tocomplete work order and check history

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Research applicable vehicle and service information such as engine management system operation vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers

Name
The student will be able to identify engine mechanical integrity

Objective
Identify and interpret engine performance concern determine necessary action', Inspect engine assembly for fuel oil coolant and other leaks determine necessary action', Diagnose abnormal engine noise or vibration concerns determine necessary action', Diagnose abnormal exhaust color odor and sound determine necessary action', Perform engine absolute vacuumboost manifold pressure tests determine necessary action', Perform cylinder power balance test determine necessary action', Perform cylinder cranking and running compression tests determine necessary action', Perform cylinder leakage test determine necessary action', Diagnose engine mechanical electrical electronic fuel and ignition concerns determine necessary action', Perform cooling system pressure tests check coolant condition inspect and test radiator pressure cap coolant recovery tank and hoses perform necessary action', Verify correct camshaft timing', Retrieve and record diagnostic trouble codes OBD monitor status and freeze frame data clear codes when applicable', Access and use service information to perform stepbystep diagnosis', Inspect and test crankshaft and camshaft position sensors perform necessary action

Name
The student will be able toexplore the fundamentals of fuel system theory

Name
The student will be able to identify fuel system concerns

Objective
Diagnose engine mechanical electrical electronic fuel and ignition concerns determine necessary action', Access and use service information to perform stepbystep diagnosis', Perform active tests of actuators using a scan tool determine necessary action', Diagnose hot or cold nostarting hard starting poor driveability incorrect idle speed poor idle flooding hesitation surging engine misfire power loss stalling poor mileage dieseling and emissions problems determine necessary action', Check fuel for contaminants and quality determine necessary action', Inspect and test fuel pumps and pump control systems for pressure regulation and volume perform necessary action', Replace fuel filters', Inspect throttle body air induction system intake manifold and gaskets for vacuum leaks andor unmetered air', Inspect and test fuel injectors', Verify idle control operation

Name
The student will be able toexplore the fundamentals of ignition theory

Name
The student will be able to identify ignition system concerns

Objective
Diagnose engine mechanical electrical electronic fuel and ignition concerns determine necessary action', Retrieve and record diagnostic trouble codes OBD monitor status and freeze frame data clear codes when applicable', Access and use service information to perform stepbystep diagnosis', Perform active tests of actuators using a scan tool determine necessary action', Diagnose ignition system related problems such as nostarting hard starting engine misfire poor driveability spark knock power loss poor mileage and emissions concerns determine necessary action', Inspect and test ignition primary and secondary circuit wiring and solid state components test ignition coils perform necessary action', Inspect and test crankshaft and camshaft position sensors perform necessary action', Inspect test andor replace ignition control module powertrainengine control module reprogram as necessary

Name
The student will be able toidentify induction system concerns

Objective
Perform engine absolute vacuumboost manifold pressure tests determine necessary action', Retrieve and record diagnostic trouble codes OBD monitor status and freeze frame data clear codes when applicable', Access and use service information to perform stepbystep diagnosis', Perform active tests of actuators using a scan tool determine necessary action', Diagnose hot or cold nostarting hard starting poor driveability incorrect idle speed poor idle flooding hesitation surging engine misfire power loss stalling poor mileage dieseling and emissions problems determine necessary action', Inspect throttle body air induction system intake manifold and gaskets for vacuum leaks andor unmetered air', Verify idle control operation

Name
The student will be able to identify exhaust system concerns

Objective
Diagnose abnormal exhaust color odor and sound determine necessary action', Perform engine absolute vacuumboost manifold pressure tests determine necessary action', Retrieve and record diagnostic trouble codes OBD monitor status and freeze frame data clear codes when applicable', Diagnose hot or cold nostarting hard starting poor driveability incorrect idle speed poor idle flooding hesitation surging engine misfire power loss stalling poor mileage dieseling and emissions problems determine necessary action

TAS132 - Engine Performance II

Overview

Department
Applied Technologies

Course Description
This course contains competencies that can be used in their entirety within a single course or as needed for courses designed by a Kansas institution as Institutional Flexible Credit. Through a variety of learning and assessment activities students can: analyze engine mechanical integrity; analyze fuel system concerns; analyze ignition system concerns; analyze induction system concerns; analyze exhaust system concerns; service fuel system concerns; repair fuel system concerns; service ignition system concerns; repair ignition system concerns; service induction system concerns; service exhaust system concerns; repair induction system concerns; repair exhaust system concerns.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to analyze engine mechanical integrity

Name
The student will be able to analyze fuel system concerns

Objective
Diagnose engine mechanical electrical electronic fuel and ignition concerns determine necessary action', Prepare 4 or 5 gas analyzer inspect and prepare vehicle for test and obtain exhaust readings interpret readings and determine necessary action', Retrieve and record diagnostic trouble codes OBD monitor status and freeze frame data clear codes when applicable', Diagnose the causes of emissions or driveability concerns with stored or active diagnostic trouble codes obtain graph and interpret scan tool data', Diagnose emissions or driveability concerns without stored diagnostic trouble codes determine necessary action', Perform active tests of actuators using a scan tool determine necessary action', Diagnose hot or cold nostarting hard starting poor driveability incorrect idle speed poor idle flooding hesitation surging engine misfire power loss stalling poor mileage dieseling and emissions problems determine necessary action', Inspect test electricalelectronic sensors controls and wiring of EGR systems perform necessary action', Inspect and test electricalelectronicallyoperated components and circuits of air injection systems perform necessary action

Name
The student will be able to analyze ignition system concerns

Objective
Diagnose engine mechanical electrical electronic fuel and ignition concerns determine necessary action', Prepare 4 or 5 gas analyzer inspect and prepare vehicle for test and obtain exhaust readings interpret readings and determine necessary action', Retrieve and record diagnostic trouble codes OBD monitor status and freeze frame data clear codes when applicable', Diagnose the causes of emissions or driveability concerns with stored or active diagnostic trouble codes obtain graph and interpret scan tool data', Diagnose emissions or driveability concerns without stored diagnostic trouble codes determine necessary action', Perform active tests of actuators using a scan tool determine necessary action', Diagnose hot or cold nostarting hard starting poor driveability incorrect idle speed poor idle flooding hesitation surging engine misfire power loss stalling poor mileage dieseling and emissions problems determine necessary action', Inspect test electricalelectronic sensors controls and wiring of EGR systems perform necessary action', Diagnose emissions driveability concerns caused by the secondary air injection and catalytic converter systems determine necessary action', Inspect and test mechanical components of secondary air injection systems perform necessary action', Inspect and test electricalelectronicallyoperated components and circuits of air injection systems perform necessary action

Name
The student will be able to analyze induction system concerns

Objective
Diagnose engine mechanical electrical electronic fuel and ignition concerns determine necessary action', Prepare 4 or 5 gas analyzer inspect and prepare vehicle for test and obtain exhaust readings interpret readings and determine necessary action', Retrieve and record diagnostic trouble codes OBD monitor status and freeze frame data clear codes when applicable', Diagnose the causes of emissions or driveability concerns with stored or active diagnostic trouble codes obtain graph and interpret scan tool data', Diagnose emissions or driveability concerns without stored diagnostic trouble codes determine necessary action', Diagnose hot or cold nostarting hard starting poor driveability incorrect idle speed poor idle flooding hesitation surging engine misfire power loss stalling poor mileage dieseling and emissions problems determine necessary action', Diagnose oil leaks emissions and driveability concerns caused by the positive crankcase ventilation PCV system determine necessary action', Inspect test and service positive crankcase ventilation PCV filterbreather cap valve tubes orifices and hoses perform necessary action', Diagnose emissions and driveability concerns caused by the exhaust gas recirculation EGR system determine action', Inspect test service and replace components of the EGR system including EGR tubing exhaust passages vacuumpressure controls filters and hoses perform necessary action', Inspect test electricalelectronic sensors controls and wiring of EGR systems perform necessary action', Diagnose emissions driveability concerns caused by the secondary air injection and catalytic converter systems determine necessary action', Inspect and test mechanical components of secondary air injection systems perform necessary action', Inspect and test electricalelectronicallyoperated components and circuits of air injection systems perform necessary action', Inspect and test catalytic converter efficiency

Name
The student will be able to analyze exhaust system concerns

Name
The student will be able to service fuel system concerns

Objective
Diagnose engine mechanical electrical electronic fuel and ignition concerns determine necessary action', Prepare 4 or 5 gas analyzer inspect and prepare vehicle for test and obtain exhaust readings interpret readings and determine necessary action', Retrieve and record diagnostic trouble codes OBD monitor status and freeze frame data clear codes when applicable', Diagnose the causes of emissions or driveability concerns with stored or active diagnostic trouble codes obtain graph and interpret scan tool data', Diagnose emissions or driveability concerns without stored diagnostic trouble codes determine necessary action', Check for module communication including CANBUS systems errors using a scan tool', Inspect and test computerized engine control system sensors powertrainengine control module PCMECM actuators and circuits using a graphing multimeter GMMdigital storage oscilloscope DSO perform necessary action', Perform active tests of actuators using a scan tool determine necessary action', Describe the importance of running all OBDII monitors for repair verification', Diagnose hot or cold nostarting hard starting poor driveability incorrect idle speed poor idle flooding hesitation surging engine misfire power loss stalling poor mileage dieseling and emissions problems determine necessary action', Diagnose emissions and driveability concerns caused by the evaporative emissions control system determine necessary action', Inspect test components hoses of the evaporative emissions control system perform necessary action', Interpret diagnostic trouble codes DTCs and scan tool data related to the emissions control systems perform necessary action', Identify hybrid vehicle internal combustion engine service precautions

Name
The student will be able to repair fuel system concerns

Objective
Diagnose engine mechanical electrical electronic fuel and ignition concerns determine necessary action', Prepare 4 or 5 gas analyzer inspect and prepare vehicle for test and obtain exhaust readings interpret readings and determine necessary action', Retrieve and record diagnostic trouble codes OBD monitor status and freeze frame data clear codes when applicable', Diagnose the causes of emissions or driveability concerns with stored or active diagnostic trouble codes obtain graph and interpret scan tool data', Diagnose emissions or driveability concerns without stored diagnostic trouble codes determine necessary action', Check for module communication including CANBUS systems errors using a scan tool', Inspect and test computerized engine control system sensors powertrainengine control module PCMECM actuators and circuits using a graphing multimeter GMMdigital storage oscilloscope DSO perform necessary action', Perform active tests of actuators using a scan tool determine necessary action', Describe the importance of running all OBDII monitors for repair verification', Diagnose hot or cold nostarting hard starting poor driveability incorrect idle speed poor idle flooding hesitation surging engine misfire power loss stalling poor mileage dieseling and emissions problems determine necessary action', Diagnose emissions and driveability concerns caused by the evaporative emissions control system determine necessary action', Inspect test components hoses of the evaporative emissions control system perform necessary action', Interpret diagnostic trouble codes DTCs and scan tool data related to the emissions control systems perform necessary action', Identify hybrid vehicle internal combustion engine service precautions

Name
The student will be able to service ignition system concerns

Objective
Diagnose engine mechanical electrical electronic fuel and ignition concerns determine necessary action', Prepare 4 or 5 gas analyzer inspect and prepare vehicle for test and obtain exhaust readings interpret readings and determine necessary action', Retrieve and record diagnostic trouble codes OBD monitor status and freeze frame data clear codes when applicable', Diagnose the causes of emissions or driveability concerns with stored or active diagnostic trouble codes obtain graph and interpret scan tool data', Diagnose emissions or driveability concerns without stored diagnostic trouble codes determine necessary action', Check for module communication including CANBUS systems errors using a scan tool', Inspect and test computerized engine control system sensors powertrainengine control module PCMECM actuators and circuits using a graphing multimeter GMMdigital storage oscilloscope DSO perform necessary action', Perform active tests of actuators using a scan tool determine necessary action', Describe the importance of running all OBDII monitors for repair verification', Diagnose hot or cold nostarting hard starting poor driveability incorrect idle speed poor idle flooding hesitation surging engine misfire power loss stalling poor mileage dieseling and emissions problems determine necessary action', Diagnose emissions and driveability concerns caused by the evaporative emissions control system determine necessary action', Inspect test components hoses of the evaporative emissions control system perform necessary action', Interpret diagnostic trouble codes DTCs and scan tool data related to the emissions control systems perform necessary action', Identify hybrid vehicle internal combustion engine service precautions

Name
The student will be able to repair ignition system concerns

Objective
Diagnose engine mechanical electrical electronic fuel and ignition concerns determine necessary action', Prepare 4 or 5 gas analyzer inspect and prepare vehicle for test and obtain exhaust readings interpret readings and determine necessary action', Retrieve and record diagnostic trouble codes OBD monitor status and freeze frame data clear codes when applicable', Diagnose the causes of emissions or driveability concerns with stored or active diagnostic trouble codes obtain graph and interpret scan tool data', Diagnose emissions or driveability concerns without stored diagnostic trouble codes determine necessary action', Check for module communication including CANBUS systems errors using a scan tool', Inspect and test computerized engine control system sensors powertrainengine control module PCMECM actuators and circuits using a graphing multimeter GMMdigital storage oscilloscope DSO perform necessary action', Perform active tests of actuators using a scan tool determine necessary action', Describe the importance of running all OBDII monitors for repair verification', Diagnose hot or cold nostarting hard starting poor driveability incorrect idle speed poor idle flooding hesitation surging engine misfire power loss stalling poor mileage dieseling and emissions problems determine necessary action', Interpret diagnostic trouble codes DTCs and scan tool data related to the emissions control systems perform necessary action', Identify hybrid vehicle internal combustion engine service precautions

Name
The student will be able to service induction system concerns

Objective
Diagnose engine mechanical electrical electronic fuel and ignition concerns determine necessary action', Prepare 4 or 5 gas analyzer inspect and prepare vehicle for test and obtain exhaust readings interpret readings and determine necessary action', Retrieve and record diagnostic trouble codes OBD monitor status and freeze frame data clear codes when applicable', Diagnose the causes of emissions or driveability concerns with stored or active diagnostic trouble codes obtain graph and interpret scan tool data', Diagnose emissions or driveability concerns without stored diagnostic trouble codes determine necessary action', Check for module communication including CANBUS systems errors using a scan tool', Inspect and test computerized engine control system sensors powertrainengine control module PCMECM actuators and circuits using a graphing multimeter GMMdigital storage oscilloscope DSO perform necessary action', Diagnose driveability and emissions problems resulting from malfunctions of interrelated systems cruise control security alarms suspension controls traction controls AC automatic transmissions nonOEMinstalled accessories or similar systems determine necessary action', Perform active tests of actuators using a scan tool determine necessary action', Describe the importance of running all OBDII monitors for repair verification', Diagnose hot or cold nostarting hard starting poor driveability incorrect idle speed poor idle flooding hesitation surging engine misfire power loss stalling poor mileage dieseling and emissions problems determine necessary action', Diagnose emissions driveability concerns caused by the secondary air injection and catalytic converter systems determine necessary action', Inspect and test mechanical components of secondary air injection systems perform necessary action', Inspect and test electricalelectronicallyoperated components and circuits of air injection systems perform necessary action', Inspect and test catalytic converter efficiency', Diagnose emissions and driveability concerns caused by the evaporative emissions control system determine necessary action', Inspect test components hoses of the evaporative emissions control system perform necessary action', Interpret diagnostic trouble codes DTCs and scan tool data related to the emissions control systems perform necessary action', Identify hybrid vehicle internal combustion engine service precautions

Name
The student will be able to service exhaust system concerns

Name
The student will be able to repair induction system concerns

Objective
Diagnose engine mechanical electrical electronic fuel and ignition concerns determine necessary action', Prepare 4 or 5 gas analyzer inspect and prepare vehicle for test and obtain exhaust readings interpret readings and determine necessary action', Retrieve and record diagnostic trouble codes OBD monitor status and freeze frame data clear codes when applicable', Diagnose the causes of emissions or driveability concerns with stored or active diagnostic trouble codes obtain graph and interpret scan tool data', Diagnose emissions or driveability concerns without stored diagnostic trouble codes determine necessary action', Inspect and test computerized engine control system sensors powertrainengine control module PCMECM actuators and circuits using a graphing multimeter GMMdigital storage oscilloscope DSO perform necessary action', Diagnose driveability and emissions problems resulting from malfunctions of interrelated systems cruise control security alarms suspension controls traction controls AC automatic transmissions nonOEMinstalled accessories or similar systems determine necessary action', Perform active tests of actuators using a scan tool determine necessary action', Describe the importance of running all OBDII monitors for repair verification', Diagnose hot or cold nostarting hard starting poor driveability incorrect idle speed poor idle flooding hesitation surging engine misfire power loss stalling poor mileage dieseling and emissions problems determine necessary action', Diagnose emissions driveability concerns caused by the secondary air injection and catalytic converter systems determine necessary action', Inspect and test mechanical components of secondary air injection systems perform necessary action', Inspect and test electricalelectronicallyoperated components and circuits of air injection systems perform necessary action', Inspect and test catalytic converter efficiency', Diagnose emissions and driveability concerns caused by the evaporative emissions control system determine necessary action', Inspect test components hoses of the evaporative emissions control system perform necessary action', Interpret diagnostic trouble codes DTCs and scan tool data related to the emissions control systems perform necessary action', Identify hybrid vehicle internal combustion engine service precautions

Requirements

Simple Requirements

Enrolled in Course TAS131

Type
Prerequisite

Enroll in the following Courses:
- TAS131 - Engine Performance I

TAS133 - Brakes I

Overview

Department
Applied Technologies

Course Description
This course is a thorough and detailed study of brake system theory and functional operation and principles of hydraulic systems as it applies to braking system operation. Practical applications of all phases of brake work including complete system service of disc and drum brake systems, parking brake systems, power assist devices and machining of brake disc and drum.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Perform system pressure and travel calculations utilizing Pascal's Law

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Research applicable vehicle and service information such as brake system operation vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers

Name
Determine appropriate system pressure tests utilizing service specifications

Objective
Diagnose pressure concerns in the brake system using hydraulic principles Paschals Law', Measure brake pedal height travel and free play as applicable determine necessary action', Check master cylinder for internalexternal leaks and proper operation determine necessary action', Remove bench bleed and reinstall master cylinder', Diagnose poor stopping pulling or dragging concerns caused by malfunctions in the hydraulic system determine necessary action', Inspect brake lines flexible hoses and fittings for leaks dents kinks rust cracks bulging or wear tighten loose fittings and supports determine necessary action', Replace brake lines hoses fittings and supports', Fabricate brake lines using proper material and flaring procedures double flare and ISO types', Select handle store and fill brake fluids to proper level', Inspect test andor replace metering holdoff proportioning balance pressure differential and combination valves', Inspect test andor replace components of brake warning light system', Bleed andor flush brake system', Test brake fluid for contamination

Name
Determine brake system concerns and necessary actions

Objective
Identify and interpret brake system concern determine necessary action', Research applicable vehicle and service information such as brake system operation vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers

Name
Diagnose poor stopping, pulling or dragging concerns caused by malfunctions in the hydraulic system

Objective
Measure brake pedal height travel and free play as applicable determine necessary action', Check master cylinder for internalexternal leaks and proper operation determine necessary action', Remove bench bleed and reinstall master cylinder', Diagnose poor stopping pulling or dragging concerns caused by malfunctions in the hydraulic system determine necessary action', Inspect brake lines flexible hoses and fittings for leaks dents kinks rust cracks bulging or wear tighten loose fittings and supports determine necessary action', Replace brake lines hoses fittings and supports', Fabricate brake lines using proper material and flaring procedures double flare and ISO types', Select handle store and fill brake fluids to proper level', Inspect test andor replace metering holdoff proportioning balance pressure differential and combination valves', Inspect test andor replace components of brake warning light system

Name
Determine how to inspect, fabricate and/or replace brake lines and hoses

Objective
Inspect brake lines flexible hoses and fittings for leaks dents kinks rust cracks bulging or wear tighten loose fittings and supports determine necessary action', Replace brake lines hoses fittings and supports', Fabricate brake lines using proper material and flaring procedures double flare and ISO types', Select handle store and fill brake fluids to proper level

Name
Determine the service specifications pertaining to the removal, cleaning and refinishing procedures on brake drums

Objective
Remove clean inspect and measure brake drums determine necessary action', Refinish brake drum measure final drum diameter

Name
Apply drum brake repair and replacement procedures

Objective
Remove clean and inspect brake shoes springs pins clips levers adjustersselfadjusters other related brake hardware and backing support plates lubricate and reassemble', Inspect and install wheel cylinders', Preadjust brake shoes and parking brake install brake drums or drumhub assemblies and wheel bearings', Install wheel torque lug nuts and make final checks and adjustments

Name
Diagnose poor stopping noise vibration, pulling, grabbing, dragging or pedal pulsation concerns on disc-brake vehicles

Objective
Diagnose poor stopping noise pulling grabbing dragging or pulsation concerns determine necessary action', Remove caliper assembly inspect for leaks and damage to caliper housing determine necessary action', Clean and inspect caliper mounting and slidespins for operation wear and damage determine necessary action

Name
Determine disc brake repair and replacement procedures

Objective
Remove inspect and replace pads and retaining hardware determine necessary action', Disassemble and clean caliper assembly inspect parts for wear rust scoring and damage replace seal boot and damaged or worn parts', Reassemble lubricate and reinstall caliper pads and related hardware seat pads and inspect for leaks', Clean inspect and measure rotor thickness lateral runout and thickness variation determine necessary action', Remove and reinstall rotor', Check brake pad wear indicator system operation determine necessary action

Name
Determine how to caliper piston retractions

Objective
Retract caliper piston on an integrated parking brake system

Name
Diagnose wheel bearing noise, wheel shimmy and vibration concerns

Objective
Diagnose wheel bearing noises wheel shimmy and vibration concerns determine necessary action

Name
Determine how to remove, inspect and replace bearing and hub assemblies

Objective
Remove clean inspect repack and install wheel bearings and replace seals install hub and adjust bearings', Check parking brake cables and components for wear binding and corrosion clean lubricate adjust or replace as needed', Check parking brake and indicator light system operation determine necessary action', Check operation of brake stop light system determine necessary action', Replace wheel bearing and race', Inspect and replace wheel studs', Remove and reinstall sealed wheel bearing assembly

TAS134 - Brakes II for Automotive

Overview

Department
Applied Technologies

Course Description
In this course students will: Determine necessary brake system correction; Conduct system pressure tests utilizing service specifications; Perform diagnosis and correction for poor stopping, pulling or dragging concerns caused by malfunctions in the hydraulic system; Conduct inspection, fabrication and/or replacement of brake lines and hoses; Diagnose poor stopping noise vibration, pulling, grabbing, dragging or pedal pulsation concerns; Perform service specifications pertaining to the removal, cleaning and refinishing procedures on brake drums; Perform drum brake repair and replacement procedures; Diagnose poor stopping noise vibration, pulling, grabbing, dragging or pedal pulsation concerns; Perform disc brake repair and replacement procedures; Machine rotor according to service specifications; Perform caliper piston retraction where applicable; Inspect and test power assist systems; Determine necessary action on wheel bearing noise, wheel shimmy and vibration concern diagnoses; Perform the removal, inspection and replacement of bearing and hub assemblies through a variety of classroom and lab/shop learning and assessment activities.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
1

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Determine necessary brake system correction

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Identify and interpret brake system concern determine necessary action', Research applicable vehicle and service information such as brake system operation vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers

Name
Conduct system pressure tests utilizing service specifications

Objective
Diagnose pressure concerns in the brake system using hydraulic principles Paschals Law', Measure brake pedal height travel and free play as applicable determine necessary action', Check master cylinder for internalexternal leaks and proper operation determine necessary action', Remove bench bleed and reinstall master cylinder', Diagnose poor stopping pulling or dragging concerns caused by malfunctions in the hydraulic system determine necessary action', Inspect brake lines flexible hoses and fittings for leaks dents kinks rust cracks bulging or wear tighten loose fittings and supports determine necessary action', Replace brake lines hoses fittings and supports', Fabricate brake lines using proper material and flaring procedures double flare and ISO types', Select handle store and fill brake fluids to proper level', Inspect test andor replace metering holdoff proportioning balance pressure differential and combination valves', Inspect test andor replace components of brake warning light system', Bleed andor flush brake system', Test brake fluid for contamination

Name
Perform diagnosis and correction for poor stopping, pulling or dragging concerns caused by malfunctions in the hydraulic system

Objective
Measure brake pedal height travel and free play as applicable determine necessary action', Check master cylinder for internalexternal leaks and proper operation determine necessary action', Remove bench bleed and reinstall master cylinder', Diagnose poor stopping pulling or dragging concerns caused by malfunctions in the hydraulic system determine necessary action', Inspect brake lines flexible hoses and fittings for leaks dents kinks rust cracks bulging or wear tighten loose fittings and supports determine necessary action', Replace brake lines hoses fittings and supports', Fabricate brake lines using proper material and flaring procedures double flare and ISO types', Select handle store and fill brake fluids to proper level', Inspect test andor replace metering holdoff proportioning balance pressure differential and combination valves', Inspect test andor replace components of brake warning light system

Name
Conduct inspection, fabrication and/or replacement of brake lines and hoses

Objective
Inspect brake lines flexible hoses and fittings for leaks dents kinks rust cracks bulging or wear tighten loose fittings and supports determine necessary action', Replace brake lines hoses fittings and supports', Fabricate brake lines using proper material and flaring procedures double flare and ISO types', Select handle store and fill brake fluids to proper level

Name
Diagnose poor stopping noise vibration, pulling, grabbing, dragging or pedal pulsation concerns

Objective
Diagnose poor stopping noise vibration pulling grabbing dragging or pedal pulsation concerns determine necessary action

Name
Perform service specifications pertaining to the removal, cleaning and refinishing procedures on break drums

Objective
Remove clean inspect and measure brake drums determine necessary action', Refinish brake drum measure final drum diameter

Name
Perform drum brake repair and replacement procedures

Objective
Remove clean and inspect brake shoes springs pins clips levers adjustersselfadjusters other related brake hardware and backing support plates lubricate and reassemble', Inspect and install wheel cylinders', Preadjust brake shoes and parking brake install brake drums or drumhub assemblies and wheel bearings', Install wheel torque lug nuts and make final checks and adjustments

Name
Diagnose poor stopping noise vibration, pulling, grabbing, dragging or pedal pulsation concerns

Objective
Diagnose poor stopping noise pulling grabbing dragging or pulsation concerns determine necessary action', Remove caliper assembly inspect for leaks and damage to caliper housing determine necessary action', Clean and inspect caliper mounting and slidespins for operation wear and damage determine necessary action

Name
Perform disc brake repair and replacement procedures

Objective
Remove inspect and replace pads and retaining hardware determine necessary action', Disassemble and clean caliper assembly inspect parts for wear rust scoring and damage replace seal boot and damaged or worn parts', Reassemble lubricate and reinstall caliper pads and related hardware seat pads and inspect for leaks', Clean inspect and measure rotor thickness lateral runout and thickness variation determine necessary action', Remove and reinstall rotor', Check brake pad wear indicator system operation determine necessary action

Name
Machine rotor according to service specifications

Objective
Refinish rotor on vehicle measure final rotor thickness', Refinish rotor off vehicle measure final rotor thickness

Name
Perform caliper piston retraction where applicable

Objective
Retract caliper piston on an integrated parking brake system

Name
Inspect and test power assist systems

Objective
Test pedal free travel check power assist operation', Check vacuum supply to vacuumtype power booster', Inspect the vacuumtype power booster unit for leaks inspect the check valve for proper operation determine necessary action', Inspect and test hydraulically assisted power brake system for leaks and proper operation determine necessary action

Name
Determine necessary action on wheel bearing noise, wheel shimmy and vibration concern diagnoses

Objective
Diagnose wheel bearing noises wheel shimmy and vibration concerns determine necessary action

Name
Perform the removal, inspection and replacement of bearing and hub assemblies

Objective
Remove clean inspect repack and install wheel bearings and replace seals install hub and adjust bearings', Check parking brake cables and components for wear binding and corrosion clean lubricate adjust or replace as needed', Check parking brake and indicator light system operation determine necessary action', Check operation of brake stop light system determine necessary action', Replace wheel bearing and race', Inspect and replace wheel studs', Remove and reinstall sealed wheel bearing assembly

Requirements

Simple Requirements

A minimum grade of 'C' in Course TAS133

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- TAS133 - Brakes I

TAS135 - Computer Systems for Automotive

Overview

Department
Applied Technologies

Course Description
In this course students will: Perform automotive computer system diagnosis; perform vehicle communication diagnosis; perform engine computer system diagnosis; transmission computer diagnosis; perform air bag system diagnosis; perform heating and air conditioning electronic diagnosing; perform electronic anti-lock brake/traction/stability diagnosis; perform driver assistance system diagnosis; identify computer systems through a variety of learning and assessment activities.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
In-Vehicle Transmission/Transaxle Maintenance and Repair

Objective
Diagnose electronic transmission control systems using a scan tool determine necessary action

Name
Steering Systems Diagnosis and Repair

Objective
Disable and enable supplemental restraint system SRS', Remove and replace steering wheel centertime supplemental restraint system SRS coil clock spring

Name
Suspension Systems Diagnosis and Repair

Objective
Diagnose inspect adjust repair or replace components of electronically controlled steering systems including sensors switches and actuators initialize system as required', Describe the function of the idle speed compensation switch', Lubricate suspension and steering systems

Name
Electronic Brake, Traction and Stability Control Systems Diagnosis and Repair

Objective
Identify and inspect electronic brake control system components determine necessary action', Diagnose poor stopping wheel lockup abnormal pedal feel unwanted application and noise concerns associated with the electronic brake control system determine necessary action', Diagnose electronic brake control system electronic controls and components by retrieving diagnostic trouble codes andor using recommended test equipment determine necessary action', Remove and install electronic brake control system electricalelectronic and hydraulic components', Test diagnose and service electronic brake control system speed sensors digital and analog toothed ring tone wheel and circuits using a graphing multimeter GMMdigital storage oscilloscope DSO includes output signal resistance shorts to voltageground and frequency data', Identify traction controlvehicle stability control system components

Name
General Electrical System Diagnosis

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Identify and interpret electricalelectronic system concern determine necessary action', Research applicable vehicle and service information such as electricalelectronic system operation vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers', Diagnose electricalelectronic integrity of series parallel and seriesparallel circuits using principles of electricity Ohms Law', Use wiring diagrams during diagnosis of electrical circuit problems', Demonstrate the proper use of a digital multimeter DMM during diagnosis of electrical circuit problems including source voltage voltage drop current flow and resistance', Check electricalelectronic circuit waveforms interpret readings and determine needed repairs', Remove and replace terminal end from connector replace connectors and terminal ends', Repair wiring harness including CANBUS systems', Perform solder repair of electrical wiring', Identify location of hybrid vehicle high voltage circuit disconnect service plug location and safety procedures

Name
Gauges, Warning Devices, and Driver Information Systems Diagnosis and Repair

Objective
Inspect and test gauges and gauge sending units for cause of abnormal gauge readings determine necessary action', Inspect and test connectors wires and printed circuit boards of gauge circuits determine necessary action', Diagnose the cause of incorrect operation of warning devices and other driver information systems determine necessary action', Inspect and test sensors connectors and wires of electronic digital instrument circuits determine necessary action

Name
Accessories Diagnosis and Repair

Objective
Diagnose supplemental restraint system SRS concerns determine necessary action', Disarm and enable the airbag system for vehicle service', Diagnose radio static and weak intermittent or no radio reception determine necessary action', Diagnose body electronic system circuits using a scan tool determine necessary action', Check for module communication including CANBUS systems errors using a scan tool', Describe the operation of keyless entryremotestart systems', Perform software transfers software updates or flash reprogramming on electronic modules

Name
A/C System Diagnosis and Repair

Objective
Using scan tool observe and record related HVAC data and trouble codes

Name
Computerized Engine Controls Diagnosis and Repair

Objective
Retrieve and record diagnostic trouble codes OBD monitor status and freeze frame data clear codes when applicable', Diagnose the causes of emissions or driveability concerns with stored or active diagnostic trouble codes obtain graph and interpret scan tool data', Diagnose emissions or driveability concerns without stored diagnostic trouble codes determine necessary action', Check for module communication including CANBUS systems errors using a scan tool', Inspect and test computerized engine control system sensors powertrainengine control module PCMECM actuators and circuits using a graphing multimeter GMMdigital storage oscilloscope DSO perform necessary action', Access and use service information to perform stepbystep diagnosis', Diagnose driveability and emissions problems resulting from malfunctions of interrelated systems cruise control security alarms suspension controls traction controls AC automatic transmissions nonOEMinstalled accessories or similar systems determine necessary action', Perform active tests of actuators using a scan tool determine necessary action', Describe the importance of running all OBDII monitors for repair verification

Requirements

Simple Requirements

Completed Course

Type
Prerequisite

Complete ALL of the following Courses:

TAS136 - Suspension and Steering I

Overview

Department
Applied Technologies

Course Description
In this course students will: document fundamental suspension system concerns; perform fundamental diagnostics of steering systems; perform fundamental repairs of steering systems; perform fundamental diagnostics of suspension systems; perform fundamental repairs of suspension systems; determine the need for wheel alignment and adjustment; perform fundamental diagnostics of wheel and tire systems; perform fundamental repairs of wheel and tire systems through a variety of learning and assessment activities.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to document suspension system concerns

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Identify and interpret suspension and steering system concerns determine necessary action', Research applicable vehicle and service information such as suspension and steering system operation vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers

Name
The student will be able to perform diagnostics of steering systems

Objective
Diagnose steering column noises looseness and binding concerns including tilt mechanisms determine necessary action', Diagnose power steering gear nonrack and pinion binding uneven turning effort looseness hard steering and noise concerns determine necessary action', Diagnose power steering gear rack and pinion binding uneven turning effort looseness hard steering and noise concerns determine necessary action', Determine proper power steering fluid type inspect fluid level and condition', Diagnose power steering fluid leakage determine necessary action', Test and diagnose components of electronically controlled steering systems using a scan tool determine necessary action', Inspect and test electric power assist steering', Identify hybrid vehicle power steering system electrical circuits service and safety precautions', Diagnose inspect adjust repair or replace components of electronically controlled steering systems including sensors switches and actuators initialize system as required', Describe the function of the idle speed compensation switch

Name
The student will be able to perform repairs of steering systems

Objective
Disable and enable supplemental restraint system SRS', Remove and replace steering wheel centertime supplemental restraint system SRS coil clock spring', Inspect steering shaft universaljoints flexible couplings collapsible column lock cylinder mechanism and steering wheel perform necessary action', Adjust nonrack and pinion worm bearing preload and sector lash', Remove and replace rack and pinion steering gear inspect mounting bushings and brackets', Inspect and replace rack and pinion steering gear inner tie rod ends sockets and bellows boots', Flush fill and bleed power steering system', Remove inspect replace and adjust power steering pump belt', Remove and reinstall power steering pump', Remove and reinstall press fit power steering pump pulley check pulley and belt alignment', Inspect and replace power steering hoses and fittings', Inspect and replace pitman arm relay centerlinkintermediate rod idler arm and mountings and steering linkage damper', Inspect replace and adjust tie rod ends sockets tie rod sleeves and clamps', Diagnose inspect adjust repair or replace components of electronically controlled steering systems including sensors switches and actuators initialize system as required', Lubricate suspension and steering systems

Name
The student will be able to perform diagnostics of suspension systems

Objective
Diagnose short and long arm suspension system noises body sway and uneven ride height concerns determine necessary action', Diagnose strut suspension system noises body sway and uneven ride height concerns determine necessary action', Test and diagnose components of electronically controlled suspension systems using a scan tool determine necessary action

Name
The student will be able to perform repairs of suspension systems

Objective
Diagnose short and long arm suspension system noises body sway and uneven ride height concerns determine necessary action', Diagnose strut suspension system noises body sway and uneven ride height concerns determine necessary action', Remove inspect and install upper and lower control arms bushings shafts and rebound bumpers', Remove inspect and install strut rods and bushings', Remove inspect and install upper andor lower ball joints', Remove inspect and install steering knuckle assemblies', Remove inspect and install short and long arm suspension system coil springs and spring insulators', Remove inspect install and adjust suspension system torsion bars inspect mounts', Remove inspect and install stabilizer bar bushings brackets and links', Remove inspect and install strut cartridge or assembly strut coil spring insulators silencers and upper strut bearing mount', Remove inspect and install leaf springs leaf spring insulators silencers shackles brackets bushings and mounts', Inspect remove and replace shock absorbers', Remove inspect and service or replace front and rear wheel bearings', Lubricate suspension and steering systems

Name
The student will be able to determine the need for wheel alignment and adjustment

Objective
Diagnose vehicle wander drift pull hard steering bump steer memory steer torque steer and steering return concerns determine necessary action', Perform prealignment inspection and measure vehicle ride height perform necessary action', Prepare vehicle for wheel alignment on the alignment machine perform fourwheel alignment by checking and adjusting front and rear wheel caster camber and toe as required center steering wheel', Check toeoutonturns turning radius determine necessary action', Check SAI steering axis inclination and included angle determine necessary action', Check rear wheel thrust angle determine necessary action', Check for front wheel setback determine necessary action', Check front andor rear cradle subframe alignment determine necessary action

Name
The student will be able to perform diagnostics of wheel and tire systems

Objective
Diagnose wheeltire vibration shimmy and noise determine necessary action', Measure wheel tire axle flange and hub runout determine necessary action', Diagnose tire pull problems determine necessary action', Inspect diagnose and calibrate tire pressure monitoring system

Name
The student will be able to perform repairs of wheel and tire systems

Objective
Inspect tire condition identify tire wear patterns check and adjust air pressure determine necessary action', Rotate tires according to manufacturers recommendations', Dismount inspect and remount tire on wheel balance wheel and tire assembly static and dynamic', Dismount inspect and remount tire on wheel equipped with tire pressure monitoring system sensor', Reinstall wheel torque lug nuts', Inspect tire and wheel assembly for air loss perform necessary action', Repair tire using internal patch

TAS137 - Suspension and Steering II

Overview

Department
Applied Technologies

Course Description
In this, course students will: gain knowledge in the use of alignment geometry and computerized alignment equipment to diagnose and repair steering suspension problems and to verify that a vehicle's suspension and steering components are within manufacturer's specifications. In addition, removing and replacing steering and suspension components according to manufacturer's specifications, inspecting, servicing, and repairing wheel and tire assemblies for optimum performance.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
2

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Student will be able to complete general diagnosis of suspension and steering systems

Objective
Remove and replace steering wheel centertime supplemental restraint system SRS coil clock spring', Diagnose steering column noises looseness and binding concerns including tilt mechanisms determine necessary action', Diagnose power steering gear nonrack and pinion binding uneven turning effort looseness hard steering and noise concerns determine necessary action', Diagnose power steering gear rack and pinion binding uneven turning effort looseness hard steering and noise concerns determine necessary action', Inspect steering shaft universaljoints flexible couplings collapsible column lock cylinder mechanism and steering wheel perform necessary action', Adjust nonrack and pinion worm bearing preload and sector lash

Name
Student will be able to diagnose and repair steering systems

Objective
Remove and replace rack and pinion steering gear inspect mounting bushings and brackets', Determine proper power steering fluid type inspect fluid level and condition', Flush fill and bleed power steering system', Diagnose power steering fluid leakage determine necessary action', Remove inspect replace and adjust power steering pump belt', Remove and reinstall power steering pump', Remove and reinstall press fit power steering pump pulley check pulley and belt alignment', Inspect and replace power steering hoses and fittings', Test and diagnose components of electronically controlled steering systems using a scan tool determine necessary action', Inspect and test electric power assist steering', Identify hybrid vehicle power steering system electrical circuits service and safety precautions

Name
Student will be able to diagnose and repair suspension and related steering systems

Objective
Test and diagnose components of electronically controlled suspension systems using a scan tool determine necessary action', Diagnose inspect adjust repair or replace components of electronically controlled steering systems including sensors switches and actuators initialize system as required

Name
Student will be able to diagnose and repair wheel alignment and adjustments

Objective
Diagnose vehicle wander drift pull hard steering bump steer memory steer torque steer and steering return concerns determine necessary action', Perform prealignment inspection and ride height perform necessary action', Prepare vehicle for wheel alignment on the alignment machine perform fourwheel alignments by checking and adjusting front and rear wheel caster camber and toe as required center steering wheel', Check toeoutonturns turning radius determine necessary action', Check SAI steering axis inclination and included angle determine necessary action', Check rear wheel thrust angle determine necessary action', Check for front wheel setback determine necessary action', Check front andor rear cradle subframe alignment determine necessary action

Name
Student will be able to diagnose and repair wheel and tire issue

Objective
Diagnose wheeltire vibration shimmy and noise determine necessary action', Measure wheel tire axle flange and hub runout determine necessary action', Diagnose tire pull problems determine necessary action

Requirements

Simple Requirements

A minimum grade of 'C' in Course TAS136

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- TAS136 - Suspension and Steering I

TAS150 - Specialized Training

Overview

Department
Applied Technologies

Course Description
This course is an online, self-paced course to allow students to acquire specialized training. In this course, students will choose one of the training options provided and utilize their chosen system to complete modules required.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Demonstrated self-discipline, maturity, and time management

Name
Advocate for your own learning in alignment with O.E.M. learning goals

Name
Develope an understanding of the importance of continuous improvement / continuous learning

Name
Demonstrated ability to utilize O.E.M. learning management systems

Name
Reflecte on O.E.M. specific service procedures and how they may differ

Name
Utilize resume building skills to accurately reflect and identify certifications and credentials

Name
Acquire O.E.M. certification utilizing chosen O.E.M.'s learning management system

TAS160 - Transportation Industry Safety

Overview

Department
Applied Technologies

Course Description
In today's dynamic transportation landscape, safety remains a paramount concern. This course is tailored to provide a comprehensive understanding of safety measures and protocols to meet all ASE and governmental standards.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
30

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Explore the fundamental principles of safety management, hazard identification, risk assessment, and mitigation strategies within the transportation sector.

Name
Gain an understanding of the role safety plays in maintaining the well-being of employees, passengers, and the environment.

Name
Familiarize yourself with the specific safety standards and requirements established by ASE for various transportation-related occupations, including automotive technicians,alternative fuel vehicles and more

Name
Learn how to interpret and apply ASE safety guidelines in practical settings.

Name
Understand the regulatory framework governing safety in the transportation industry, including federal and state regulations, industry-specific guidelines, and international standards.

Name
Explore compliance requirements related to vehicle maintenance, operation, and emergency response.

Name
Examine safety systems and features integrated into transportation vehicles

Name
Learn how to inspect, maintain, and troubleshoot safety-related components, such as airbags, antilock braking systems (ABS), and emergency evacuation systems.

Name
Develop the skills and knowledge necessary to respond effectively to transportation-related emergencies, such as vehicle accidents, fire, and evacuation procedures.

Name
Explore the importance of first aid, CPR, and emergency response plans in the context of transportation safety.

Name
Investigate the environmental safety aspects of the transportation industry, with a focus on reducing emissions, handling hazardous materials, and addressing environmental emergencies.

Name
Learn about sustainable practices and their impact on safety and regulatory compliance.

Name
Cultivate a culture of safety within transportation organizations by promoting effective communication, teamwork, and proactive safety measures.

Name
Understand the role of leadership in creating and maintaining a safe working environment.

Name
Demonstrate safe work practices, proper tool/equipment usage, and compliance with environmental and workplace safety regulations.

Name
Demonstrate the ability to safely operate, position, and secure vehicles on hydraulic and mechanical lifts by applying industry-standard procedures, identifying potential hazards, and verifying proper lock and support mechanisms before performing service work.

Name
Recognize and follow established procedures for lab/shop conduct, including tool checkout, cleanup, and shared equipment responsibilities.

Name
Identify academic and technical requirements of the transportation programs, including grading policies, attendance expectations, and participation standards.

TAS206 - PowerTrain Systems

Overview

Department
Applied Technologies

Course Description
This course contains competencies that can be used in their entirety within a single course or as needed for courses designed by a Kansas institution as Institutional Flexible Credit. Through a variety of learning and assessment activities students can: determine the general drive train diagnosis procedures; explore the fundamentals of clutch operation; explore the fundamentals of clutch removal, inspection and repair; determine the powerflow of the manual transmission and transaxle; perform fundamental manual transmission and transaxle inspection and repair according to service specifications; perform fundamental differential inspection and repair according to service specifications; perform fundamental diagnosis, inspection and replacement of drive axle shafts and supporting components; perform fundamental diagnosis, inspection, adjustment and repair of four- and all-wheel drive components; diagnose drive train issues; diagnose clutch concerns; perform the removal, inspection and/or repair of the clutch and its components; conduct a transmission and transaxle inspection and repair according to service specifications; conduct a differential inspection and repair according to service specifications; conduct the diagnosis, inspection and replacement of drive axle shafts and supporting components; conduct the diagnosis, inspection, adjustment and repair of four- and all-wheel drive components.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to determine the general drive train diagnosis procedures.

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Remove and reinstall transmissiontransaxle', Disassemble clean and reassemble transmissiontransaxle components', Inspect transmissiontransaxle case extension housing case mating surfaces bores bushings and vents perform necessary action', Diagnose noise concerns using transmissiontransaxle powerflow principles', Diagnose hard shifting and jumping out of gear concerns determine necessary action', Inspect adjust and reinstall shift linkages brackets bushings cables pivots and levers', Inspect replace and align powertrain mounts', Inspect and replace gaskets seals and sealants inspect sealing surfaces', Remove and replace transaxle final drive', Inspect adjust and reinstall shift cover forks levers grommets shafts sleeves detent mechanism interlocks and springs', Measure end play or preload shim or spacer selection procedure on transmissiontransaxle shafts perform necessary action', Inspect and reinstall synchronizer hub sleeve keys inserts springs and blocking rings', Diagnose transaxle final drive assembly noise and vibration concerns determine necessary action', Remove inspect measure adjust and reinstall transaxle final drive pinion gears spiders shaft side gears side bearings thrust washers and case assembly', Inspect lubrication devices oil pump or slingers perform necessary action', Inspect test and replace transmissiontransaxle sensors and switches', Describe the operational characteristics of an electronically controlled manual transmissiontransaxle', Identify and interpret drive train concern determine necessary action', Research applicable vehicle and service information such as drive train system operation fluid type vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers', Diagnose fluid loss level and condition concerns determine necessary action', Drain and fill manual transmissiontransaxle and final drive unit

Name
The student will be able to explore the fundamentals of clutch operation.

Objective
Diagnose clutch noise binding slippage pulsation and chatter determine necessary action

Name
The student will be able to explore the fundamentals of clutch removal, inspection and repair.

Objective
Inspect clutch pedal linkage cables automatic adjuster mechanisms brackets bushings pivots and springs perform necessary action', Inspect hydraulic clutch slave and master cylinders lines and hoses determine necessary action', Inspect and replace clutch pressure plate assembly clutch disc release throwout bearing and linkage and pilot bearingsbushing as applicable', Bleed clutch hydraulic system', Inspect flywheel and ring gear for wear and cracks determine necessary action', Inspect engine block core plugs rear main engine oil seal clutch bell housing transmissiontransaxle case mating surfaces and alignment dowels determine necessary action', Measure flywheel runout and crankshaft end play determine necessary action

Name
The student will be able to determine the powerflow of the manual transmission and transaxle.

Objective
Remove and reinstall transmissiontransaxle', Diagnose noise concerns using transmissiontransaxle powerflow principles

Name
The student will be able to perform fundamental manual transmission and transaxle inspection and repair according to service specifications

Objective
Disassemble clean and reassemble transmissiontransaxle components', Inspect transmissiontransaxle case extension housing case mating surfaces bores bushings and vents perform necessary action', Diagnose noise concerns using transmissiontransaxle powerflow principles', Diagnose hard shifting and jumping out of gear concerns determine necessary action', Inspect adjust and reinstall shift linkages brackets bushings cables pivots and levers', Inspect replace and align powertrain mounts', Inspect and replace gaskets seals and sealants inspect sealing surfaces', Remove and replace transaxle final drive', Inspect adjust and reinstall shift cover forks levers grommets shafts sleeves detent mechanism interlocks and springs', Measure end play or preload shim or spacer selection procedure on transmissiontransaxle shafts perform necessary action', Inspect and reinstall synchronizer hub sleeve keys inserts springs and blocking rings', Diagnose transaxle final drive assembly noise and vibration concerns determine necessary action', Remove inspect measure adjust and reinstall transaxle final drive pinion gears spiders shaft side gears side bearings thrust washers and case assembly', Inspect lubrication devices oil pump or slingers perform necessary action', Inspect test and replace transmissiontransaxle sensors and switches', Describe the operational characteristics of an electronically controlled manual transmissiontransaxle

Name
The student will be able to perform fundamental differential inspection and repair according to service specifications.

Objective
Diagnose noise and vibration concerns determine necessary action', Diagnose fluid leakage concerns determine necessary action', Inspect and replace companion flange and pinion seal measure companion flange runout', Inspect ring gear and measure runout determine necessary action', Remove inspect and reinstall drive pinion and ring gear spacers sleeves and bearings', Measure and adjust drive pinion depth', Measure and adjust drive pinion bearing preload', Measure and adjust side bearing preload and ring and pinion gear total backlash and backlash variation on a differential carrier assembly threaded cup or shim types', Check ring and pinion tooth contact patterns perform necessary action', Disassemble inspect measure and adjust or replace differential pinion gears spiders shaft side gears side bearings thrust washers and case', Reassemble and reinstall differential case assembly measure runout determine necessary action', Limited Slip Differential', Diagnose noise slippage and chatter concerns determine necessary action', Clean and inspect differential housing refill with correct lubricant andor additive', Inspect and reinstall limited slip differential components', Measure rotating torque determine necessary action

Name
The student will be able to perform fundamental diagnosis, inspection and replacement of drive axle shafts and supporting components.

Objective
Diagnose drive axle shafts bearings and seals for noise vibration and fluid leakage concerns determine necessary action', Diagnose constantvelocity CV joint noise and vibration concerns determine necessary action', Diagnose universal joint noise and vibration concerns perform necessary action', Remove and replace front wheel drive FWD front wheel bearing', Inspect service and replace shafts yokes boots and CV joints', Inspect service and replace shaft center support bearings', Check shaft balance and phasing measure shaft runout measure and adjust driveline angles', Inspect and replace drive axle shaft wheel studs', Remove and replace drive axle shafts', Inspect and replace drive axle shaft seals bearings and retainers', Measure drive axle flange runout and shaft end play determine necessary action

Name
The student will be able to perform fundamental diagnosis, inspection, adjustment and repair of four- and all-wheel drive components.

Objective
Diagnose noise vibration and unusual steering concerns determine necessary action', Inspect adjust and repair shifting controls mechanical electrical and vacuum bushings mounts levers and brackets', Remove and reinstall transfer case', Disassemble service and reassemble transfer case and components', Inspect frontwheel bearings and locking hubs perform necessary action', Check drive assembly seals and vents check lube level', Diagnose test adjust and replace electricalelectronic components of fourwheel drive systems

Name
The student will be able to diagnose drive train issues.

Objective
Complete work order to include customer information vehicle identifying information customer concern related service history cause and correction', Identify and interpret drive train concern determine necessary action', Research applicable vehicle and service information such as drive train system operation fluid type vehicle service history service precautions and technical service bulletins', Locate and interpret vehicle and major component identification numbers', Diagnose fluid loss level and condition concerns determine necessary action', Drain and fill manual transmissiontransaxle and final drive unit

Name
The student will be able to diagnose clutch concerns.

Objective
Diagnose clutch noise binding slippage pulsation and chatter determine necessary action

Name
The student will be able to perform the removal, inspection and/or repair of the clutch and its components.

Objective
Inspect clutch pedal linkage cables automatic adjuster mechanisms brackets bushings pivots and springs perform necessary action', Inspect hydraulic clutch slave and master cylinders lines and hoses determine necessary action', Inspect and replace clutch pressure plate assembly clutch disc release throwout bearing and linkage and pilot bearingsbushing as applicable', Bleed clutch hydraulic system', Inspect flywheel and ring gear for wear and cracks determine necessary action', Inspect engine block core plugs rear main engine oil seal clutch bell housing transmissiontransaxle case mating surfaces and alignment dowels determine necessary action', Measure flywheel runout and crankshaft end play determine necessary action

Name
The student will be able to conduct a transmission and transaxle inspection and repair according to service specifications.

Objective
Disassemble clean and reassemble transmissiontransaxle components', Inspect transmissiontransaxle case extension housing case mating surfaces bores bushings and vents perform necessary action', Diagnose noise concerns using transmissiontransaxle powerflow principles', Diagnose hard shifting and jumping out of gear concerns determine necessary action', Inspect adjust and reinstall shift linkages brackets bushings cables pivots and levers', Inspect replace and align powertrain mounts', Inspect and replace gaskets seals and sealants inspect sealing surfaces', Remove and replace transaxle final drive', Inspect adjust and reinstall shift cover forks levers grommets shafts sleeves detent mechanism interlocks and springs', Measure end play or preload shim or spacer selection procedure on transmissiontransaxle shafts perform necessary action', Inspect and reinstall synchronizer hub sleeve keys inserts springs and blocking rings', Diagnose transaxle final drive assembly noise and vibration concerns determine necessary action', Remove inspect measure adjust and reinstall transaxle final drive pinion gears spiders shaft side gears side bearings thrust washers and case assembly', Inspect lubrication devices oil pump or slingers perform necessary action', Inspect test and replace transmissiontransaxle sensors and switches', Describe the operational characteristics of an electronically controlled manual transmissiontransaxle

Name
The student will be able to conduct a differential inspection and repair according to service specifications.

Objective
Ring and Pinion Gears and Differential Case Assembly', Diagnose noise and vibration concerns determine necessary action', Diagnose fluid leakage concerns determine necessary action', Inspect and replace companion flange and pinion seal measure companion flange runout', Inspect ring gear and measure runout determine necessary action', Remove inspect and reinstall drive pinion and ring gear spacers sleeves and bearings', Measure and adjust drive pinion depth', Measure and adjust drive pinion bearing preload', Measure and adjust side bearing preload and ring and pinion gear total backlash and backlash variation on a differential carrier assembly threaded cup or shim types', Check ring and pinion tooth contact patterns perform necessary action', Disassemble inspect measure and adjust or replace differential pinion gears spiders shaft side gears side bearings thrust washers and case', Reassemble and reinstall differential case assembly measure runout determine necessary action', Limited Slip Differential', Diagnose noise slippage and chatter concerns determine necessary action', Clean and inspect differential housing refill with correct lubricant andor additive', Inspect and reinstall limited slip differential components', Measure rotating torque determine necessary action', Drive Axle Shaft', Diagnose drive axle shafts bearings and seals for noise vibration and fluid leakage concerns determine necessary action', Inspect and replace drive axle shaft wheel studs', Remove and replace drive axle shafts', Inspect and replace drive axle shaft seals bearings and retainers', Measure drive axle flange runout and shaft end play determine necessary action

Name
The student will be able to conduct the diagnosis, inspection and replacement of drive axle shafts and supporting components.

Objective
Diagnose drive axle shafts bearings and seals for noise vibration and fluid leakage concerns determine necessary action', Diagnose constantvelocity CV joint noise and vibration concerns determine necessary action', Diagnose universal joint noise and vibration concerns perform necessary action', Remove and replace front wheel drive FWD front wheel bearing', Inspect service and replace shafts yokes boots and CV joints', Inspect service and replace shaft center support bearings', Check shaft balance and phasing measure shaft runout measure and adjust driveline angles', Inspect and replace drive axle shaft wheel studs', Remove and replace drive axle shafts', Inspect and replace drive axle shaft seals bearings and retainers', Measure drive axle flange runout and shaft end play determine necessary action

Name
The student will be able to conduct the diagnosis, inspection, adjustment and repair of four- and all-wheel drive components.

Objective
Diagnose noise vibration and unusual steering concerns determine necessary action', Diagnose constantvelocity CV joint noise and vibration concerns determine necessary action', Diagnose universal joint noise and vibration concerns perform necessary action', Remove and replace front wheel drive FWD front wheel bearing', Inspect service and replace shafts yokes boots and CV joints', Inspect service and replace shaft center support bearings', Check shaft balance and phasing measure shaft runout measure and adjust driveline angles', Inspect adjust and repair shifting controls mechanical electrical and vacuum bushings mounts levers and brackets', Remove and reinstall transfer case', Disassemble service and reassemble transfer case and components', Inspect frontwheel bearings and locking hubs perform necessary action', Check drive assembly seals and vents check lube level', Diagnose test adjust and replace electricalelectronic components of fourwheel drive systems

TAS225 - Electrical III

Overview

Department
Applied Technologies

Course Description
In this course students will: perform charging system diagnosis; perform charging system repair; identify current flow on starting and charging system diagrams through a variety of learning and assessment activities.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
2

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Perform charging system diagnosis

Objective
Perform charging system output test determine necessary action', Diagnose charging system for the cause of undercharge nocharge and overcharge conditions', Inspect adjust or replace generator alternator drive belts pulleys and tensioners check pulley and belt alignment', Remove inspect and install generator alternator', Perform charging circuit voltage drop tests determine necessary action

Name
Perform charging system repair

Objective
Perform charging system output test determine necessary action', Diagnose charging system for the cause of undercharge nocharge and overcharge conditions', Inspect adjust or replace generator alternator drive belts pulleys and tensioners check pulley and belt alignment', Remove inspect and install generator alternator', Perform charging circuit voltage drop tests determine necessary action

Name
Identify current flow on starting and charging system diagrams

Objective
Use wiring diagrams during diagnosis of electrical circuit problems

Requirements

Simple Requirements

A minimum grade of 'C' in Course TAS125

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- TAS125 - Electrical II

TFF108 - Welding Safety & Orientation

Overview

Department
Aviation

Course Description
The primary purpose of this course is to introduce and familiarize new students with the use and safety precautions to consider when using welding related equipment. The equipment in WSU Tech's welding lab compares to what is currently used by Industry. This course will enable a person who has never before used the equipment to set up and use it in an appropriate manner at an entry level and, doing so, meet safety standards. A separate safety exam will be given at the end of demonstrating the use and hazards it presents. Before students can use any piece of equipment on their own, they have to attain a score of 100% on the safety exam. Equipment in the lab that is excluded from the safety training may only be used under direct supervision of an instructor who is within an arm's length away.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to operate equipment commonly found in welding facility.

Objective
20 Variable speed Side sander on pedestal Finishing machine', Floor standing variable speed drill press', Pedestal Grinder with wire wheel and hard disc', Metal cutting Shear Hydraulic', Piranha metal worker with various functions', Horizontal and Vertical Band saw', Electrical safety', Oxygen and Acetylene', Abrasive CutOff saw

Name
The student will be able to demonstrate the safe utilization of equipment commonly found in a welding facility.

Objective
20 Variable speed Side sander on pedestal Finishing machine', Floor standing variable speed drill press', Pedestal Grinder with wire wheel and hard disc', Metal cutting Shear Hydraulic', Piranha metal worker with various functions', Horizontal and Vertical Band saw', Electrical safety', Oxygen and Acetylene', Abrasive CutOff saw

TFF110 - Tap and Die

Overview

Department
Aviation

Course Description
This course provides knowledge and technical skills on taps and dies. Topics include 60 degree thread form, common fastener thread series and markings on taps. The student will learn the process of hand tapping, the process of repairing a thread with a threading die and the process of installing a threaded insert.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the common characteristics of threads

Objective
Define pitch', Define TPI', Identify the sections of a 60 degree thread form', List common fastener thread series

Name
The student will be able to identify the common characteristics of tap

Objective
Identify a hand tap', Identify a helical tap', Identify the sections of tap', Understand the markings on a tap

Name
The student will be able identify the characteristics of hand tapping

Objective
List types of tap wrenches', List proper cutting fluids for tapping different materials', Understand the process of hand tapping

Name
The student will be able to identify the characteristics of threading dies

Objective
List types of threading dies', List the parts of an adjustable threading die', Understand the process of repairing a thread with a threading die

Requirements

Simple Requirements

A minimum grade of 'C' in Course AER106

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AER106 - Aerospace Manufacturing Tooling Orientation

TFF112 - Print Reading

Overview

Department
Aviation

Course Description
Student will learn to identify basic lines, views, and abbreviations used in blueprints, interpret basic 2 D sketches using orthographic projections and blueprints, determine dimensions of features of simple parts, sketch simple parts with dimensional measurements, determine dimensions of a multi-feature part, interpret GDT symbols, frames and datums.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to utilize a production drawing in the shop

Objective
Describe the types of production drawings detail installation and assembly', Describe the elements of detail assembly and installation drawing', Identify what is and is not an assembly', Discuss the common elements of production drawing border title block revision block picture area parts list

Name
The student will be able identify terminology common to blueprints and explain their relationships

Objective
List the basic shapes used on blueprints point and lines surfaces planes angles', Identify line types used on blueprints', Identify the angle types used on blueprints', Explain the relationships that exist between two or more lines surfaces planes angles perpendicular lines right angles parallel lines acute angle obtuse angle complimentary angle supplementary angle', Measure an angle', Identify types of circles and terminology associated with them including concentric eccentric circumference diameter and radius', Explain the relationships that exist between two or more circles concentric circles eccentric circles arc tangent chord straight arc arch between radii', Identify common angles and arcs including straight angle right angle acute angle obtuse angle complementary angle supplementary angle and arc between two radii

Name
The student will be able to compare and contrast the elements of blueprint views

Objective
Explain how blueprints are drawn', Describe pictorial drawings perspective view isometric view oblique view and orthographic drawings', Compare and contrast the differences between perspective isometric and orthographic drawings', Describe orthographic projection including its principles and views', Identify the most common orthographic views top front and right side', Interpret an orthographic projection', Compare and contrast first and third angle projection', Identify auxiliary views including primary secondary and tertiary', Identify additional views including enlarged sectional partial and rotated', Describe the unique characteristics of orthographic views and airplanes including airplane views and reference planes station buttock line water line wing reference planes

Name
The student will be able to successfully demonstrate the ability to recognize various Auxiliary Views

Objective
Explain the term auxiliary view', Identify various auxiliary views', Identify primary and secondary auxiliary views', Complete various auxiliary views

Name
The student will be able to successfully demonstrate the ability to use math as it applies to blueprints

Objective
Identify and define whole numbers fractions and decimal fractions', Add subtract multiply and divide whole numbers', Convert between improper fractions and mixed numbers', Reduce fractions to their lowest terms', Add subtract multiply and divide fractions', Add subtract multiply and divide decimal fractions', Convert fractions to decimal fractions', Convert decimal fractions to fractions

Name
Determine dimensions of features of simple parts

Objective
Solve quality problems using process planning technical knowledge teamwork mathematics and critical thinking', Demonstrate employability skills needed to obtain and retain employment in machine tool and related fields', Describe blueprint line standards including object hidden center dimension extension leader break section phantom stitch cutting plane and viewing plane', Identify the standards of line precedence', Interpret a product based upon a line drawing', Interpret hidden features on a blueprint drawing', Identify other views of a product on the blueprint drawing', Identify the different types of dimensions dimension of size and dimension of position', Describe the components of dimensions extension lines dimension lines and dimension', Identify dimension of angles', Define tolerance and its role', Describe methods of displaying tolerance on a blueprint with dimension separate note title block', Identify the different types of tolerance and their role plus and minus maximum and minimum maximum minimum', Explain the purpose of dimension lines and extension lines', Identify different dimensioning methods used in product drawings including chain and baseline or datum dimensioning arcs and radius typical dimensions and rivet location dimensions

Name
Sketch simple parts with dimensional measurements

Objective
Solve quality problems using process planning technical knowledge teamwork mathematics and critical thinking', Demonstrate employability skills needed to obtain and retain employment in machine tool and related fields

Name
Determine dimensions of a multi-feature part

Objective
Solve quality problems using process planning technical knowledge teamwork mathematics and critical thinking', Demonstrate employability skills needed to obtain and retain employment in machine tool and related fields', Determine the difference between a neck and a groove', Determine the sizes of necks and grooves', Identify common types of slots', Identify type and size of a keyway and keyseat', Identify a flat', Determine the difference between a boss and a pad

Name
Interpret GDT symbols, frames and DATUMs

Objective
Solve quality problems using process planning technical knowledge teamwork mathematics and critical thinking', Demonstrate employability skills needed to obtain and retain employment in machine tool and related fields', Identify the role of symbols on a blueprint', Define GDT

Name
Generate basic drawings using CAD software

Objective
Solve quality problems using process planning technical knowledge teamwork mathematics and critical thinking', Demonstrate employability skills needed to obtain and retain employment in machine tool and related fields', Use CAD and CAM programs to design parts and program manufacturing machines

TFF114 - Introduction to CAD I

Overview

Department
Aviation

Course Description
This course introduces computer-aided drafting (CAD) and examines the hardware that makes up a CAD workstation. It also covers the operating system (Microsoft Windows) that enables the equipment to function as a unit. The course shows how to use AutoCAD to set up drawings and construct lines, circles, arcs, other shapes, geometric constructions, and text. Students will use display and editing techniques as well to obtain information about their drawings and work with drawing files. This course also introduces recommended drafting standards for students to use for properly preparing drawings with AutoCAD. This course also examines dimensioning, blocks and attributes, section views, isometric drawings, multiview layouts, annotative objects, external references, and sheet sets. Students will learn how to use AutoCAD to dimension drawings, create section lines and graphic patterns, design symbols and attributes for multiple use, and create sheet sets. Student drawings will be plotted or printed. This course also covers recommended drafting standards and practices for students to use for properly preparing drawings with AutoCAD.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to apply AutoCAD screen dialog and vocabulary through classroom and laboratory work assignments

Objective
Identify the central processing unit of a CAD system', Identify the input devices of a CAD system', Identify the output devices of a CAD system

Name
The student will be able demonstrate through classroom and laboratory work assignments the ability to manipulate commands in the CAD software

Objective
Identify the commands used for file loading and saving drawing output and environment configuration', Identify the commands used for creating entities', Identify the commands used for editing existing entities', Identify the commands used for entering text on the drawing', Identify the commands used for transforming entities', Identify the commands used for dimensioning the drawing', Demonstrate proper file management techniques', Create text using appropriate style and size to annotate drawings', Create new drawings', Perform drawing set up', Create wireframe andor solid models', Create joined surfaces', Create a fillet or blend between two surfaces', Create feature based geometry for example holes slots and rounds', Apply architectural commands for office drawings

Name
The student will be able to demonstrate through classroom and laboratory work assignments the ability to manipulate entities in the CAD software

Objective
Create a hard copy of the drawing', Exit a CAD application', Establish the drawing environment', Create simple objects', Perform basic editing on existing objects', Enter text on the drawing', Translate scale rotate reflect and replicate a simple object', Dimension a simple object', Apply advanced dimensioning techniques', Control entity color properties', Use layering techniques', Explain coordinate systems', Draw with coordinate systems', Compute variety of text arrangements', Illustrate prints with auxiliary views and layer controls', Illustrate basic dimensioning variables', Control line types', Create and edit polylines', Plot drawings on media using correct layout and scale', Utilize geometry editing commands for example trimming extending and scaling', Utilize nongeometry editing commands for example text and drawing format', Save drawings to storage devices

Name
The student will be able to demonstrate through classroom and laboratory work assignments the ability to manipulate line construction functions in the CAD software

Objective
Control line types, Create and edit polylines, Plot drawings on media using correct layout and scale

Name
The student will be able to demonstrate through classroom and laboratory work assignments the ability to manipulate system variables in the CAD software

Objective
Utilize geometry editing commands, for example: trimming, extending, and scaling, Utilize non-geometry editing commands, for example: text and drawing format, Save drawings to storage devices

Name
The student will be able to demonstrate time management skills in the laboratory Status

Objective
Identity role of planning in time management, Identify planning tools including current technologies, Identify role of prioritizing in time management, Demonstrate prioritizing techniques, Demonstrate planning skills

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- MMG113 - Print Reading

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- TFF112 - Print Reading

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- AVC112 - Blueprint Reading

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- MCD104 - Blueprint Reading for Drafting

TFF115 - Hand and Power Tools for Aerospace Tooling

Overview

Department
Aviation

Course Description
This course provides technical knowledge on hand power tools used by a toolmaker in the aerospace industry. The student will learn about die grinders, disco grinders and magnetic drills.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
1

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the characteristics of files used in aerospace tooling

Objective
Define and explain the file', Classify a file by it coarseness', Classify a file by its cut pattern', Identify the correct file for the job', Demonstrate basic filing techniques

Name
The student will be able to identify the characteristics of reamers used in aerospace tooling

Objective
Define and explain the hand reaming tool', Identify the different types of hand reamers', Define the major components of a reamer', Demonstrate how to ream a drilled hole

Name
The student will be able to identify the characteristics of lapping tools used in aerospace tooling

Objective
Define and explain the lapping tool', Identify the different types of lapping tools', Define the major components of a lapping tool', Demonstrate how to lap a drilled hole

Name
The student will be able to identify the characteristics of hammers used in aerospace tooling

Objective
Define and explain hammers', Identify the different types of hammers', Define the major components of a hammer', Define and explain punches', Identify the different types of punches', Define the major components of a punch', Demonstrate how to use a punch

Name
The student will be able to identify the characteristics of pliers and ratchets used in aerospace tooling

Objective
Define and explain a pair of pliers', Identify the different types of pliers', Define the major components of a pair of pliers', Define and explain ratchets', Identify the different types of ratchets', Define the major components of a ratchet

Name
The student will be able to identify the characteristics of scribes used in aerospace tooling

Objective
Define and explain the scribe', Identify the different types of scribes', Demonstrate how to use a scribe

Name
The student will be able to identify the characteristics of drill blocks used in aerospace tooling

Objective
Define and explain drill block', Identify the different types of drill blocks', Define the major components of drill blocks', Demonstrate how to use a drill blocks

Name
The student will be able to identify the characteristics of die grinders used in aerospace tooling

Objective
Define die grinder', Describe how die grinders are rated', State the impact of RPM rating on the grinder performance', Define mandrel', List some common die grinder bits

Name
The student will be able to identify the characteristics of disc grinders used in aerospace tooling

Objective
Define disc grinder', Describe the uses of disc grinder', List the basic components of a disc grinder', List the common grinding discs', List the steps required for proper grinding', Define magnetic drill

Name
The student will be able to identify the characteristics of magnetic drills used in aerospace tooling

Objective
List the common varieties of magnetic drills', List the components of magnetic drills', Describe the steps for properly using a magnetic drill

Name
The student will be able to identify the characteristics of punches used in aerospace tooling

Objective
Define and explain punches, Identify the different types of punches, Define the major components of a punch, Demonstrate how to use a punch

Requirements

Simple Requirements

A minimum grade of 'C' in Course TFF110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- TFF110 - Tap and Die

TFF117 - Precision Measuring

Overview

Department
Aviation

Course Description
This course is designed to assist multiple technical training disciplines with the proper operation, calibration, and measuring technique’s required for utilizing precision measurement equipment effectively. Both SAE and metric measuring instruments will be covered; including steel rules, feeler gauges, precision straight edge, calipers, inside and outside micrometers, angle measurement, small hole gauges, telescoping gauges and dial indicators.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will demonstrate skills associated with Certification in Tape and Rule Measurement

Objective
Understand basic safety guidelines as related to the use of precision measuring tools in shops and laboratories', Describe the basic design of various tapes rules and calipers to include features sizes variations and the technology behind the tool', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks on various tapes rules and calipers', Demonstrate application of various tapes rules and calipers to include proper usage obtaining and reading measurements accurately and performing tool maintenance

Name
The student will demonstrate skills associated with Certification in Slide Caliper Measurement

Objective
Understand basic safety guidelines as related to the use of precision measuring tools in shops and laboratories', Describe the basic design of various dial calipers to include features sizes variations and the technology behind the tool', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks on various dial calipers', Demonstrate application of various dial calipers to include proper usage obtaining and reading measurements accurately and performing tool maintenance

Name
The student will demonstrate skills associated with Certification in Micrometer Measurement

Objective
Understand basic safety guidelines as related to the use of precision measuring tools in shops and laboratories', Describe the basic design of various micrometers small hole gages and telescoping gages to include features sizes variations and the technology behind the tool', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks on various micrometers small hole gages and telescoping gages', Demonstrate application of various micrometers small hole gages and telescoping gages to include proper usage obtaining and reading measurements accurately and performing tool maintenance

Name
The student will demonstrate all skills associated with Certification in Gage Measurement

Objective
Understand basic safety guidelines as related to the use of precision measuring tools in shops and laboratories', Describe the basic design of depth gages screw pitch gages and thickness gages', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks on depth gages screw pitch gages and thickness gages', Demonstrate application of depth gages screw pitch gages and thickness gages to include proper usage obtaining and reading measurements and performing tool maintenance

Name
The student will demonstrate all skills associated with Certification in Angle Measurement

Objective
Understand basic safety guidelines as related to the use of precision measuring tools in shops and laboratories', Describe the basic design of the steel protractor and combination square set to include features sizes variations and the technology behind the tool', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks on the steel protractor and combination square set', Demonstrate application of the steel protractor and combination square set to include proper usage obtaining and reading measurements accurately and performing tool maintenance

Name
The student will demonstrate all skills associated with Certification in Dial Indicator and Bore Gage Measurement

Objective
Understand basic safety guidelines as related to the use of precision measuring tools in shops and laboratories', Describe the basic design of various dial indicators and bore gages to include features sizes variations and the technology behind the tool', Describe the difference between calibration and field check determine when they should be done and be able to properly demonstrate field checks on various dial indicators and bore gages', Demonstrate application of various dial indicators and bore gages to include proper usage obtaining and reading measurements accurately and performing tool maintenance

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- MNF113 - Blueprint Basics For Manufacturing

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- TFF112 - Print Reading

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- AVC112 - Blueprint Reading

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- MMG113 - Print Reading

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- MCD104 - Blueprint Reading for Drafting

TFF118 - Welding Applications

Overview

Department
Aviation

Course Description
In this course student will learn the basic elements of SMAW, GMAW and GTAW. Additionally, students learn the equipment, processes and skills associated with welding cutting equipment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to demonstrate basic skills in shield metal arc welding

Objective
Identify all equipment used in shield metal arc welding', Compare and contrast filler metal', Select appropriate filler metal for the weld', Utilize appropriate measurement tool', Demonstrate a Surfacing Weld', Demonstrate Fillet Weld', Cut metal using Power Equipment', Demonstrate General Welding Safety Practices', Identify duty cycles and general operational procedures of SMAW equipment

Name
The student will be able to demonstrate basic skills in gas tungsten arc welding

Objective
Identify all equipment used in gas tungsten arc welding', Utilize appropriate measurement tool', Demonstrate a GTAW Surfacing Weld', Demonstrate a Fillet Weld', Identify filler metals', Cut metal using Power Equipment', Demonstrate General Welding Safety Practices

Name
The student will be able to demonstrate basic skills in gas metal arc welding

Objective
Identify all equipment used in gas metal arc welding', Utilize appropriate measurement tool', Demonstrate a GMAW Surfacing Weld', Demonstrate a GMAW Fillet Weld', Demonstrate General Welding Safety Practices', Cut metal using Power Equipment

Name
The student will be able to distinguish different types of Oxygen cutting equipment and processes used in the welding trade

Name
The students will demonstrate proper operation of cutting equipment used in the welding industry

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- CWG105 - Welding Safety OSHA and Orientation

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- TFF108 - Welding Safety & Orientation

TFF120 - Metrology

Overview

Department
Aviation

Course Description
Students will learn the proper operation, field verification, and measuring techniques utilized in precision machining, manufacturing, and tooling in this course. The course will also expose the student to software applications used in the industry. Measuring instruments will be covered in Primary standards, Flexible Measuring Instruments, Support and Layout, Height Measuring Tools, and Laser Tracking and Romer Arm usage and software.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The Student will demonstrate all skills associated with Certification in Primary Standards

Name
The Student will demonstrate all skills associated with Certification in Flexible Measuring Tools

Name
The Student will demonstrate all skills associated with Certification in Support and Layout

Name
The Student will demonstrate all skills associated with Certification in Height Measuring Tools

Name
The Student will demonstrate an understanding of usage and operating software associated with a Laser Tracking device

Name
The Student will demonstrate an understanding of usage and operating software associated with a Inspection Arm

Requirements

Simple Requirements

A minimum grade of 'C' in Course MCD106

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MCD106 - Precision Measuring

TFF125 - Tooling Capstone

Overview

Department
Aviation

Course Description
This course provides the specific technical knowledge and skills necessary to utilize hand and power tools to create a drill jig. This course emphasizes the importance of critical features, the process of permanent assembly and the role of toolmakers in the manufacturing environment.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
120

Billing Hours

Billing Hours
Min:
4

Lab Hours

Lab Hours Min:
120

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to identify the need for creating tools in the aerospace industry

Objective
Understand the need for new tools', List some common sources of information for a toolmaker', Understand the role of the tooling engineer in the making of a tool', Understand the role of the toolmaker

Name
The student will be able identify the process used to create a tool

Objective
Identify critical features of a tool', Define removability', Identify critical features or requirements on an engineering drawing

Name
The student will be able to identify the role of performance assemblies

Objective
Define a permanent assembly', Understand the process of making a permanent assembly with screws and dowel pins', Understand the function of screws and dowel pins in a permanent assembly

Name
The student will be able identify the critical features the tooling process

Objective
Understand the purpose of precision locators', Understand how removability is attained in building a drill jig

Name
The student will be able identify the final details in tooling process

Objective
Understand how to layout a clamp for installation', Understand the importance to deburring

Name
The student will be able to demonstrate tooling techniques by creating a series of 4 projects

Objective
Demonstrate skills associated with hand drilling operations - Project 1', Demonstrate skills associated with hand drill and drill press operations - project 1', Demonstrate skills associated with precision drilling operations - project 3', Demonstrate skills associated with removable sub assembly - Project 4', Demonstrate tool building skills by creating Drill Fixture - Project 5

Requirements

Simple Requirements

A minimum grade of 'C' in Course AER150

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AER150 - Assembly Overview I

A minimum grade of 'C' in Course TFF115

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- TFF115 - Hand and Power Tools for Aerospace Tooling

TFF130 - Machining I

Overview

Department
Aviation

Course Description
Students will learn to conduct job hazard analysis for conventional mills and lathes, develop math skills for machine tool operations, perform preventive maintenance and housekeeping on conventional mills and lathes, select work holding devices for mills, lathes and other machine tools, calculate feeds and speeds, remove material using milling and turning processes, align milling head, use a vertical mill to center drill, drill and ream holes, change tools and tool holders on milling machines, and maintain saws and grinders.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to conduct job hazard analysis (JHA) for conventional mills and lathes

Name
The student will be able to develop math skills for machine tool operations

Name
The student will be able to convert metric/English measurements

Name
The student will be able to perform preventive maintenance on manual lathes

Name
The student will be able to select work holding devices

Name
The student will be able to calculate cutting speeds and feeds for an assigned project

Name
The student will be able to perform operations using tailstock

Name
The student will be able to set speeds, feeds and depth of cut on milling machines

Name
The student will be able to perform O.D. facing and turning operations

Name
The student will be able to perform maintenance on vertical/horizontal milling machines

Name
The student will be able to change tools and holders on milling machines

Name
The student will be able to align vertical mill head

Name
The student will be able to use a vertical mill to center drill, drill and ream holes

Name
The student will be able to remove material using milling and turning processes

Name
The student will be able to machine parts square on milling machines

Name
The student will be able to maintain saws

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

TFF135 - Direct & Alternating Current

Overview

Department
Aviation

Course Description
This course introduces direct current (DC) concepts and applications and the theory and application of varying sense wave voltages and current. Topics include: electrical principles and laws; batteries; DC test equipment; series, parallel and simple combination circuits; magnetism, AC wave generation, AC test equipment, inductance, capacitance, and basic transformers, and laboratory procedures and safety practices.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to discuss the terminology, principles, and applications of DC circuits.

Objective
Understanding basic Electrical Safety rules', Recognizing Symbols and reading Schematics', Identifying the relationship between circuit voltage current and resistance', Differentiating between Series and Parallel circuits', Identifying types of switches and switching concepts', Using Ohms Law as it applies to circuit resistance current and voltage', Calculating resistance and power in series seriesparallel and parallel resistive circuits', Calculating current in a series circuit', Understanding current flow in a series and seriesparallel resistive circuit', Understanding voltage in a series and seriesparallel resistive circuit', Identifying and applying rheostats potentiometers voltage current and voltagecurrent dividers', Using a DC ammeter ohmmeter and voltmeter', Troubleshooting DC circuits

Name
The student will be able to discuss the terminology, principles, and applications of AC circuits.

Objective
Understanding what Magnetism is and how magnetic fields are created', Understanding what an electromagnet is', Basic Oscilloscope and AC Waveform Generator use', Measuring amplitude AC voltage current and impedance with an Oscilloscope', Measuring and setting Frequency', Understanding the fundamentals of Inductive Reactance and Impedance', Understanding how magnetism applies to the operation of solenoids and relays', Apply define and explain transformer turns and voltage ratios', Explain transformer stepupstepdown theory and demonstrate secondary output', Determine capacitance in series and parallel circuits', Explain the fundamentals of capacitive reactance', Recognize Series and Parallel Capacitive Reactance circuits', Troubleshoot basic AC circuits

Name
Isolate, identify, and test circuits containing semiconductor devices.

Objective
Identify Semiconductor components such as resistors linear potentiometers power transformers LED indicators silicon and Zener diodes and bridge rectifiers', Demonstrate control of a semiconductor switch', Explain diode and DC characteristics', Discuss halfwave rectification', Apply fullwave diode bridge rectification', Explain power supply filtering and diode waveshaping', Describe the function of a voltage doubler', Describe a Zener Diode and its use in voltage regulation', Test the junctions of a transistor', Explain the function of a PNP transistor current control circuit', Discuss emitterbased bias potentials and the differences between collector current versus base bias', Measure transistor voltages and identify transistor load lines', Troubleshoot Semiconductor devices in electronic circuits

Requirements

Simple Requirements

A minimum grade of 'C' in Course AVC110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- AVC110 - Safety/OSHA 10

TFF140 - Machining II

Overview

Department
Aviation

Course Description
Students learn to perform basic trigonometric functions, and perform other procedures such as I.D. boring and facing operations, planning a sequence for machining operations, aligning work pieces, use work holding devices, jigs and fixtures, performing threading operations on lathes, machining keyways on a vertical mill, inspecting and dressing grinding wheels, performing O.D. & I.D. threading operations, performing O.D. & I.D. tapering operations, machining parts using milling cutters and milling machines, and tapping holes on a vertical mill.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The student will be able to perform basic trigonometric functions

Name
The student will be able to select cutting tools

Name
The student will be able to perform I.D. boring and facing operations

Name
The student will be able to machine angles using a vertical mill

Name
The student will be able to plan a sequence for milling operations

Name
The student will be able to align workpiece, work holding devices, jigs and fixtures on milling machines

Name
The student will be able to finish holes using countersinks, counterbores, reamers and taps

Name
The student will be able to perform preventive and housekeeping maintenance on a lathe

Name
The student will be able to perform O.D. and I.D. threading operations

Name
The student will be able to perform O.D. and I.D. taper operations

Name
The student will be able to establish zero reference point for work piece to be machined

Name
The student will be able to machine parts using milling cutters and milling machines

Name
The student will be able to tap holes on a vertical mill

Name
The student will be able to machine keyways on a vertical mill

Name
The student will be able to inspect and dress grinding wheels

Requirements

Simple Requirements

A minimum grade of 'C' in Course TFF130

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- TFF130 - Machining I

TFF150 - Fixture Construction

Overview

Department
Aviation

Course Description
In this course, students will have the opportunity to link classroom/lab theory with an experimental learning opportunity. Through direct observation, reflection and evaluation, students gain an insight into the internship site's work, mission, and audience, how these relate to their academic study, as well as the organization's position in the broader industry or field. Students will produce a critical reflection on their internship experience demonstrating how they have addressed specific learning goals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
225

Billing Hours

Billing Hours
Min:
5

Other Hours

Other Hours
Min:
225

Course Learning Outcomes

Learning Outcomes

Name
Applied your knowledge, skills, experience to a work environment;

Name
Acquired new learning through challenging and meaningful activities;

Name
Reflected on the content and process of the learning experience

Name
Advocated for your own learning in alignment with internship goals;

Name
Demonstrated professional skills in the workplace;

Name
Built and maintained positive professional relationships

Name
Demonstrated awareness of community and/or organizational issues;

Name
Identified, clarified and/or confirmed professional direction as it relates to your academic studies and future career path;

Name
Developed self-understanding, self-discipline, maturity and confidence;

Name
Developed strong networking/mentoring relationships

TFF155 - Tooling and Fixture Fabrication Capstone

Overview

Department
Aviation

Course Description
In this project-based course, students will apply the skills and knowledge acquired throughout the Tooling Fixture Fabrication program to a real-world project. In partnership with industry, students will fabricate a tooling fixture designed to meet the customer needs. Students will produce a critical reflection on their capstone experience demonstrating how they have addressed specific learning goals. A successful project will include a project presentation to faculty and fellow students.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
225

Billing Hours

Billing Hours
Min:
5

Other Hours

Other Hours
Min:
225

Course Learning Outcomes

Learning Outcomes

Name
Applied your knowledge, skills, experience to your capstone project

Name
Acquired new learning through challenging and meaningful activities

Name
Reflected on the content and process of the learning experience

Name
Advocated for your own learning in alignment with capstone goals

Name
Demonstrated professional skills when working with customer

Name
Built and maintained positive professional relationships

Name
Demonstrated awareness of community and/or organizational issues

Name
Identified, clarified and/or confirmed professional direction as it relates to your academic studies and future career path

Name
Developed self-understanding, self-discipline, maturity and confidence

Name
Developed strong networking/mentoring relationships

THR100 - Theatre Appreciation

Overview

Department
General Education

Course Description
Upon completion of this class, the student will know the origin of theater, as well as the major historical periods of theatrical development including Greek, Medieval and Shakespearian. Students will acquire a basic understanding of different aspects of theater and play production, including an awareness of technical theater, designing for the stage, dramatic literature and structure. The student will become familiar with what constitutes quality acting and playwriting.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Classify and define theatre terminology. Concepts and elements

Objective
Establish a working definition of theatre', Classify plays according to genre', Analyze the structure of a play by identifying its components', Understand different types of stages and the appropriate scenery for a specific space for designing and theatrical theater

Name
Analyze and evaluate plays and performances

Objective
Appraise modern professional playwriting skills and rewards', Employ basic playwriting skills by developing an original monologue', Analyze the qualities of a fine play', Become familiar with the lives and works of well known playwrights

Name
Identify and describe historical and cultural contexts of theatre

Objective
Trace the beginnings of Western Theater to Greece', Identify and explain the continuing impact of the Greeks on todays theater', Analyze plot and character in three early plays Prometheus Bound Oedipus and Antigone', Explain Medieval Cycle Plays', Explore the impact of the Renaissance on Europe in general and on theatre specifically', Identify the elements that allowed theatre to flourish during the Elizabethan Age

Name
Explain the collaborative nature of theatre

Objective
Understand the collaboration that occurs between theatre artists and audience', Understand the nature of the Commedia dell Arte Theater traveling troupes including their inclusion of women in performance

UAS180 - Ground School

Overview

Department
Aviation

Course Description
Ground school is a structured course designed to help students prepare for the Part 107 test (UAG). The primary focus is on providing the necessary knowledge required to pass the exam. Topics covered include airspace, weather, regulations, airport operations, and various other aspects. Through this course, students will gain the information needed to approach the Part 107 test with confidence and competence.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Students will learn to operate in the National Airspace system.

Name
Students will learn to read weather reports and to understand weather phenomenon related to aviation.

Name
Students will gain knowledge of airport operations.

Name
Students will learn sectional chart information.

Name
Students will learn human factors and crew resource management.

Name
Students will learn Aeronautical Decision Making.

UAS185 - Multi-Rotor Flight

Overview

Department
Aviation

Course Description
The Multi-Rotor Flight course is designed to familiarize students with the manual operation of quadcopter-style aircraft. Mastering basic flight maneuvers is fundamental to developing proficiency as a pilot and establishing a secure flying environment. Through hands-on training and practical exercises, students will gain the skills necessary to confidently control multi-rotor systems and ensure safe flight operations.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Students will learn to conduct preflight.

Name
Students will learn WSU Tech UAS Standard Operating Procedures.

Name
Students will develop manual flying skills with multi-rotor aircraft.

Name
Students will learn the basics of risk mitigation.

Requirements

Simple Requirements

A minimum grade of 'C' in Course UAS180

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- UAS180 - Ground School

UAS190 - Videography

Overview

Department
Aviation

Course Description
UAS Videography is designed to enhance our students' proficiency in pre-visualizing aerial shots, capturing high-quality video footage, and crafting refined final projects. Through the utilization of cutting-edge drone technology, this course offers students the ability to create unique projects to add to their portfolio. Furthermore, it provides a strong foundation in video editing skills that can be seamlessly applied across a diverse range of industries. UAS Videography represents a thriving and evolving market, offering abundant prospects for exploration and career advancement.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
75

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
45

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Students will gain an understanding in storyboarding shoots and creating ideas of what shots need to be captured.

Name
Students will be able to perform different flying techniques/maneuvers used in drone videography.

Name
Students will gain knowledge in industry standard video editing software.

Name
Students will learn different formats to cut videos into.

UAS220 - UAS Multi-Rotor Maintenance

Overview

Department
Aviation

Course Description
The Multi-Rotor Maintenance course provides a foundational understanding of DC electronics, soldering techniques, multi-rotor components, and the assembly of quadcopters. Geared towards beginners and enthusiasts, this course offers a practical exploration of the essential skills required for maintaining and constructing multi-rotor aerial vehicles.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
60

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Students will learn to apply Ohms Law across different types of circuits.

Name
Students will become familiar with multi-rotor components and functions.

Name
Students will gain practical experience in soldering electrical components.

Name
Students will gain practical experience assembling a multi-rotor.

Requirements

Simple Requirements

A minimum grade of 'C' in Course UAS180

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- UAS180 - Ground School

UAS225 - Post-Processing

Overview

Department
Aviation

Course Description
The post-processing phase is a pivotal aspect of drone operation, capable of defining the success or failure of a project. Acquire fundamental skills in converting photos into actionable data, primed and ready for delivery to your clients.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
45

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
45

Course Learning Outcomes

Learning Outcomes

Name
Students will gain knowledge in Pix4dmapper.

Name
Students will gain a basic understanding of how to use ArcGIS Pro.

Name
Students will learn about Vector Data.

Name
Students will learn about Raster Data.

Requirements

Simple Requirements

A minimum grade of 'C' in Course UAS180

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- UAS180 - Ground School

UAS235 - UAS Small Business Fundamentals

Overview

Department
Aviation

Course Description
Covering quoting, planning, execution, post-processing, and final product delivery, this class provides a pragmatic experience simulating the role of a small business owner. Explore the practical aspects of delivering a service to clients with a focus on quality.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Students will learn to quote a project from a client.

Name
Students will gain experience in setting up a flight and planning the operation.

Name
Students will learn about processing the data once collected.

Name
Students will present their finished data to the client.

Requirements

Simple Requirements

Enrolled in Course UAS185

Type
Prerequisite

Enroll in the following Courses:
- UAS185 - Multi-Rotor Flight

Enrolled in Course UAS225

Type
Prerequisite

Enroll in the following Courses:
- UAS225 - Post-Processing

UAS240 - Multi-Rotor Instructor

Overview

Department
Aviation

Course Description
Transitioning from student to instructor, it's now your turn to impart the proper techniques and practices for safely operating a multi-rotor. This class delves into the concepts behind the Fundamentals of Instructing (FOI) and provides hands-on practice in the real world, guiding your own students through the learning process. Remember, as the saying goes, 'the best way to become an expert on a topic is to teach it!

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
5

Contact Hours

Contact Hours Min:
90

Billing Hours

Billing Hours Min:
5

Lecture Hours

Lecture Hours Min:
60

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Students will apply FAA Fundamentals of Instruction principles to real-world aviation or UAS training scenarios.

Name
Students will design, deliver, and assess multi-rotor flight instruction that demonstrates mastery of instructional methodology and flight safety principles.

Name
Students will develop and execute instructional flight demonstrations that showcase both technical proficiency and effective teaching methodology.

Name
Students will evaluate operational environments and apply risk-management frameworks to identify, assess, and mitigate hazards prior to flight operations.

Name
Students will interpret, model, and instruct WSU Tech UAS Standard Operating Procedures to ensure standardization and regulatory compliance across flight operations.

Requirements

Simple Requirements

A minimum grade of 'C' in Course UAS185

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- UAS185 - Multi-Rotor Flight

UAS250 - Advanced Post-Processing

Overview

Department
Aviation

Course Description
In the domain of advanced drone operations, mastery of the intricate post-processing phase emerges as a critical factor, wielding the nuanced capability to decisively shape the trajectory of a project. Cultivate a refined expertise in the sophisticated craft of transmuting captured imagery into meticulously processed, actionable data, meticulously primed for seamless delivery to discerning clients. This advanced-level course delves into the intricacies and cutting-edge methodologies of post-processing, ensuring the acquisition of highly specialized skills requisite for navigating the dynamic terrain of advanced drone technology.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
5

Contact Hours

Contact Hours
Min:
90

Billing Hours

Billing Hours
Min:
5

Lecture Hours

Lecture Hours
Min:
60

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Students will use the advanced features of Pix4dMapper.

Name
Students will complete projects using ArcGIS.

Name
Students will learn 3D modeling techniques.

Name
Students will demonstrate the use of several post-processing software.

Requirements

Simple Requirements

A minimum grade of 'C' in Course UAS225

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- UAS225 - Post-Processing

UAS255 - Advanced Payloads

Overview

Department
Aviation

Course Description
Delve into the complexities of LiDAR, Thermal, and Multispectral payloads, examining how these advanced technologies might shape the future landscape of drone technology.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Students will gain experience with a Thermal Camera.

Name
Students will gain experience with Multi-Spectral Camera.

Name
Students will gain experience with LiDAR Sensors.

Name
Students will learn about different software needed to work with these types of data.

UAS260 - Fixed-Wing Construction

Overview

Department
Aviation

Course Description
Assembling a fixed-wing UAS proves to be a satisfying experience, with each step—from cutting and gluing to soldering parts—demanding meticulous attention to detail. The focus on precision throughout the process ensures the creation of a well-crafted, finished product, ready to take flight.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
3

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
3

Lecture Hours

Lecture Hours
Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Students will demonstrate soldering electrical components.

Name
Students will learn about Fixed-wing aerodynamics.

Name
Students will work to construct their aircraft using specific techniques.

Name
Students will learn to cover aircraft using laminate.

Name
Students will demonstrate aircraft functions during flight testing.

UAS267 - Advanced UAS Operations

Overview

Department
Aviation

Course Description
This course provides students with advanced training in UAS operations using aircraft designed for long-range, high-endurance, and complex mission profiles. Emphasis is placed on preparing for operations that move toward Beyond Visual Line of Sight (BVLOS), including the use of fixed-wing and hybrid platforms, extended flight planning, and advanced ground control systems. Students will learn the technical and regulatory considerations of operating larger and more capable UAS, with a strong focus on safety, redundancy, and mission execution in challenging environments. Practical training will highlight how advanced aircraft can expand capabilities across industries such as infrastructure inspection, agriculture, logistics, and environmental monitoring.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Aircraft Platform Proficiency, Differentiate and operate advanced UAS platforms with confidence

Objective
Demonstrated safe takeoff, navigation, and recovery of multiple aircraft types

Name
Advanced Mission Planning, Plan long-range missions that account for environmental and regulatory constraints

Objective
Submission and execution of a detailed mission plan with contingencies

Name
Safety and Risk Management in Extended Operations,Apply advanced safety and compliance procedures in extended or near-BVLOS operations

Objective
Completion of risk mitigation plan and successful safety audit

Name
Operational Evaluation and Debrief,Evaluate operational success and identify areas for future efficiency

Objective
Submission of mission reports with analysis of aircraft performance and improvements

Requirements

Simple Requirements

Prerequisite: UAS 255

Type
Completion Requirement

Complete ALL of the following Courses:
- UAS255 - Advanced Payloads

UAS273 - Capstone

Overview

Department
Aviation

Course Description
Utilize the culmination of your UAS knowledge in this capstone class, crafting a project that effectively encapsulates all you've learned. Develop a compelling project to showcase to friends, family, and, notably, future employers. This course provides the opportunity to apply and demonstrate the depth of your UAS expertise, leaving a lasting impression through a finely executed and comprehensive project.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
180

Billing Hours

Billing Hours
Min:
4

Other Hours

Other Hours
Min:
180

Course Learning Outcomes

Learning Outcomes

Name
Students will develop a plan and goals to accomplish along the course of their project.

Name
Students will present updates to their advisor and keep them updated on goals.

Name
Students will compile the research they did into a short paper to present to their advisor.

Name
Students will present their completed project to the advisor and other audience members at the completion of the semester.

Name
Students will perform a reflection on their project once completed and presented.

Requirements

Simple Requirements

A minimum grade of 'C' in Course UAS240

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- UAS240 - Multi-Rotor Instructor

A minimum grade of 'C' in Course UAS250

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- UAS250 - Advanced Post-Processing

UAS275 - Internship

Overview

Department
Aviation

Course Description
Translate your UAS skills into real-world workplace experience. In this course, seamlessly integrate an internship with your college program, earning both valuable credits and practical knowledge. Maximize the opportunity to gain hands-on experience and financial compensation, establishing a bridge between academic learning and professional application.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
180

Billing Hours

Billing Hours
Min:
4

Other Hours

Other Hours
Min:
180

Course Learning Outcomes

Learning Outcomes

Name
Students will work in an environment that pertains to their field of study.

Name
Students will gain practical experience in real world workplace environments.

Name
Students will demonstrate effective communication with management and coworkers.

Name
Students will demonstrate effective time management and organizational skills.

Name
Students will present reflective information to their advisor during the internship and once the internship is finished.

Requirements

Simple Requirements

A minimum grade of 'C' in Course UAS240

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- UAS240 - Multi-Rotor Instructor

A minimum grade of 'C' in Course UAS250

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- UAS250 - Advanced Post-Processing

VET101 - Introduction to Veterinary Nursing

Overview

Department
Health Sciences

Course Description
This course will introduce learners to the field of veterinary medicine, focusing on the specific roles and responsibilities of the veterinary nurse. Learners will be introduced to the historical aspects of veterinary medicine and the duties of the nurse including ethics, common animal breeds, safety, and first aid. This course also introduces the basic principles of nursing care, including clear and compassionate communication with owners. This course also gives a basic overview of medical terminology, anatomy/physiology and pathology. It will also introduce the basic principles of animal science, specifically as they relate to the role of a veterinary nurse.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
30

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The learner will analyze the ethical, governmental and legal responsibilities of the veterinary nursing profession.

Objective
Summarize the role of the veterinary technician within the veterinary health care team Explain the history legal issues and ethics of veterinary medicine', Recognize and identify legal boundaries of veterinary health care team members', Identify career opportunities within the field of the veterinary technician profession', Summarize the credentialing process need for continuing education credits and the importance of professional organizations', Demonstrate effectiveprofessional communication techniques with veterinary team members and with ownerspatients', Explain common safety issues and protocols in veterinary medicine', Provide examples of professional conduct in the workplace', Explain how to apply crisis interventiongrief management skills with owners', Respect and protect the confidentiality of client and patient information', Define the VetPatientClient relationship and the legalities related to it

Name
The learner will integrate principles of veterinary nursing to explain animal health and husbandry practices.

Objective
Develop a basic understanding of the role of livestock in agriculture US and global and differentiate between livestock and companion animals and their owners', Summarize basic concepts and principles of animal nutrition growth health behavior reproduction and genetics as well as practical commercial applications such as ration formulation disease prevention artificial insemination genetic selection and crossbreeding systems', Identify common small animal breeds and common health problems associated with individual breeds', Summarize preventative health measures for veterinary patients', Develop understanding of common behavior issues in veterinary patients', Explain the history of animal domestication', Identify the significance of animal behaviors based upon observation and critical reasoning

Name
The learner will interpret and apply medical terminology, anatomy/ physiology, and pathology concepts to veterinary nursing contexts.

Objective
Define prefix suffix and root words as they relate to medical terminology', Differentiate between the types of organ systems of different classes of animals', Define pathology and give a brief overview of parasites and other common ailments of animals

Name
The learner will evaluate the human-animal bond and assess its implications for veterinary nursing care.

Objective
Understand the importance of the human animal bond

Requirements

Simple Requirements

A minimum grade of 'C' in the following

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- BIO110 - Principles of Biology
- CHM110 - General Chemistry
- ENG101 - Composition I
- SPH101 - Public Speaking
  OR SPH111 - Interpersonal Communication

Complete ALL of the following Course Sets:

- Math Elective

Enrolled in the following

Type
Corequisite

Enroll in the following Courses:

- VET110 - Veterinary Anatomy and Physiology
- VET115 - Veterinary Clinical Pathology I
  OR VET116 - Laboratory and Diagnostic Skills
  OR VET117 - Veterinary Clinical Pathology I Part 2
- VET140 - Veterinary Pharmacology
  OR VET141 - Veterinary Assisting II
  OR VET142 - Veterinary Pharmacology Part 2
- VET200 - Veterinary Professional Wellness

VET102 - Introduction to Veterinary Assisting/Animal Science

Overview

Department
Health Sciences

Course Description
This course will introduce learners to the field of veterinary medicine and animal science, focusing on the specific roles and responsibilities of the veterinary assistant. Learners will be introduced to the basic principles of animal handling and care, common animal breeds, safety in the veterinary setting and first aid. This course also gives an overview of veterinary medical terminology.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
1

Contact Hours

Contact Hours Min:
30

Billing Hours

Billing Hours Min:
1

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The learner will gain overview of veterinary medicine/animal science.

Name
The learner will gain overview of common small animal breeds.

Name
The learner will demonstrate understanding of humane handling of small animals.

Name
The learner will demonstrate understanding of veterinary workplace safety.

VET103 - Introduction to Veterinary Nursing Part 2

Overview

Department
Health Sciences

Course Description
Intro to Veterinary Nursing: This course is designed for students who have completed VET 102 Introduction to Veterinary Assisting/Animal Science and have been accepted into the Veterinary Nursing program. This course will introduce learners to the field of veterinary medicine, focusing on specific roles and responsibilities of the veterinary technician. Students will be introduced to the historical aspects of veterinary medicine and the duties of the technician including ethics. This course introduces the basic principles of nursing care, including clear and compassionate communication with owners. This course also gives a basic overview of medical terminology, anatomy/physiology, and pathology. It will introduce the basic principles of animal science, specifically as they relate to the role of the veterinary technician.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
2

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The learner will gain an overview of the Veterinary Nurse profession and Associated Ethics

Objective
Summarize the role of the veterinary technician within the veterinary health care team Explain the history legal issues and ethics of veterinary medicine', Recognize and identify legal boundaries of veterinary health care team members', Identify career opportunities within the field of the veterinary technician profession', Summarize the credentialing process need for continuing education credits and the importance of professional organizations', Demonstrate effectiveprofessional communication techniques with veterinary team members and with ownerspatients', Explain common safety issues and protocols in veterinary medicine', Provide examples of professional conduct in the workplace', Explain how to apply crisis interventiongrief management skills with owners', Respect and protect the confidentiality of client and patient information', Define the VetPatientClient relationship and the legalities related to it

Name
The learner will demonstrate understanding of fundamental principles in animal anatomy/physiology, medical terminology, and pathology.

Objective
Define prefix suffix and root words as they relate to medical terminology', Differentiate between the types of organ systems of different classes of animals', Define pathology and give a brief overview of parasites and other common ailments of animals

Name
The learner will demonstrate an understanding of the bond between humans and animals.

Objective
Understand the importance of the human animal bond

Requirements

Simple Requirements

A minimum grade of 'C' in the following

Type
Prerequisite

Complete ALL of the following Courses:
- VET102 - Introduction to Veterinary Assisting/Animal Science
- SPH101 - Public Speaking

Enrolled in the following

Type
Corequisite

Enroll in the following Courses:
- VET110 - Veterinary Anatomy and Physiology
- VET115 - Veterinary Clinical Pathology I
  OR VET116 - Laboratory and Diagnostic Skills
- VET117 - Veterinary Clinical Pathology I Part 2
- VET140 - Veterinary Pharmacology
  OR VET141 - Veterinary Assisting II
- VET142 - Veterinary Pharmacology Part 2

VET105 - Veterinary Business Procedures/ Office Management

Overview

Department
Health Sciences

Course Description
This course will introduce learners to the expectations of veterinary nurses including: veterinary medical records, admitting procedures, and record maintenance via hands on experiences. It will cover basic bookkeeping skills, inventory control measures, marketing, scheduling, interpersonal communication, phone etiquette, professionalism, working with difficult owners/animals, and the use of computer software specifically designed for use in veterinary clinics and hospitals.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The learner will develop effective client communication skills

Objective
Differentiate between Professional Ethical and nonprofessionalethical behavior', Demonstrate effectivedirecting of phone calls', Demonstrate proper appointment scheduling and schedulereschedule appointments', Demonstrate how to greet clients', Identify owners needs

Name
Describe the roles and responsibilities of each member of the veterinary health team, recognizing the important part that each plays in the delivery of excellent care

Objective
Describe the roles and responsibilities of the Veterinarian Veterinary Technician and Veterinary Assistant', Describe the roles and responsibilities of the Office Staff Supply Vendors OwnersClients and Patients', Demonstrate commitment to high quality animal care the team approach to veterinary medicine

Name
Demonstrate knowledge of proper front office duties

Objective
Interpret written veterinary medical records accurately', Explain and demonstrate admission discharge and triage of patients according to client patient and facility needs', Summarize various procedures for filing and record retention', Utilize veterinary practice management software to create and maintain clientpatient records to schedule appointments and manage inventory', Explain and demonstrate bookkeeping and inventory control measures', Name various veterinary vendors and navigate websites and phone systems', Explain and demonstrate how to complete facility records and logs for compliance with regulatory guidelines', Explain various techniques for marketing a veterinary facility', Handle daily clientbased financial transactions use of estimate forms payment options CareCredit', Establish and maintain appropriate sanitation and infection control protocols for a veterinary facility including patient and laboratory area

Requirements

Simple Requirements

A minimum grade of 'C' in Course BIO110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- BIO110 - Principles of Biology

A minimum grade of 'C' in Course CHM110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CHM110 - General Chemistry

A minimum grade of 'C' in Course MTH101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MTH101 - Intermediate Algebra (Inactive)

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- SPH101 - Public Speaking

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- SPH111 - Interpersonal Communication

VET107 - Veterinary Business Procedures/ Office Management Part 2

Overview

Department
Health Sciences

Course Description
This course is designed for students who have completed VET 106 Veterinary Practice Management and have been accepted into the Veterinary Nursing program. This course will introduce learners to the expectations of veterinary technicians including veterinary medical records, admitting procedures, and record maintenance via hands-on experience. It will cover basic bookkeeping skills, inventory control measures, marketing, scheduling interpersonal communication, phone etiquette, professionalism, working with difficult owners and animals, and the use of computer software specifically designed for use in veterinary clinics and hospitals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
15

Billing Hours

Billing Hours
Min:
1

Lecture Hours

Lecture Hours
Min:
15

Course Learning Outcomes

Learning Outcomes

Name
Describe the roles and responsibilities of each member of the veterinary health team, recognizing the important part that each plays in the delivery of excellent care

Objective
Describe the roles and responsibilities of the Veterinarian Veterinary Technician and Veterinary Assistant', Describe the roles and responsibilities of the Office Staff Supply Vendors OwnersClients and Patients', Demonstrate commitment to high quality animal care the team approach to veterinary medicine

Name
Demonstrate knowledge of proper front office duties

Objective
Interpret written veterinary medical records accurately', Explain and demonstrate admission discharge and triage of patients according to client patient and facility needs', Summarize various procedures for filing and record retention', Utilize veterinary practice management software to create and maintain clientpatient records to schedule appointments and manage inventory', Explain and demonstrate bookkeeping and inventory control measures', Name various veterinary vendors and navigate websites and phone systems', Explain and demonstrate how to complete facility records and logs for compliance with regulatory guidelines', Explain various techniques for marketing a veterinary facility', Handle daily clientbased financial transactions use of estimate forms payment options CareCredit', Establish and maintain appropriate sanitation and infection control protocols for a veterinary facility including patient and laboratory area

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- VET116 - Laboratory and Diagnostic Skills

OR

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- SPH111 - Interpersonal Communication

A minimum grade of 'C' in Course SPH101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- SPH101 - Public Speaking

A minimum grade of 'C' in Course MTH101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- MTH101 - Intermediate Algebra (Inactive)

A minimum grade of 'C' in Course CHM110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CHM110 - General Chemistry

A minimum grade of 'C' in Course VET121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- VET121 - Veterinary Assisting I

A minimum grade of 'C' in Course BIO110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- BIO110 - Principles of Biology

VET110 - Veterinary Anatomy and Physiology

Overview

Department
Health Sciences

Course Description
This course will introduce veterinary medical terminology, including prefix, suffix, root words, common medical terms, and a basic knowledge of word construction. This course will relate the relevant medical terminology to the structure and function of animal bodies and the anatomical/physiological differences between selected species. Learners will examine body organization, cellular biology, histology, and gross anatomy/physiology of the integumentary, skeletal, muscular, endocrine, reproductive, cardiovascular, lymphatic, digestive, respiratory, urinary, and nervous systems. Lab will include the use of skeletons, models, virtual anatomy tools, and dissection of cadavers.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours
Min:
4

Contact Hours

Contact Hours
Min:
105

Billing Hours

Billing Hours
Min:
4

Lecture Hours

Lecture Hours
Min:
15

Lab Hours

Lab Hours Min:
90

Course Learning Outcomes

Learning Outcomes

Name
The learner will differentiate and utilize medical terms by applying knowledge of word parts.

Objective
Memorize the spelling and definitions of commonly used medical word parts', State the rules for use of the combining vowel in medical terminology', Recognize pronounce spell and define commonly used medical terms relating to the diagnosis pathology and treatment of each body system', Construct a reasonable definition for an unfamiliar medical term that can be broken down into medical word parts', Use a medical dictionary and similar reference materials to find the meaning of medical terms and commonly used abbreviations

Name
The learner will analyze the structure of cells, tissues, organs and systems to explain their interrelationships.

Objective
Describe the function of the basic cell and of major tissue types

Name
The learner will interpret how metabolic processes support organ system function.

Objective
Explain the interrelationships between organ systems and physiological processes', Explain the major homeostatic mechanisms utilized in each body system in response to internal and external environmental changes

Name
The learner will evaluate the relationship between structure and function to predict clinical outcomes.

Objective
Identify the structure and function of major organs and organ systems', Define large muscle groups of mammals and common ailments', Trace the processes of absorption distribution metabolism and elimination through the body of mammals

Requirements

Simple Requirements

Complete the following

Type
Prerequisite

Complete ALL of the following Courses:
- BIO110 - Principles of Biology
- MTH101 - Intermediate Algebra (Inactive)
- CHM110 - General Chemistry
- SPH101 - Public Speaking
- ENG101 - Composition I

Be enrolled in

Type
Corequisite

Enroll in the following Courses:
- VET101 - Introduction to Veterinary Nursing
  OR VET102 - Introduction to Veterinary Assisting/Animal Science
- VET103 - Introduction to Veterinary Nursing Part 2
- VET115 - Veterinary Clinical Pathology I
  OR VET116 - Laboratory and Diagnostic Skills
- VET117 - Veterinary Clinical Pathology I Part 2
- VET140 - Veterinary Pharmacology
  OR VET141 - Veterinary Assisting II
- VET142 - Veterinary Pharmacology Part 2

VET115 - Veterinary Clinical Pathology I

Overview

Department
Health Sciences

Course Description
This course is the first of a three course series and will introduce basic pathological processes and prepare the learner for the next course in the sequence. This course builds upon veterinary pharmacology and introduces clinical microbiology and cytology as it relates to veterinary nursing and animal pathology. It covers the basic principles of microbial classification, growth, and pathogenicity as well as various laboratory methods used in identification of microorganisms as they relate to pathology and parasitology in animals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The learner will apply laboratory safety and quality control principles to veterinary diagnostic principles.

Objective
Select and maintain laboratory equipment for pathological and microbial analysis', Implement quality control measures GROUP', Understand how to ensure safety of patients staff and clients

Name
The learner will perform and assess diagnostic testing methods for accuracy and reliability.

Objective
Prepare label package and store specimens for laboratory analysis', Explain basic principles of microbial classification growth and pathogenicity', Perform urinalysis determine physical properties color clarity specific gravity test chemical properties and examine and identify sediment', Perform CBC including hemoglobin packed cell volume total protein white cell count red cell count', Perform microscopic exam of blood film prepare film and stain using a variety of techniques perform leukocyte differential noting normal vs abnormal evaluate erythrocyte morphology noting normal vs abnormal estimate platelet numbers calculate absolute values and hematologic indices', Correct white blood cell count for nucleated cells', Perform coagulation testing by use of buccal mucosal bleeding time activate clotting time or fibrinogen assay GROUP', Perform blood chemistry testing BUN glu common enzymes', Perform serologic test ELISA slide or card agglutinations', Identify common blood parasites and describe their associated pathologies dirofilaria hemoplasmas', Perform common biochemical tests GROUP', Perform variety of staining procedures Wrights Gram New Methylene Blue', Perform cytologic evaluation by collecting preparing and evaluating ear cytology', Collect prepare and evaluate canine vaginal cytology GROUP', Perform variety of techniques for slide preparation smear impression aspirate', List indications for and tests used for hematologic and serum chemistry testing

Name
The learner will analyze pathological findings to connect laboratory results with clinical conditions.

Requirements

Simple Requirements

A minimum grade of 'C' in the following

Type
Prerequisite

Earn a minimum UG of C in the following:
- BIO110 - Principles of Biology
- CHM110 - General Chemistry
- ENG101 - Composition I
- MTH101 - Intermediate Algebra (Inactive)
- SPH101 - Public Speaking

Enroll in the following Courses:
- VET101 - Introduction to Veterinary Nursing
  OR VET102 - Introduction to Veterinary Assisting/Animal Science
- VET103 - Introduction to Veterinary Nursing Part 2

VET116 - Laboratory and Diagnostic Skills

Overview

Department
Health Sciences

Course Description
This course will expose the learner to basic veterinary laboratory techniques including sample collection and testing. The student will also be exposed to the safety measures employed in radiology. The student will gain hands on experience with animal handling in the lab and radiology setting.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2020

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
1

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The learner will gain overview of hematology and blood chemistries as it applies to the veterinary laboratory setting.

Name
The learner will demonstrate understanding of radiation safety.

Name
The learner will gain hands on experience with sample collection from live animals.

Requirements

Simple Requirements

A minimum grade of 'C' in Course VET141

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- VET141 - Veterinary Assisting II

VET117 - Veterinary Clinical Pathology I Part 2

Overview

Department
Health Sciences

Course Description
This course is designed for students who have completed VET 116 Laboratory and Diagnostic Skills and have been accepted into the Veterinary Nursing program. This course is the first of a three-course series and will introduce basic pathological processes and prepare the learner for the next course in the sequence. This course builds upon veterinary pharmacology and introduces clinical microbiology and cytology as it relates to veterinary technology and animal pathology. It covers the basic principles of microbial classification, growth, and pathogenicity as well as various laboratory methods used in identification of microorganisms as they relate to pathology and parasitology in animals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
2

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Develop knowledge of veterinary laboratory safety and quality control measures

Objective
Select and maintain laboratory equipment for pathological and microbial analysis', Implement quality control measures GROUP', Understand how to ensure safety of patients staff and clients

Name
Understand basic principles of veterinary pathology

Requirements

Simple Requirements

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

All of the following requirements

Earn a minimum grade (UG) of C in the following:
- CHM110 - General Chemistry

AND

All of the following requirements

Earn a minimum grade (UG) of C in the following:
- ENG101 - Composition I

AND

All of the following requirements

Earn a minimum grade (UG) of C in the following:
- MTH101 - Intermediate Algebra (Inactive)

AND

All of the following requirements

Fulfill ANY of the following requirements:

Earn a minimum grade (UG) of C in the following:
- SPH101 - Public Speaking

OR

Earn a minimum grade (UG) of C in the following:
- SPH111 - Interpersonal Communication

AND

All of the following requirements

Enroll in the following Courses:
- VET142 - Veterinary Pharmacology Part 2

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

All of the following requirements

Enroll in the following Courses:
- VET141 - Veterinary Assisting II

AND

All of the following requirements

Fulfill ALL of the following requirements:

Enroll in the following Courses:
- VET140 - Veterinary Pharmacology

AND

Enroll in the following Courses:
- VET110 - Veterinary Anatomy and Physiology

AND

Complete ALL of the following Courses:

AND

All of the following requirements

Enroll in the following Courses:
- VET103 - Introduction to Veterinary Nursing Part 2

Enrolled in Course VET102

Type
Prerequisite

Enroll in the following Courses:
- VET102 - Introduction to Veterinary Assisting/Animal Science

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

All of the following requirements

Enroll in the following Courses:
- VET101 - Introduction to Veterinary Nursing

AND

All of the following requirements

Complete ALL of the following Courses:

A minimum grade of 'C' in Course BIO110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- BIO110 - Principles of Biology

VET120 - Veterinary Nursing Procedures I

Overview

Department
Health Sciences

Course Description
This course is the first of a two course series and will explore animal nutrition, patient assessment, animal therapeutics, animal husbandry, animal restraint, animal behavior and common dental problems and dental prophylaxis. Learners will get hands on experience in the collection of various diagnostic samples and preparation for collection.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate knowledge of general patient assessment

Objective
Demonstrate and perform patient assessment techniques in a variety of animal species including obtaining temperature pulse and respiration from a dogcat', Describe common identification methods and demonstrate understanding of permanent identification perform scanning of a microchipped pet', Demonstrate effective and appropriate restraint techniques for various animal species properly restrain dog and cat', Cage and remove small animals from cages properly', Apply dog muzzle safely', Apply Elizabethan collar', Use restraint pole GROUP

Name
Obtain a thorough patient history- subjective and objective

Objective
Properly obtain subjective data from owner', Auscultate heartlungs dog cat', Assess hydration status in small animals

Name
Properly collect diagnostic specimens for analysis (ex: urine, blood, feces, specimens for cytology)

Objective
Collect diagnostic specimens for analysis by performing cephalic saphenous and jugular venipuncture in dog and cat', Collect urine samples via catheterization of a male dog and collecting voided samples from a dog and cat', Perform cystocentesis of a small animal GROUP', Prepare diagnostic specimenssamples for shipment

Name
Demonstrate understanding of therapeutic bathing, basic grooming, dipping, and short/long term care of patients

Objective
trim nails dog cat', express canine anal sacs', clean and medicate ears dog cat', Implement sanitation procedures for animal holding and housing areas', Demonstrate understanding of breedingreproduction techniques', Demonstrate understanding of care of orphan animals neonates newborns

Name
Demonstrate understanding of different routes of medication administration.

Objective
Administer parenteral medications via subcutaneous intramuscular and intravenous injections in both dog and cat', Administer enteral medications by hand pilling a dog and cat', Administer enteral medications by performing gastric intubation GROUP', Administer ophthalmic medication dog or cat

Name
Understand ocular diagnostic testing in small animal veterinary medicine.

Objective
Perform ocular diagnostic testing including tonometry fluorescein staining and Schirmer tear tests

Name
Demonstrate understanding of general veterinary nursing care and fluid therapy.

Objective
Administer enema GROUP', Develop familiarity with fluid delivery systems', Understand concept of monitoring patient hydration status', Determine fluid infusion rate by performing proper calculations', Place an intravenous catheter cephalic or saphenous and maintain care for catheter', Administer subcutaneous fluids

Name
Understand impact of oral health and the importance of preventative care.

Objective
Perform routine dental prophylaxis manual and machine', Correctly chart small animal dental procedure

Requirements

Simple Requirements

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

All of the following requirements

Fulfill ALL of the following requirements:

Earn a minimum grade (UG) of C in the following:
- VET101 - Introduction to Veterinary Nursing

AND

Complete ALL of the following Courses:

AND

All of the following requirements

Earn a minimum grade (UG) of C in the following:
- VET117 - Veterinary Clinical Pathology I Part 2

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

All of the following requirements

Earn a minimum grade (UG) of C in the following:
- VET116 - Laboratory and Diagnostic Skills

AND

All of the following requirements

Earn a minimum grade (UG) of C in the following:
- VET110 - Veterinary Anatomy and Physiology

AND

All of the following requirements

Earn a minimum grade (UG) of C in the following:
- VET103 - Introduction to Veterinary Nursing Part 2

A minimum grade of 'C' in Course VET102

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- VET102 - Introduction to Veterinary Assisting/Animal Science

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

All of the following requirements

Earn a minimum grade (UG) of C in the following:
- VET115 - Veterinary Clinical Pathology I

AND

All of the following requirements

Complete ALL of the following Courses:

VET121 - Veterinary Assisting I

Overview

Department
Health Sciences

Course Description
This course is the first of a two course series and will explore veterinary anatomy, common diseases of small animals, zoonoses, and nutrition. The learner will get hands on experience in animal handling and restraint and basic grooming techniques for small animals.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
60

Billing Hours

Billing Hours
Min:
2

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
The learner will demonstrate understanding of common small animal diseases and zoonoses.

Name
The learner will gain hands on experience in animal handling.

Name
The learner will properly employ grooming techniques used in small animals.

Name
The learner will gain overview of veterinary practice management.

Name
The learner will demonstrate understanding of sanitation and disinfection techniques used in veterinary medicine.

Name
The learner will demonstrate attributes of professionalism.

Name
The learner will demonstrate appropriate client communication.

Requirements

Simple Requirements

A minimum grade of 'C' in Course VET102

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- VET102 - Introduction to Veterinary Assisting/Animal Science

VET122 - Veterinary Nursing Procedures I Part 2

Overview

Department
Health Sciences

Course Description
This course is designed for students who have completed VET 121 Veterinary Assisting I and have been accepted into the Veterinary Nursing program. This course is the first of a two course series and will explore animal nutrition, patient assessment, animal therapeutics, animal husbandry, animal restraint, animal behavior and common dental problems and the prophylactic procedure for teeth cleaning. Learners will get hands-on experience in the collection of various diagnostic samples and preparation for collection.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
60

Billing Hours

Billing Hours Min:
2

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate knowledge of general patient assessment

Objective
Demonstrate and perform patient assessment techniques in a variety of animal species including obtaining temperature pulse and respiration from a dogcat', Describe common identification methods and demonstrate understanding of permanent identification perform scanning of a microchipped pet', Demonstrate effective and appropriate restraint techniques for various animal species properly restrain dog and cat', Cage and remove small animals from cages properly', Apply dog muzzle safely', Apply Elizabethan collar', Use restraint pole GROUP

Name
Obtain a thorough patient history- subjective and objective

Objective
Properly obtain subjective data from owner', Auscultate heartlungs dog cat', Assess hydration status in small animals

Name
Properly collect diagnostic specimens for analysis (ex: urine, blood, feces, specimens for cytology)

Objective
Collect diagnostic specimens for analysis by performing cephalic saphenous and jugular venipuncture in dog and cat', Collect urine samples via catheterization of a male dog and collecting voided samples from a dog and cat', Perform cystocentesis of a small animal GROUP', Prepare diagnostic specimenssamples for shipment

Name
Demonstrate understanding of different routes of medication administration.

Objective
Administer parenteral medications via subcutaneous intramuscular and intravenous injections in both dog and cat', Administer enteral medications by hand pilling a dog and cat', Administer enteral medications by performing gastric intubation GROUP', Administer ophthalmic medication dog or cat

Name
Understand ocular diagnostic testing in small animal veterinary medicine.

Objective
Perform ocular diagnostic testing including tonometry fluorescein staining and Schirmer tear tests

Name
Demonstrate understanding of general veterinary nursing care and fluid therapy.

Objective
Administer enema GROUP', Develop familiarity with fluid delivery systems', Understand concept of monitoring patient hydration status', Determine fluid infusion rate by performing proper calculations', Place an intravenous catheter cephalic or saphenous and maintain care for catheter', Administer subcutaneous fluids

Name
Understand impact of oral health and the importance of preventative care.

Objective
Perform routine dental prophylaxis manual and machine', Correctly chart small animal dental procedure

Requirements

Simple Requirements

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

All of the following requirements

Fulfill ALL of the following requirements:

Earn a minimum grade (UG) of C in the following:
- VET101 - Introduction to Veterinary Nursing

AND

Earn a minimum grade (UG) of C in the following:
- VET121 - Veterinary Assisting I

AND

Complete ALL of the following Courses:

AND

All of the following requirements

Earn a minimum grade (UG) of C in the following:
- VET117 - Veterinary Clinical Pathology I Part 2

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

All of the following requirements

Earn a minimum grade (UG) of C in the following:
- VET102 - Introduction to Veterinary Assisting/Animal Science

AND

All of the following requirements

Fulfill ALL of the following requirements:

Earn a minimum grade (UG) of C in the following:
- VET115 - Veterinary Clinical Pathology I

AND

Earn a minimum grade (UG) of C in the following:
- VET110 - Veterinary Anatomy and Physiology

AND

Complete ALL of the following Courses:

AND

All of the following requirements

Earn a minimum grade (UG) of C in the following:
- VET103 - Introduction to Veterinary Nursing Part 2

A minimum grade of 'C' in Course VET116

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- VET116 - Laboratory and Diagnostic Skills

VET130 - Veterinary Emergency, Critical Medicine and Hospital Procedures

Overview

Department
Health Sciences

Course Description
This course will cover emergency and critical care nursing skills and hospital procedures in Veterinary Medicine. Topics will focus on companion animal care, but will include large animal, laboratory animal, and exotic animal care as it relates to the veterinary nurse.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate understanding of emergency medical procedures, forms, treatments.

Objective
Understand and utilize established emergency protocols', Understand the role of every member of the team during an emergency', Define and demonstrate proper triage techniques', Maintain emergency medical supplies crash cart', Utilize medical records and consent forms appropriately during an emergency simulation

Name
Perform and explain critical care in small animals.

Objective
Perform first aid and cardiopulmonary resuscitation simulation', Use resuscitation bag ambu bag', Apply emergency splints and bandages', Communicate effectively to pet owners education relating to emergencies and how to transport their pet to hospital', Recognize and respond to emergencies over the phone', Demonstrate understanding of blood typing', Collect and cross match blood for a transfusion GROUP', Demonstrate understanding of blood transfusionsauto transfusions', Develop and demonstrate use of crisis intervention grief management with owners and team members', Demonstrate understanding of different categories of shock and appropriately respond', Develop understanding of emergency fluid and drug therapy', Understand client communication during emergencies

Requirements

Simple Requirements

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

All of the following requirements

Fulfill ALL of the following requirements:

Earn a minimum grade (UG) of C in the following:
- VET101 - Introduction to Veterinary Nursing

AND

Complete ALL of the following Courses:

AND

All of the following requirements

Earn a minimum grade (UG) of C in the following:
- VET117 - Veterinary Clinical Pathology I Part 2

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

All of the following requirements

Earn a minimum grade (UG) of C in the following:

- VET116 - Laboratory and Diagnostic Skills

AND

All of the following requirements

Earn a minimum grade (UG) of C in the following:

- VET110 - Veterinary Anatomy and Physiology

AND

All of the following requirements

Earn a minimum grade (UG) of C in the following:

- VET103 - Introduction to Veterinary Nursing Part 2

A minimum grade of 'C' in Course VET102

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- VET102 - Introduction to Veterinary Assisting/Animal Science

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

All of the following requirements

Earn a minimum grade (UG) of C in the following:

- VET115 - Veterinary Clinical Pathology I

AND

All of the following requirements

Complete ALL of the following Courses:

VET140 - Veterinary Pharmacology

Overview

Department
Health Sciences

Course Description
This course will explore pharmacological principles, including pharmacokinetics drug classes, indications, dosage, preparation, mechanisms of action, and side effects of drugs used in veterinary medicine.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The learner will discuss, understand and perform pharmacy duties as they relate to the veterinary nurse

Objective
Read and follow veterinarians pharmacy orders', Recognize groups of drugs their mechanisms and clinically relevant side effects', Recognize the safe and effective manner in which vaccines must be administered recognize and explain common side effects', Accurately perform appropriate calculations', Use weights and measures correctly', Safely and effectively administer drugs by common parenteral and enteral routes explain appropriate routes and methods and when is appropriate to use each method', Demonstrate ability to monitor therapeutic responses', Demonstrate the ability to accurately record medical information', Demonstrate understanding of controlled substance regulations', Demonstrate compliance with all federal regulatory guidelines for drug purchase storage administration withdrawal dispensing disposal and inventory control eg biologics pesticides hazardous waste', Perform inventory control procedures including restocking supplies', Reconstitute vaccines and know proper vaccination protocol', Describe appropriate routes and methods of drug administration and vaccine administration

Name
The learner will demonstrate a basic understanding of the mechanisms of action of medications

Objective
Describe pathways of absorption distribution metabolism and excretion of drugs', Describe drug classes and identify drugs within those classes', Explain handling storage side effects drug interactions safety and reasons for use of various drugs', Describe mechanisms of action of the drug classes', Relay drug information to clients eg handling storage administration sideeffects drug interactions safety reasons for use of drug

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Enroll in the following Courses:
- VET101 - Introduction to Veterinary Nursing

OR

Fulfill ALL of the following requirements:

Enroll in the following Courses:
- VET102 - Introduction to Veterinary Assisting/Animal Science

AND

Enroll in the following Courses:
- VET103 - Introduction to Veterinary Nursing Part 2

OR

Complete ALL of the following Courses:

Enrolled in Course VET110

Type
Prerequisite

Enroll in the following Courses:
- VET110 - Veterinary Anatomy and Physiology

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Enroll in the following Courses:
- VET115 - Veterinary Clinical Pathology I

OR

Fulfill ALL of the following requirements:

Enroll in the following Courses:
- VET116 - Laboratory and Diagnostic Skills

AND

Enroll in the following Courses:
- VET117 - Veterinary Clinical Pathology I Part 2

OR

Complete ALL of the following Courses:

A minimum grade of 'C' in Course CHM110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- CHM110 - General Chemistry

A minimum grade of 'C' in Course ENG101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ENG101 - Composition I

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Earn a minimum grade (UG) of C in the following:
- MTH107 - Contemporary Math with Corequisite

OR

Earn a minimum grade (UG) of C in the following:
- MTH108 - Contemporary Math

OR

Earn a minimum grade (UG) of C in the following:
- MTH110 - College Algebra with Corequisite

OR

Earn a minimum grade (UG) of C in the following:
- MTH112 - College Algebra

OR

Earn a minimum grade (UG) of C in the following:
- MTH119 - Elementary Statistics with Corequisite

OR

Earn a minimum grade (UG) of C in the following:
- MTH120 - Elementary Statistics

VET141 - Veterinary Assisting II

Overview

Department
Health Sciences

Course Description
This course is the second in a two course series and will continue to explore and cover exam room procedures, pharmacology, euthanasia and surgical assisting. The learner will gain hands on experience in animal handling and restraint as well as basic medication administration.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
1

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The learner will gain overview of veterinary exam room procedures.

Name
The learner will demonstrate understanding of basic techniques related to the veterinary pharmacy.

Name
The learner will demonstrate understanding of aseptic technique as it relates to surgical assisting

Requirements

Simple Requirements

A minimum grade of 'C' in Course VET121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- VET121 - Veterinary Assisting I

VET142 - Veterinary Pharmacology Part 2

Overview

Department
Health Sciences

Course Description
This course is designed for students who have completed VET 141 Veterinary Assisting II and have been accepted into the Veterinary Nursing program. This course will explore pharmacological principles, including pharmacokinetics, drug classes, indications, dosages, preparation, mechanisms of action, and side effect of drugs used in veterinary medicine.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours
Min:
1

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
1

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The learner will discuss, understand and perform pharmacy duties as they relate to the veterinary nurse

Objective
Read and follow veterinarians pharmacy orders', Recognize groups of drugs their mechanisms and clinically relevant side effects', Recognize the safe and effective manner in which vaccines must be administered recognize and explain common side effects', Accurately perform appropriate calculations', Use weights and measures correctly', Safely and effectively administer drugs by common parenteral and enteral routes explain appropriate routes and methods and when is appropriate to use each method', Demonstrate ability to monitor therapeutic responses', Demonstrate the ability to accurately record medical information', Demonstrate understanding of controlled substance regulations', Demonstrate compliance with all federal regulatory guidelines for drug purchase storage administration withdrawal dispensing disposal and inventory control eg biologics pesticides hazardous waste', Perform inventory control procedures including restocking supplies', Reconstitute vaccines and know proper vaccination protocol', Describe appropriate routes and methods of drug administration and vaccine administration

Name
The learner will demonstrate a basic understanding of the mechanisms of action of medications

Objective
Describe pathways of absorption distribution metabolism and excretion of drugs', Describe drug classes and identify drugs within those classes', Explain handling storage side effects drug interactions safety and reasons for use of various drugs', Describe mechanisms of action of the drug classes', Relay drug information to clients eg handling storage administration sideeffects drug interactions safety reasons for use of drug

Requirements

Simple Requirements

A minimum grade of 'C' in Course ENG101

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- ENG101 - Composition I

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

Earn a minimum grade (UG) of C in the following:
- MTH107 - Contemporary Math with Corequisite

AND

Fulfill ANY of the following requirements:

Enroll in the following Courses:
- VET101 - Introduction to Veterinary Nursing

OR

Fulfill ALL of the following requirements:

Enroll in the following Courses:
- VET102 - Introduction to Veterinary Assisting/Animal Science

AND

Enroll in the following Courses:
- VET103 - Introduction to Veterinary Nursing Part 2

OR

Complete ALL of the following Courses:

AND

Enroll in the following Courses:
- VET110 - Veterinary Anatomy and Physiology

AND

Fulfill ANY of the following requirements:

Enroll in the following Courses:
- VET115 - Veterinary Clinical Pathology I

OR

Fulfill ALL of the following requirements:

Enroll in the following Courses:
- VET116 - Laboratory and Diagnostic Skills

AND

Enroll in the following Courses:
- VET117 - Veterinary Clinical Pathology I Part 2

OR

Complete ALL of the following Courses:

AND

Earn a minimum grade (UG) of C in the following:
- MTH119 - Elementary Statistics with Corequisite

AND

Earn a minimum grade (UG) of C in the following:
- MTH112 - College Algebra

AND

Earn a minimum grade (UG) of C in the following:
- MTH110 - College Algebra with Corequisite

AND

Earn a minimum grade (UG) of C in the following:

- MTH108 - Contemporary Math

AND

Earn a minimum grade (UG) of C in the following:

- MTH120 - Elementary Statistics

A minimum grade of 'C' in Course CHM110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- CHM110 - General Chemistry

VET200 - Veterinary Professional Wellness

Overview

Department
Health Sciences

Course Description
This course will explore well-being strategies including physical, emotional, financial and mental health. This course will discuss topics of advocating for technicians, nutrition, exercising, financial wellness, Not One More Vet and self-harm/suicide.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
2

Contact Hours

Contact Hours
Min:
30

Billing Hours

Billing Hours
Min:
2

Lecture Hours

Lecture Hours
Min:
30

Course Learning Outcomes

Learning Outcomes

Name
The student will discuss and understand ways to ask for help during emotional crisis.

Name
The student will demonstrate an increased understanding of healthy behaviors and practices.

Name
The student will engage in behaviors that will improve their own health and enable them to care for others.

VET215 - Veterinary Clinical Pathology II

Overview

Department
Health Sciences

Course Description
This course is the second of a three course series and will continue to build upon pathological processes and prepare the learner for the next course in the sequence. This course will explore the life cycles, modes of transmissions, and pathological consequences associated with common parasites of animals. Laboratory techniques of hematology, serum chemistry, urinalysis and fecal sample collection will be covered. This course also explores special commercial laboratory test procedures and pathological processes. Lab will introduce diagnostic procedures and cover identification of parasites and various pathologies using prepared slides and collected specimens. Additionally, postmortem examination procedures and proper submission of tissue samples for pathologic diagnosis are introduced.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Describe the life cycles and modes of transmission of common parasites of small and large animals.

Objective
Identify common internal and external parasites of animals and the pathology they cause', Perform parasitological procedures for external parasites and identify mites lice ticks fleas and flies', Identify common parasitic forms including nematodes trematodes cestodes and protozoa', Recognize common internal and external parasites by their scientific name as well as common name', Develop familiarity with common anti parasitics used in veterinary medicine

Name
Describe the steps of a postmortem examination and demonstrate proper submission of tissue samples.

Objective
Develop understanding of common zoonotic pathologies as they relate to the collection and evaluation of diagnostic samples', Collect samples store and ship according to laboratory procedures GROUP', Perform necropsy procedures post mortem examination on nonpreserved animal GROUP', Explain how to handle rabies suspects and samples safely

Name
Describe and demonstrate the collection and handling of animal biological samples including blood, urinary, and fecal samples.

Objective
Collect and evaluate skin scrapings', Perform coprologic testing including fecal floatation with and without centrifuge direct smear and fecal sedimentation', Culture and identify common dermatophytes', Identify common animal pathogens using commercially available media and reagents GROUP', Perform microbiologic procedures including collecting representative sample culture bacteria and perform sensitivity tests', Perform diagnostic procedures for parasites including antigen kits direct testing methods or use of Knotts GROUP

Requirements

Simple Requirements

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

All of the following requirements

Fulfill ALL of the following requirements:

Fulfill ALL of the following requirements:

Earn a minimum grade (UG) of C in the following:

- VET116 - Laboratory and Diagnostic Skills

AND

Complete ALL of the following Courses:

AND

Earn a minimum grade (UG) of C in the following:

- VET103 - Introduction to Veterinary Nursing Part 2

AND

All of the following requirements

Earn a minimum grade (UG) of C in the following:

- VET117 - Veterinary Clinical Pathology I Part 2

A minimum grade of 'C' in Course VET110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- VET110 - Veterinary Anatomy and Physiology

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Earn a minimum grade (UG) of C in the following:

- VET101 - Introduction to Veterinary Nursing

A minimum grade of 'C' in Course VET102

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:

- VET102 - Introduction to Veterinary Assisting/Animal Science

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

All of the following requirements

Earn a minimum grade (UG) of C in the following:

- VET115 - Veterinary Clinical Pathology I

AND

All of the following requirements

Complete ALL of the following Courses:

VET220 - Veterinary Nursing Procedures II

Overview

Department
Health Sciences

Course Description
This course is the second of a two course series and will continue to explore and cover advanced techniques in animal nutrition, patient assessment, animal therapeutics, animal husbandry, animal restraint, animal behavior and common dental problems and dental prophylaxis focused on companion animals. Learners will get hands on experience in the collection of various diagnostic samples and preparation for collection with a focus on companion animals.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate advanced nursing techniques including parenteral administration of medication, bandaging and wound care, physical rehabilitation, kennel duty, and diagnostic sample collection

Objective
Demonstrate kennel duty experience in the care of a variety of companion animals', Select necessary materials explain and demonstrate proper techniques for acquiring samples from small animals for diagnostic testing', Describe and demonstrate proper procedures for administering parenteral medications to companion animals', Explain appropriate use and demonstrate application of different types of bandages for companion animals', Demonstrate proper technique for restraint for the collection of diagnostic samples', Demonstrate ability to provide client education regarding home care of bandages', Apply and remove splints bandages and slings', Develop understanding of wound management and abscess care', Develop understanding of physical therapy techniques hydrotherapy laser', Explain care of the recumbent patient', Develop understanding of behavior of small animals as it applies to disease life stage environmental', Understand varieties of aggression as seen commonly in small animals fear maternal same sex redirected', Effectively communicate to client behavior recommendations based on history of problem', Perform routine dental radiographic images', Perform dental prophylactic cleaning manual and machine', Understand and effectively communicate home care to client regarding dental health recommendations', Recognize and effectively manage common dental emergencies

Name
Describe and demonstrate safe and effective vaccine administration.

Objective
Understand and explain the various needs of vaccinations throughout small animal lifespan', Demonstrate knowledge of side effects of vaccinations', Become familiar and demonstrate sites used on the body for vaccinations

Name
Demonstrate understanding of small animal nutrition.

Objective
be familiar with therapeutic foods', recognize key nutritional factors in disease conditions', Understand life stage energy and nutrient requirements of well animals dog cat', Identify substances that when ingested result in toxicity identify common poisonous plants be familiar with substance organic and inorganic that cause toxicity', Identify current developments in nutritional supplements and additives including benefits and potential toxicities', develop and communicate hospital and clinic nutrition protocols and reinforce owner compliance

Requirements

Simple Requirements

A minimum grade of 'C' in the following

Type
Prerequisite

Complete ALL of the following Courses:

- VET120 - Veterinary Nursing Procedures I
  OR VET121 - Veterinary Assisting I
- VET122 - Veterinary Nursing Procedures I Part 2
- VET215 - Veterinary Clinical Pathology II

VET230 - Veterinary Diagnostic Imaging with Lab

Overview

Department
Health Sciences

Course Description
Covers the physics of x-ray photon production, radiation safety, quality control measures, federal and state radiation regulations, film processing, radiographic technique evaluation, positioning of animals, and proper identification and storage of radiographic images. Covers the operation and use of fixed, portable, and dental x-ray machines; the care and development of films; radiographic positioning of animals; and evaluation of radiographic technique. Explores additional diagnostic imaging modalities, such as ultrasound, MRI, CT, and endoscopy.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Explain how x-rays are produced and relate that theory to actual practice

Objective
Understand explain and practice appropriate safety measures when working around radiation', Summarize radiographic quality control measures', Develop GROUP and properly utilize radiographic technique charts', Explain darkroom and film processing procedures', Explain how to properly label file and store radiographic images', Develop understanding of MRI CT nuclear scintigraphy and fluoroscopy', Develop understanding of radiograph machine anatomy and function of parts', Develop and utilize proper medical terminology as applied to anatomical positioning', Explain density and contrast and the factors that influence them', Understand and describe endoscopy how it works and how its utilized in veterinary medicine', Understand and describe sonography how it works and how its utilized in veterinary medicine

Name
Assist in completion of diagnostic radiographs

Objective
Measure patient using xray caliper', Properly restrain and position large animal for common diagnostic views of a limb', Properly restrain and position small animal for thoracic abdominal and extremity common views', Identify common artifacts and technical errors and understand how to correct them', Process exposed film to create diagnostic image automatic digital computerized', Properly use the collimator to reduce scatter radiation', Explain and demonstrate the proper PPE used during radiographing a patient', Perform radiographic contrast study GROUP', Perform on a sedated canine techniques utilized in screening for canine hip dysplasia GROUP', Understand the use of chemical restraint as the preferred method

Name
Process diagnostic radiographs

Objective
Use digital processing', Maintain quality control', Label file store film', Use automatic processing

Name
Properly care for equipment

Objective
Demonstrate proper maintenance of radiographic equipment including recognition of faulty equipment operation', Complete radiographic logs reports files and records

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Earn a minimum grade (UG) of C in the following:
- VET101 - Introduction to Veterinary Nursing

OR

Fulfill ALL of the following requirements:

Earn a minimum grade (UG) of C in the following:
- VET102 - Introduction to Veterinary Assisting/Animal Science

AND

Earn a minimum grade (UG) of C in the following:
- VET103 - Introduction to Veterinary Nursing Part 2

OR

Complete ALL of the following Courses:

A minimum grade of 'C' in Course VET110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- VET110 - Veterinary Anatomy and Physiology

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Earn a minimum grade (UG) of C in the following:
- VET115 - Veterinary Clinical Pathology I

OR

Fulfill ALL of the following requirements:

Earn a minimum grade (UG) of C in the following:
- VET116 - Laboratory and Diagnostic Skills

AND

Earn a minimum grade (UG) of C in the following:
- VET117 - Veterinary Clinical Pathology I Part 2

OR

Complete ALL of the following Courses:

VET240 - Veterinary Anesthesia and Surgical Assisting

Overview

Department
Health Sciences

Course Description
This course will explore the principles and practices of veterinary anesthesia and surgical assistance including pre-operative, operative, and post-operative protocols for routine surgical procedures. Learners will be provided with hands-on experience in anesthesiology, surgical patient preparation and surgical assistance.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate skills associated with surgical preparation, assisting and anesthesia

Objective
Calculate dosages of appropriate anesthetic related drugs', Administer anesthetic related drugs via injection and use of mask', Place endotracheal tube', Utilize clinical signs and appropriate equipment to monitor patient status during anesthetic procedures esophageal stethoscope blood pressure monitor capnometer electrocardiogram pulse oximeter', Prepare surgical site using aseptic technique', Demonstrate proper operating room conduct and asepsis', Assist with care of exposed tissues and organs', Properly handle and pass all instruments', Operate and maintain suction and cautery machines', Understand principles of operation and maintenance of fiber optic equipment', Perform basic suturing techniques', Prepare surgical instruments and supplies including gowns masks gloves and drapes', Operate and maintain autoclaves sterilize equipment and supplies appropriately', Perform presurgical setup', Identify and know proper use of surgical instruments', Identify common suture material types and sizes', Provide operating room sanitation and care', Participate in ovariohysterectomy and orchiectomy surgery in dogcat', Develop knowledge of routine surgical procedures Csection orthopedic procedures tail docking onychectomy laparotomies dystocia dehorning and prolapsed organs', Perform postsurgical clean up including equipment instruments suite proper disposal of hazardous waste', Deliver postoperative care instructions including woundpain management fluid therapy adequate nutrition bandaging discharge instructions and suture removal

Name
Demonstrate knowledge of routine procedures and related equipment

Objective
Palpate and express the urinary bladder as needed', Palpate anatomical locations as landmarks for shaving and surgical preparation', Position patient for common procedures', Maintain and operate anesthetic machine and breathing systems rebreather nonrebreather masks

Name
Recognize and integrate all aspects of patient management for common surgical procedures in a variety of animal species

Objective
Evaluate and implement pain management protocols as directed', Coordinate pain management with the anesthesiasurgery team', Recognize and respond appropriately to patients in a compromised state', Perform appropriate resuscitation procedures as needed', Calculate emergency drugs', Assess patients risk status', Perform preoperative evaluationexamination

Name
Utilize medical records and logs

Objective
Complete controlled substance log', Properly identify patients and surgical procedures', Record and maintain operative and surgical records

Requirements

Simple Requirements

A minimum grade of 'C' in Course VET250

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- VET250 - Veterinary Nursing: Large Animal Disease and Medical Care

A minimum grade of 'C' in Course VET265

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- VET265 - Veterinary Nursing Procedures: Avian, Exotic and Lab Animals Disease and Medical Care

VET250 - Veterinary Nursing: Large Animal Disease and Medical Care

Overview

Department
Health Sciences

Course Description
This course will explore common large animal breeds (ruminant, equine, swine, and chickens). It will introduce techniques necessary for the provision of nursing care to large animals, including restraint, husbandry, behavior, physical examination, medication administration, diagnostic sample collection, grooming, bandaging, nutrition, and vaccination. It will also cover preventive medicine and diseases of large animals including the public health significance of relevant large animal diseases and examine the role of the veterinary nurse in performing diagnostics, nursing care, and client education.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Develop understanding and practice general veterinary nursing of large animals including husbandry, restraint, examination, diagnostic testing, medication administration, preventative health measures and nutrition.

Objective
Explain and demonstrate effective safe and appropriate restraint techniques for large animals cowhorse', Apply twitch GROUP', Apply bovine tail restraint', Apply halter cowhorse', Safely operate a cattle chute GROUP', Summarize and perform basic grooming of large animals', Place equine tail wraps and leg wraps', Obtain thorough large animal history', Obtain objective data from large animal TPR MM GI sounds', Auscultate heart lungs digestive system in cowhorse', Summarize appropriate husbandry techniques for optimum health of large animals', Identify and interpret common large animal behaviors and their impact on the provision of nursing care', Demonstrate understanding of appropriate vaccine protocols for large animals', Recognize common large animal medical forms Coggins interstate transport', Understand the common protocols for loadingunloading and transportation of large animals', Explain the nutritional requirements of large animals and common plant toxicities', Understand anatomic difference in the equinebovine limb

Name
Perform and explain the collection of samples and medication protocols for large animals

Objective
Administer parenteral medication intramuscular in the horse', Administer parenteral medication intravenous in the cow and horse', Administer enteral medications to cow via use of balling gun', Use dosing syringe to administer enteral medicine in the cowhorse', Develop understanding of nasogastric intubation in large animals', Collect milk samples and conduct mastitis testing CMT bacterial cultureGROUP', Perform fecal samples testing on large animal stool', Demonstrate understanding of large animal parasite prevention protocols', Identify common large animal intestinal parasites', Collect blood sample from jugular vein ruminant horse', Demonstrate familiarity with other collection sites in large animals bovine tail porcine vena cava', Administer parenteral medication subcutaneous in the cow

Name
Construct discharge and follow-up instructions for clients

Objective
Effectively communicate discharge and followup instructions to clients', Explain the public health significance of relevant large animal diseases', Recognize common large animal pathology prevention and treatment options

VET260 - Veterinary Clinical Pathology III

Overview

Department
Health Sciences

Course Description
This course is the third of a three course series and will bring together knowledge of pathological processes gained from the first two courses in the sequence and relate them to every day practice in veterinary medicine with an emphasis on companion animal practice. This course will continue to explore the life cycles, modes of transmissions, and pathological consequences associated with common parasites of animals. It will also continue discussion of microbiology and cytology as they relate to the veterinary technician. It will explore physical injuries, resulting pathologies and treatments. Additionally, this course will explore environmental and nutritional concepts as they relate to various pathologies with an emphasis in this relation to small/companion animals. Lastly, this course will reinforce the issue of zoonosis and safety on the job with The Occupational Safety and Health Administration (OSHA) protocols.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours Min:
3

Contact Hours

Contact Hours Min:
75

Billing Hours

Billing Hours Min:
3

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
60

Course Learning Outcomes

Learning Outcomes

Name
Develop understanding of common animal pathologies, prevention, and treatment including zoonosis, anatomical/physiological and nutritional effects of disease

Objective
Develop understanding of the inflammatory process', Detail causes and effects of nutritional diseases in companion animals', Identify links between nutritionaldiet and systemic disease heart disease diabetes', Define and give examples of common zoonotic disorders', Differentiate between causative agents of disease bacterial viral rickettsial parasitic', Describe the different routes for transmission of zoonotic disease', Identify and understand common pathology of the nervous system', Identify and understand common pathology of the cardiovascular system', Identify and understand common pathology of the urinary system', Identify and understand common pathology of the reproductive system', Identify and understand common pathology of the musculoskeletal system', Identify and understand common pathology of the respiratory system', Become familiar with the common treatments of common diseases', Investigate evaluate and create a veterinary case study based on a pathology discussed', Perform routine urinalysis and sedimentation', Perform coprologic tests

Name
Develop complete understanding of workplace safety in the veterinary industry including hazards and OSHA regulations

Objective
Understand ways to decrease risk of injury or disease in the veterinary workplace', Utilize safety equipment such as gloves and masks with any zoonotic potential case', Understand OSHA regulations as they apply to veterinary medicine

Requirements

Simple Requirements

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

All of the following requirements

Fulfill ALL of the following requirements:

Earn a minimum grade (UG) of C in the following:
- VET120 - Veterinary Nursing Procedures I

AND

Complete ALL of the following Courses:

AND

All of the following requirements

Earn a minimum grade (UG) of C in the following:
- VET122 - Veterinary Nursing Procedures I Part 2

A minimum grade of 'C' in Course VET121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- VET121 - Veterinary Assisting I

A minimum grade of 'C' in Course VET215

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- VET215 - Veterinary Clinical Pathology II

VET265 - Veterinary Nursing Procedures: Avian, Exotic and Lab Animals Disease and Medical Care

Overview

Department
Health Sciences

Course Description
Introduces basic techniques necessary for the provision of nursing care to small animals, including small animal restraint, husbandry, behavior, physical examination, medication administration, vaccination, and grooming. Includes kennel duty experience in the care of a variety of companion animals. Provides an overview of the anatomy and physiology, the care and handling, and diseases of common laboratory and exotic small animals. Covers the principles of lab animal use in research with an emphasis on animal welfare. This course also covers preventive medicine and diseases of small animals including the public health significance of relevant small animal diseases. Examines the role of the veterinary nurse in performing diagnostics, nursing care, and client education. Reinforce staff/owner relationships with role playing scenarios.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2026

Credits

Credit Hours

Credit Hours Min:
2

Contact Hours

Contact Hours Min:
45

Billing Hours

Billing Hours Min:
2

Lecture Hours

Lecture Hours Min:
15

Lab Hours

Lab Hours Min:
30

Course Learning Outcomes

Learning Outcomes

Name
Demonstrate knowledge of the unique husbandry issues for each species (birds, reptiles, amphibians, guinea pigs, hamsters, gerbils, and ferrets) and provide client education concerning the following needs

Objective
Develop knowledge of the unique husbandry of birds', Develop knowledge of the unique husbandry of reptiles amphibians', Develop knowledge of the unique husbandry of guinea pigs', Develop knowledge of the unique husbandry of hamsters', Develop knowledge of the unique husbandry of gerbils', Develop knowledge of the unique husbandry of ferrets', Provide client education concerning nutritional needswatering of each species listed above', Provide client education concerning caging temp humidity lighting of each species listed above', Provide client education concerning aquarium care', Provide client education concerning reproduction of each species listed above', Provide client education concerning basic grooming of each species listed above', Provide client education concerning appropriate transportation of each species listed above

Name
Demonstrate the ability to obtain objective data: birds, reptiles, rats and mice

Objective
Obtain objective data from birds', Understand techniques to obtain objective data from reptiles amphibians ferrets

Name
Demonstrate understanding of providing safe and effective general nursing care for birds, reptiles, amphibians, guinea pigs, hamsters, gerbils, and ferrets.

Objective
Perform nail trim on birds', Understand tube feeding in birds', Understand and name the sites used for catheterization in birds and reptiles', Understand techniques to restrain and trim nails on reptiles guinea pigs and ferrets', Develop knowledge on bird beak trimming', Understand and name the sites used for injections in both birds and reptiles', Recognize proper techniques and restrain mouse rat rabbit', Determine sex and understand reproduction of the mouse rat rabbit', Understand basic nutritional needs of mice rat rabbit', Provide food water and enrichment in lab setting for mouse rat rabbit', Understand permanent identification and other identification methods used in lab species', Collect blood samples by performing venipuncture in the rat GROUP', Collect blood by performing venipuncture in the rabbit', Have working knowledge of anesthetic and recovery procedures as they apply to exotic medicine', Identify and describe clinical signs of commons diseases in laboratory species and exotic species', Perform radiography on exotic animal understand complications with restraint and technique GROUP', Perform oral dosing in rats and mice GROUP', Perform parenteral injection in rats and mice subcutaneous', Perform parenteral injection in the mouse intraperitonealGROUP', Recognize normal vs abnormal behavior in birds', Recognize common emergencies that affect birds and reptiles', Recognize common toxicities for exotic species', Demonstrate knowledge of the unique respiratory system of birds

Name
Develop working knowledge of animal research including welfare and regulatory agencies

Objective
Understand restraint of non human primates', Demonstrate knowledge of zoonotic disease and modes of transmission with non human primates

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Earn a minimum grade (UG) of C in the following:
- VET101 - Introduction to Veterinary Nursing

OR

Fulfill ALL of the following requirements:

Earn a minimum grade (UG) of C in the following:
- VET102 - Introduction to Veterinary Assisting/Animal Science

AND

Earn a minimum grade (UG) of C in the following:
- VET103 - Introduction to Veterinary Nursing Part 2

OR

Complete ALL of the following Courses:

A minimum grade of 'C' in Course VET110

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- VET110 - Veterinary Anatomy and Physiology

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Earn a minimum grade (UG) of C in the following:
- VET115 - Veterinary Clinical Pathology I

OR

Fulfill ALL of the following requirements:

Earn a minimum grade (UG) of C in the following:
- VET116 - Laboratory and Diagnostic Skills

AND

Earn a minimum grade (UG) of C in the following:
- VET117 - Veterinary Clinical Pathology I Part 2

OR

Complete ALL of the following Courses:

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Enroll in the following Courses:
- VET120 - Veterinary Nursing Procedures I

OR

Fulfill ALL of the following requirements:

Enroll in the following Courses:
- VET121 - Veterinary Assisting I

AND

Enroll in the following Courses:
- VET122 - Veterinary Nursing Procedures I Part 2

OR

Complete ALL of the following Courses:

Enrolled in Course VET215

Type
Prerequisite

Enroll in the following Courses:
- VET215 - Veterinary Clinical Pathology II

VET270 - Veterinary Nursing Seminar

Overview

Department
Health Sciences

Course Description
This course will serve to reinforce knowledge and concepts covered in the other courses in the program. This course will prepare students for the Veterinary Technician National Exam (VTNE) and help them to become ready to work in the field of Veterinary Nursing.

Academic Level (Course Level)
Undergraduate

Instructional Methods
Traditional

Effective Start Term
Fall 2025

Credits

Credit Hours

Credit Hours Min:
1

Contact Hours

Contact Hours Min:
15

Billing Hours

Billing Hours Min:
1

Lecture Hours

Lecture Hours Min:
15

Course Learning Outcomes

Learning Outcomes

Name
Prepare for employment in the field of veterinary medicine.

Objective
Revamp resume and cover letter from Global Professional Skills course incorporating knowledge and skills gained throughout veterinary technician program', Complete Mock interview process', Contribute to weekly discussion boards and journal culminating in a term paper analyzing clinical experience group discussion and sharing of clinical experiences

Name
Demonstrate knowledge of Pharmacy and Pharmacology in preparation for the VTNE.

Objective
Utilize knowledge of anatomy physiology and pathophysiology as it applies to the use of pharmacological and biological agents', Prepare administer andor dispense pharmacological and biological agents excluding anesthetics and analgesics to comply with veterinary orders', Educate the client regarding pharmacological and biological agents excluding anesthetics and analgesics administered or dispensed to ensure the safety of the patientclient and efficacy of the products

Name
Demonstrate knowledge of Surgical Nursing in preparation for the VTNE.

Objective
Utilize knowledge of anatomy physiology and pathophysiology as it applies to surgical nursing', Prepare and maintain the surgical environment equipment instruments and supplies to meet the needs of the surgical team and patient', Prepare patient for procedure including but not limited to surgical site preparation and patient positioning Function as a sterile surgical technician including but not limited to tissue handling suturing instrument handling to ensure patient safety and procedural efficiency', Function as a circulating nonsterile surgical technician to ensure patient safety and procedural efficiency

Name
Demonstrate knowledge of dentistry in preparation for the VTNE.

Objective
Utilize knowledge of anatomy physiology and pathophysiology as it applies to dentistry', Prepare and maintain the environment equipment instruments and supplies for dental procedures to meet the needs of the dental team and patient', Perform or assist with dental procedures including but not limited to prophylactic radiographic therapeutic and charting to maintain the dental health of the patient and aid in the treatment of dental disease', Educate the client regarding dental health including prophylactic and posttreatment care

Name
Demonstrate knowledge of Laboratory Procedures in preparation for the VTNE.

Objective
Utilize knowledge of anatomy physiology and pathophysiology as it applies to laboratory procedures', Collect prepare and maintain specimens for inhouse or outside laboratory evaluation', Perform laboratory tests and procedures including but not limited to microbiology serology cytology hematology urinalysis and parasitology', Maintain laboratory equipment and related supplies to ensure quality of test results and safety of operation

Name
Demonstrate knowledge of Animal Care and Nursing in preparation for the VTNE.

Objective
Utilize knowledge of anatomy physiology and pathophysiology as it applies to animal care and nursing', Perform and document initial and ongoing evaluations of physical behavioral nutritional and environmental status of animals to provide for optimal animalclient safety and health', Perform animal nursing procedures including but not limited to restraint postoperative care catheterization wound management bandaging and rehabilitation therapy in the implementation of prescribed treatments', Perform clinical diagnostic procedures including but not limited to blood pressure measurement electrocardiography and oximetry to aid in diagnosis and prognosis', Educate clients and the public about animal care including but not limited to behavior nutrition pre and postoperative care preventative care zoonosis to promote and maintain the health of animals and the safety of clientspublic', Provide a safe sanitary and comfortable environment for animals to ensure optimal healthcare and clientpersonnel safety', Maintain diagnostic and related supplies to ensure quality of test results and safety of operation

Name
Demonstrate knowledge of Diagnostic Imaging in preparation for the VTNE.

Objective
Utilize knowledge of anatomy physiology and pathophysiology as it applies to diagnostic images', Produce diagnostic images excluding dental following protocols for quality and operatorpatient safety', Maintain imaging equipment and related materials to ensure quality to ensure quality of results and safety of operation

Name
Demonstrate knowledge of Anesthesia in preparation for the VTNE.

Objective
Utilize knowledge of anatomy physiology and pathophysiology as it applies to anesthesia', Assist in development of the anesthetic plan to ensure patient safety and procedural efficacy', Implement the anesthetic plan including but not limited to administration of medication monitoring and maintenance to facilitate diagnostic therapeutic or surgical procedures', Prepare and maintain anesthetic equipment and related materials to ensure safe and reliable operation', Educate the client about anesthetics and anesthesia to ensure the safety of the patientclient and efficacy of the products or procedures

Name
Demonstrate knowledge of Emergency Medicine / Critical Care.

Objective
Utilize knowledge of anatomy physiology and pathophysiology as it applies to emergency medicine and critical care', Perform triage and document initial and ongoing evaluations of physical behavioral nutritional and environmental status of animals presented for critical conditions including but not limited to shock acute illness acute trauma and toxicity', Perform emergency nursing procedures including but not limited to cardiopulmonary cerebral resuscitation CPCR stemming acute blood loss and fracture stabilization in the implementation of prescribed treatments', Perform critical care nursing procedures including but not limited to blood transfusions fluid resuscitation and ongoing oxygen therapy in the implementation of prescribed treatments

Name
Demonstrate knowledge of Pain Management / Analgesia

Objective
Utilize knowledge of anatomy physiology and pathophysiology as it applies to pain management and analgesia', Assess need for analgesia and assist in the development and implementation of the pain management plan to optimize patient comfort andor healing', Educate the client with regard to analgesics and administration of pain management protocols and the side effects to ensure the safety of the patientclient and efficacy of the products or procedures

Requirements

Simple Requirements

All of the following requirements

Type
Prerequisite

Fulfill ALL of the following requirements:

Fulfill ALL of the following requirements:

Earn a minimum grade (UG) of C in the following:
- VET120 - Veterinary Nursing Procedures I

AND

Complete ALL of the following Courses:

AND

Earn a minimum grade (UG) of C in the following:
- VET122 - Veterinary Nursing Procedures I Part 2

A minimum grade of 'C' in Course VET121

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- VET121 - Veterinary Assisting I

A minimum grade of 'C' in Course VET215

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- VET215 - Veterinary Clinical Pathology II

VET275 - Veterinary Clinical Practicum

Overview

Department
Health Sciences

Course Description
This course provides hands-on experience working with actual animal cases in a clinical veterinary setting. This course will expand student knowledge and build proficiency of acquired skills through task-specific exercises learned prior in the curriculum. It also links prior on-campus coursework with off-campus learning experiences providing development of increased proficiency and honing of essential skills learned in the formal instructional setting which are necessary for a career as a veterinary technician. Students will be matched to practicum sites at the discretion of the instructor. Each student is expected to attend a minimum of 240 hours at extern sites. These hours can be completed at two locations (120 hours at each site). The practicum will be monitored and reviewed by the program director or the director’s appointee.

Academic Level (Course Level)
Undergraduate

Effective Start Term
Fall 2024

Credits

Credit Hours

Credit Hours
Min:
6

Contact Hours

Contact Hours
Min:
270

Billing Hours

Billing Hours
Min:
6

Other Hours

Other Hours
Min:
270

Course Learning Outcomes

Learning Outcomes

Name
Implement the principles and techniques of infection control when necessary

Objective
Demonstrate the difference between disinfection and sterilization', Identify the difference between a disinfectant and an antiseptic', Demonstrate the precautions that are necessary when one is prepping for procedures on animal patients', Evaluate safety precautions and consequences of not following proper infection control including zoonotic diseases', Relate OSHA concepts to the clinical setting

Name
Demonstrate knowledge regarding prevention of disease transmission when necessary

Objective
Demonstrate following the Occupational Safety and Health Administrations blood borne pathogen standard', Demonstrate proper asepsis', Demonstrate following the Center of Disease Controls Guidelines regarding disinfection', Demonstrate proper handling of contaminated instruments

Name
Implement the proper handling infectious and biohazardous waste when necessary

Objective
Demonstrate taking a patients pulse blood pressure and respiration rate and other vitalsphysical examination when necessaryapplicable', Evaluate the completion of a patients medical history', Demonstrate collecting and charting a patients relevant medical history', Perform examinations when necessaryapplicable', Identify and document thorough treatment and examination notes

Name
Collect data for patient medical record when necessary

Objective
Demonstrate taking a patients pulse blood pressure and respiration rate and other vitalsphysical examination when necessaryapplicable', Evaluate the completion of a patients medical history', Demonstrate collecting and charting a patients relevant medical history', Perform examinations when necessaryapplicable', Identify and document thorough treatment and examination notes

Name
Give patient/owner instructions

Objective
Demonstrate giving thorough and proper postoperative instructions to owners', Demonstrate describing procedures to owners prior to the start of the procedure', Demonstrate proper restraint and handling techniques', Demonstrate giving dietary instruction to owners

Name
Act as a support assistant when necessary

Objective
Run proper testscytology exams as indicated', Demonstrate proper handling and patient placement for diagnostic imaging procedures', Demonstrate assisting in setting up sterile examsurgical settings', Identify proper instruments', Demonstrate proper instrument set up for indicated procedure', Demonstrating retrieving necessary materials for a technicianveterinarian performing a procedure

Name
Demonstrate administrative assistant duties when necessary

Objective
Demonstrate proper telephone technique', Schedule patients as necessary', Work with insurance companies and other third parties as necessary', Order supplies and equipment as needed', Demonstrate proper filing of medical records as instructed by the front office', Demonstrate good communication with staff owners and patients', Identify types of practice records and files', Identify how to use these filing systems alphabetic numeric crossreference chronologic and subject', Describe the process of scheduling appointments for maximum productivity', Discuss the management of inventory systems', Identify proper patient confidentiality

Requirements

Simple Requirements

Any of the following requirements

Type
Prerequisite

Fulfill ANY of the following requirements:

Any of the following requirements

Earn a minimum grade (UG) of C in the following:
- VET215 - Veterinary Clinical Pathology II

OR

Any of the following requirements

Fulfill ALL of the following requirements:

Earn a minimum grade (UG) of C in the following:
- VET121 - Veterinary Assisting I

AND

Earn a minimum grade (UG) of C in the following:
- VET122 - Veterinary Nursing Procedures I Part 2

OR

Any of the following requirements

Complete ALL of the following Courses:

A minimum grade of 'C' in Course VET120

Type
Prerequisite

Earn a minimum grade (UG) of C in the following:
- VET120 - Veterinary Nursing Procedures I