UTAH SYSTEM OF HIGHER EDUCATION

Utah System of Higher Education
Airframe Maintenance
FY2026 / 37 Credits (1110 Clock-Hours)

Airframe Maintenance

Institutions: USU-Eastern

Technical Certificate (Catalog Year: 2026, 37 Credits/1110 Clock-Hours Required, CIP: 47.0607)

Foundational Courses (37 Credits/1110 Clock-Hours)		Credits	Clock-Hours
TEMT 1005	Machining for Manufacturing Trades	3	90
TEAV 1000	Technical Mathematics	3	90
TEAV 1010	Circuit Analysis	3	90
TEAV 1020	Circuit Analysis Lab	2	60
TEAV 1130	Flight Principles	3	90
TEAV 1140	Aircraft Components and Principles	2	60
TEAV 1170	Aircraft Structures	3	90
TEAV 1240	Aircraft Maintenance	3	90
TEAV 2170	Aircraft Systems	3	90
TEAV 2180	Aircraft Hydraulics and Pneumatics Systems	3	90
TEAV 2200	Composite Manufacturing and Repair	3	90
TEAV 2420	Regulations and Records	2	60
TEAV 2430	Aircraft Electrical Systems and Components	2	60
TEAV 2440	Aircraft Electrical Systems and Components Lab	2	60

PROGRAM DESCRIPTION

The Airframe Maintenance program equips students with the necessary skills for a career in aviation maintenance. After completing this certificate, students will meet the Federal Aviation Administration requirements to take the General and Airframe tests required to earn their FAA Airframe license.

Objectives:

- Perform aviation engine maintenance in alignment with FAA Standards.
- Prepare for FAA Licensing by fulfilling all prerequisites to sit for the Federal Aviation Administration General and Airframe licensing exams, qualifying for certification and practice in the field.
- Interpret diagnostic material for aviation maintenance and repair.
- Record maintenance logs and certify the airworthiness of aircraft.

FOUNDATIONAL COURSE DESCRIPTIONS

Machining for Manufacturing Trades — 3 Credits/90 Clock-Hours

This is a course to support manufacturing programs related to machining. It gives students a working overview of industrial machine shop practice. This course is designed to teach principles and techniques of manufacturing processes by learning to operate the lathe and mill. Students will be trained in areas of blueprint reading, hand tools, machining and part inspection, all with the use of manual machines.

Objectives:

- Identify safe practices in a machine shop.
- Identify correct clean up procedures.
- Demonstrate basic layout procedures.
- Reading and interpreting blueprints.
- Safely setup and operate a band saw.
- Safely operate a bench grinder and hand tools.
- Accurately use and read steel rules, micrometers, and calipers.
- Perform safe and effective use of lathes and milling machines.
- Perform basic programming and use controls of a CNC machine.

Technical Mathematics — 3 Credits/90 Clock-Hours

This course covers various specialized mathematical topics necessary for careers in trades and industries. These topics include, but are not limited to, systems of units, units of measure, scientific vs. metric prefix notation, functions, complex numbers, and vectors.

Objectives:

- Use systems of units and units of measure, scientific vs. metric prefix notation, algebraic and trigonometric functions, complex numbers, and vectors.
- Identify relevant steps for calculating multi-step problems to find solutions.
- Utilize trigonometric functions in a contextualized setting relevant to the field of study.
- Apply mathematic principles in various contexts and settings.

Circuit analysis — 3 Credits/90 Clock-Hours

This course consists of studying and applying DC and AC concepts, semiconductors, digital electronics, and microcomputers, including Ohm's Law, Kirchhoff's Voltage and Current Laws, resistance,

capacitance, inductance, conductance, reactance, susceptance, impedance, admittance, and RC and RL time constants. Analysis of series, parallel, series-parallel, and bridge networks using Superposition, Thevenin's and Maximum Power Transfer Theorems, Resonance, Mesh, and Nodal Analysis.

Objectives:

- Identify passive and active components and understand their uses in electrical circuitry.
- Identify and read electrical schematics and their symbols.
- Correctly use a multimeter to read voltage, current, resistance, and capacitance.
- Differentiate types of circuits, including but not limited to resistive, capacitive, inductive, RLC, RC, and RL.

Circuit Analysis Lab **2 Credits/60 Clock-Hours**

This course involves hands-on application of circuit analysis and application of theory. Students will demonstrate an understanding of circuit principles and demonstrate technical proficiency in measuring and troubleshooting circuits.

Objectives:

- Use schematic diagrams and symbols to prototype AC and circuits.
- Analyze voltage divider, bridge, and maximum power transfer circuits.
- Perform series, parallel, and series-parallel combination circuits calculations and measurements, and analyze circuits for faulty components.

Flight Principles **3 Credits/90 Clock-Hours**

This course provides an introduction to the fundamentals of flight theory and the physics that govern flight. It covers the operation of aircraft control systems essential to flight and teaches the techniques for ground handling and servicing of aircraft.

Objectives:

- Explain Fundamental Flight Theory and Physics, including the aerodynamics and physics that govern how aircraft fly and operate.
- Identify Aircraft Control System Operations, including the essential systems crucial for flight, and explain how each component functions and interacts within the system.
- Demonstrate Ground Handling and Servicing Techniques by performing practical skills related to safe and efficient operations.

Aircraft Components and Principles **2 Credits/60 Clock-Hours**

This course equips students with the skills needed for aircraft maintenance, emphasizing the application of FAA guidelines, manufacturer specifications, and airworthiness directives. Students will conduct thorough inspections, perform maintenance procedures such as cleaning and testing, and learn to select appropriate maintenance materials. Additionally, the course covers human factors in aviation maintenance to enhance safety, efficiency, and team dynamics.

Objectives:

- Read, comprehend, and apply information from FAA and manufacturer's aircraft maintenance specifications, manuals, publications, Federal Aviation Regulations, Airworthiness Directives, and Advisory material.
- Perform inspections, identify and treat aircraft corrosion, check welds, and execute precision measurements to ensure airworthiness.

- Utilize appropriate methods for aircraft cleaning, basic heat testing, and nondestructive testing to maintain and enhance aircraft safety and functionality.
- Identify and select the correct cleaning materials, hardware, and other materials required for aircraft maintenance tasks.
- Discuss human factors in aviation maintenance to improve safety, efficiency, and team dynamics, focusing on error management, fatigue mitigation, and effective communication strategies.

Aircraft Structures **3 Credits/90 Clock-Hours**

This course provides a comprehensive introduction to aircraft structures, including the fuselage, wings, empennage, engine mounts, and landing gear components. Students will achieve proficiency in the use and installation of aircraft hardware, rivets, and special fasteners for structural assemblies. The curriculum covers wood structures and fabric covering processes, as well as accepted methods for repairing metal structures. Additionally, students will learn about organic finishes and application techniques, supplemented by laboratory applications and practical experience.

Objectives:

- Use and install aircraft hardware, including rivets and special fasteners, focusing on aluminum fabrication processes through hands-on lab experiences.
- Perform structural analytical calculations to determine repair strength requirements, allowable shear and bearing stress, and material forming limits, ensuring integrity and compliance with safety standards.
- Use machine tools to accurately form aircraft parts, enhancing technical capabilities in component manufacturing and assembly.

Aircraft Maintenance **3 Credits/90 Clock-Hours**

In this course, students will work hands-on on complete aircraft assemblies. They will acquire skills in maintaining, repairing, altering, and inspecting aircraft and their components, adhering to FAA industry standards. The curriculum includes rigging aircraft control surfaces, fabricating control cables, performing cable tension testing, inspecting and rigging landing gear systems, and learning to remove and install major airframe components.

Objectives:

- Maintain, repair, and alter aircraft, focusing on adherence to FAA industry standards, including structural repairs, aircraft finishes, and troubleshooting structural failure modes.
- Inspect, rig, and assemble aircraft systems, including landing gear alignment and rigging, wing removal, and installing major airframe components.
- Fabricate control cables, balance control surfaces, rig flap systems, and other control surfaces to ensure optimal aircraft performance.
- Explain the fundamental principles of helicopter flight and rigging, emphasizing aircraft weight and balance and helicopter-specific maintenance practices.

Aircraft Systems **3 Credits/90 Clock-Hours**

This course covers the theory and operation of aerospace environmental systems, communication, navigation and guidance systems, fuel and propellant systems, fire detection, and warning.

Objectives:

- Discuss environmental control, oxygen, fuel, and de-icing systems essential for providing a safe and comfortable environment in aircraft.

- Operate, inspect, and maintain key systems, including oxygen and pressurization systems, flight instruments, and fuel systems, to ensure aircraft readiness and safety.
- Diagnose and troubleshoot problems in various aircraft systems during malfunctions, enhancing reliability and performance during flights.
- Remove, bench test, reinstall, and repair system components to develop practical skills that are adaptable to different aircraft types.

Aircraft Hydraulic and Pneumatic Systems **3 Credits/90 Clock-Hours**

This course explores the theory and operation of aircraft hydraulic and pneumatic systems, including landing gear and brakes. It provides hands-on experience in a lab setting, where students learn to operate, design, and troubleshoot these systems. Through practical exercises with actual aircraft components, participants gain essential skills in maintenance and servicing, preparing them for careers in aviation and aerospace.

Objectives:

- Explain the theory and operational principles behind aircraft hydraulic and pneumatic systems.
- Operate basic systems effectively and basic hydraulic and pneumatic setups for aircraft.
- Diagnose and troubleshoot malfunctions within hydraulic and pneumatic systems to maintain functionality and safety.
- Maintain and service aircraft hydraulic and pneumatic components, ensuring they meet industry standards.

Composite Manufacturing Processes and Repair **3 Credits/90 Clock-Hours**

Composite manufacturing processes, composite materials survey, tooling design and fabrication, autoclave processes, vacuum bag techniques, filament winding processes, equipment requirements, materials cutting and storage, and composite materials testing.

Objectives:

- Prepare composite surfaces for painting and conduct thorough inspections, including tap tests to assess structural integrity.
- Perform various composite repair methods and techniques, including the use of appropriate fasteners and practices for structural repairs.
- Accurately measure and mix materials associated with composite construction to ensure high-quality fabrications.
- Inspect composite, plastic, and glass-laminated structures to identify defects and ensure compliance with industry standards.

FAA Regulations, Records, and Certification **2 Credits/60 Clock-Hours**

Students learn the maintenance forms, records, and regulations for releasing aircraft to airworthy status. Certification of maintenance technicians is also included.

Objectives:

- Obtain the necessary knowledge, risk management, and skill elements as required by the FAA's Airmen Certification Standards (ACS) Section 1-General, subsection i - Regulations, Maintenance Forms, Records, and Publications.
- Effectively and efficiently work in a team environment.

Aircraft Electrical Systems and Components **2 Credits/60 Clock-Hours**

Aircraft electrical power generating systems. Theory of generation, alternators, regulation, and control systems with laboratory application of principles and systems studied.

Objectives:

- Obtain the necessary knowledge, risk management, and skill elements as required by the FAA's Airmen Certification Standards (ACS) Section 1-General, subsection i - Regulations, Maintenance Forms, Records, and Publications.
- Demonstrate record keeping and necessary forms for FAA standards.
- Assess the airworthiness status of aircraft and maintenance schedules.
- Prepare for certification of maintenance technician status.

Aircraft Electrical Systems and Components Lab **2 Credits/60 Clock-Hours**

Aircraft electrical power generating systems. Theory of generation, alternators, regulation, and control systems with laboratory application of principles and systems studied.

Objectives:

- Obtain the necessary knowledge, risk management, and skill elements as required by the FAA's Airmen Certification Standards (ACS) section 1-A Fundamentals of Electricity and Electronics, 2-K Aircraft electrical systems, and 3-F Engine electrical systems.
- Troubleshoot and diagnose Aircraft electrical faults and circuits.
- Apply theory to the principles of aircraft electrical competencies.

Utah System of Higher Education
Phlebotomy
FY2026 / 3 Credits (90/105 Clock-Hours)

Phlebotomy			
Institutions: Bridgerland, Davis, Dixie, Mountainland, Ogden-Weber, Southwest, USU-Eastern			
Technical Certificate (Catalog Year: 2026, 3 Credits/90/105 Clock-Hours Required, CIP: 51.1009)			
Foundational Courses (3 Credits/90/105 Clock-Hours)		**Credits**	**Clock-Hours**
Foundational Course			
TEPH 1010	Phlebotomy I	2	60
Additional Course			
Bridgerland, Dixie, Mountainland, USU – Eastern (1 Credit/30 Clock-Hours)			
TEPH 1020	Phlebotomy II	1	30
Davis, Ogden-Weber, Southwest (1 Credit/45 Clock-Hours)			
TEPH 2999	Phlebotomy Clinical	1	45

Utah System of Higher Education
Phlebotomy
FY2026 / 3 Credits (90/105 Clock-Hours)

PROGRAM DESCRIPTION

This program will provide students with the skills and knowledge needed to become competent phlebotomists. The program provides hands-on, competency-based technical education through classroom and laboratory instruction as well as hands-on practice. Lectures are given on basic and advanced phlebotomy, including the healthcare setting, overview of the human body, blood collection procedures, and special collection procedures. Laboratory skills being taught include:

* Multi-sample Needle
* Urinalysis
* Butterfly Needle
* Proper Patient Identification
* Needle to Syringe and Transfer
* Glucose Testing
* Special Procedures
* Blood Cultures
* Newborn Screen
* Test Requisitions
* Hemoglobin
* Order of Draw
* Hematocrit
* Specimen Transport
* Syncope
* Centrifugation

Students have the opportunity to draw blood from classmates and volunteers. Upon completion students are eligible to take the National Certified Phlebotomy Technician (CPT) exam. Graduates are able to work as a phlebotomist and use their phlebotomy skills in a variety of hospitals, care centers, clinics, and other healthcare settings.

Objectives:

- Identify laboratory, OSHA, hazardous material, blood borne pathogen exposures, warning symbols, infection control, and patient safety rules.
- Gain a basic understanding of the laboratory equipment and computer systems.
- Demonstrate basic terminology for the healthcare setting, understand and utilize correct order of draw, and have basic knowledge of human anatomy and physiology related to venipuncture.
- Draw blood correctly and safely from a patient by properly using equipment and supplies necessary while identifying and adjusting for any challenges associated with the venipuncture.
- Pass all final examinations, gain a certificate from the college and be eligible to take the National certification exam.

FOUNDATIONAL COURSE DESCRIPTIONS

Phlebotomy I **2 Credit/60 Clock-Hours**

In Phlebotomy I, students learn about the past and present of phlebotomy practices, infection control, equipment, safety, the circulatory system, medical terminology, anatomy and physiology, preanalytical consideration, venipuncture, straights venipuncture, butterfly venipuncture, special collections, patient identification, and other relevant skills.

Objectives:

- Identify laboratory, OSHA, hazardous material, blood borne pathogen exposures, warning symbols, infection control, and patient safety rules.
- Identify and use laboratory equipment and computer systems.
- Demonstrate use of basic terminology for the healthcare setting, understand and utilize correct order of draw, and explain the basics of human anatomy and physiology related to venipuncture.

- Draw blood correctly and safely from a patient by properly using equipment and supplies necessary while identifying and adjusting for any challenges associated with the venipuncture.

LECTURE/LAB COURSE (BRIDGERLAND, DIXIE, MOUNTAINLAND, USU-EASTERN)

Phlebotomy II **1 Credit/30 Clock-Hours**

In Phlebotomy II, students learn advanced phlebotomy procedures ensuring adequate knowledge and skills in their field. Students hone communication and phlebotomy skills, while practicing real-life scenarios in a controlled environment. Students explore phlebotomy jobs and prepare for employment by demonstrating learned skills.

Objectives:

- Obtain knowledge of advanced venipuncture procedures and identify when they are to be used.
- Correctly and safely perform blood draws blood from a patient by properly using any equipment and supplies necessary while identifying and adjusting for any challenges associated with the venipuncture.
- Demonstrate communication skills appropriate for the phlebotomy industry.
- Discuss the employment requirements and career opportunities within the phlebotomy industry.

CLINCAL COURSE (DAVIS, OGDEN-WEBER, SOUTHWEST)

Phlebotomy Clinical **1 Credit/45 Clock-Hours**

In the Phlebotomy Clinical course, students transition into a professional role by demonstrating the knowledge, skills and professional attributes learned in the program while working in a professional setting. This experience takes place under the supervision of a qualified site supervisor and includes skill practice and evaluation.

Objectives:

- Practice infection control and safety.
- Perform venipunctures and collect specimens.

UTAH SYSTEM OF HIGHER EDUCATION

Utah System of Higher Education
Powerplant Maintenance
FY2026 / 38 Credits (1140 Clock-Hours)

Powerplant Maintenance

Institutions: USU-Eastern

Technical Certificate (Catalog Year: 2026, 38 Credits/1140 Clock-Hours Required, CIP: 47.0608)

Foundational Courses (38 Credits/1140 Clock-Hours)		Credits	Clock-Hours
TEMT 1005	Machining for Manufacturing Trades	3	90
TEDR 1000	Technical Drafting	4	120
TEAV 1000	Technical Mathematics	3	90
TEAV 1010	Circuit Analysis	3	90
TEAV 1020	Circuit Analysis Lab	2	60
TEAV 1130	Flight Principles	3	90
TEAV 1140	Aircraft Components and Principles	2	60
TEAV 2100	Aircraft Reciprocating Powerplants and Accessories	3	90
TEAV 2110	Aircraft Reciprocating Powerplants and Accessories Lab	3	90
TEAV 2140	Aircraft Turbine Powerplant Maintenance Operations	3	90
TEAV 2150	Aircraft Turbine Powerplant Maintenance Operations Lab	3	90
TEAV 2420	Regulations and Records	2	60
TEAV 2430	Aircraft Electrical Systems and Components	2	60
TEAV 2440	Aircraft Electrical Systems and Components Lab	2	60

Utah System of Higher Education
Powerplant Maintenance
FY2026 / 38 Credits (1140 Clock-Hours)

PROGRAM DESCRIPTION

The Airframe Maintenance program equips students with the necessary skills for a career in aviation maintenance. After completing this certificate, students will meet the Federal Aviation Administration requirements to take the General and Airframe tests required to earn their FAA Airframe license.

Objectives:

- Perform aviation engine maintenance in alignment with FAA Standards.
- Prepare for FAA Licensing by fulfilling all prerequisites to sit for the Federal Aviation Administration General and Airframe licensing exams, qualifying for certification and practice in the field.
- Interpret diagnostic material for aviation maintenance and repair.
- Record maintenance logs and certify the airworthiness of aircraft.

FOUNDATIONAL COURSE DESCRIPTIONS

Machining for Manufacturing Trades **3 Credits/90 Clock-Hours**

This is a course to support manufacturing programs related to machining. It gives students a working overview of industrial machine shop practice. This course is designed to teach principles and techniques of manufacturing processes by learning to operate the lathe and mill. Students will be trained in areas of blueprint reading, hand tools, machining and part inspection, all with the use of manual machines.

Objectives:

- Identify safe practices in a machine shop.
- Identify correct clean up procedures.
- Demonstrate basic layout procedures.
- Reading and interpreting blueprints.
- Safely setup and operate a band saw.
- Safely operate a bench grinder and hand tools.
- Accurately use and read steel rules, micrometers, and calipers.
- Perform safe and effective use of lathes and milling machines.
- Perform basic programming and use controls of a CNC machine.

Technical Drafting **4 Credits/120 Clock-Hours**

The Technical Drafting course is designed to help students develop and build familiarity with fundamental drafting concepts. Discussion concepts will include preparing industry standard documents using a drafting software.

Objectives:

- Explore various design fields including architecture, mechanical design, and/or civil design.
- Use sketching to communicate designs.
- Create isometrics, orthographic projections, sections, and auxiliary drawings, including basic annotations and dimensions.
- Use a CAD system as a drafting tool.
- Develop, modify, and plot CAD drawings.

Technical Mathematics **3 Credits/90 Clock-Hours**

This course covers various specialized mathematical topics necessary for careers in trades and industries. These topics include, but are not limited to, systems of units, units of measure, scientific vs. metric prefix notation, functions, complex numbers, and vectors.

Objectives:

- Use systems of units and units of measure, scientific vs. metric prefix notation, algebraic and trigonometric functions, complex numbers, and vectors.
- Identify relevant steps for calculating multi-step problems to find solutions.
- Utilize trigonometric functions in a contextualized setting relevant to the field of study.
- Apply mathematic principles in various contexts and settings.

Circuit analysis **3 Credits/90 Clock-Hours**

This course consists of studying and applying DC and AC concepts, semiconductors, digital electronics, and microcomputers, including Ohm's Law, Kirchhoff's Voltage and Current Laws, resistance, capacitance, inductance, conductance, reactance, susceptance, impedance, admittance, and RC and RL time constants. Analysis of series, parallel, series-parallel, and bridge networks using Superposition, Thevenin's and Maximum Power Transfer Theorems, Resonance, Mesh, and Nodal Analysis.

Objectives:

- Identify passive and active components and understand their uses in electrical circuitry.
- Identify and read electrical schematics and their symbols.
- Correctly use a multimeter to read voltage, current, resistance, and capacitance.
- Differentiate types of circuits, including but not limited to resistive, capacitive, inductive, RLC, RC, and RL.

Circuit Analysis Lab **2 Credits/60 Clock-Hours**

This course involves hands-on application of circuit analysis and application of theory. Students will demonstrate an understanding of circuit principles and demonstrate technical proficiency in measuring and troubleshooting circuits.

Objectives:

- Use schematic diagrams and symbols to prototype AC and circuits.
- Analyze voltage divider, bridge, and maximum power transfer circuits.
- Perform series, parallel, and series-parallel combination circuits calculations and measurements, and analyze circuits for faulty components.

Flight Principles **2 Credits/60 Clock-Hours**

This course provides an introduction to the fundamentals of flight theory and the physics that govern flight. It covers the operation of aircraft control systems essential to flight and teaches the techniques for ground handling and servicing of aircraft.

Objectives:

- Explain Fundamental Flight Theory and Physics, including the aerodynamics and physics that govern how aircraft fly and operate.
- Identify Aircraft Control System Operations, including the essential systems crucial for flight, and explain how each component functions and interacts within the system.
- Demonstrate Ground Handling and Servicing Techniques by performing practical skills related to safe and efficient operations.

Aircraft Components and Principles **2 Credits/60 Clock-Hours**

This course equips students with the skills needed for aircraft maintenance, emphasizing the application of FAA guidelines, manufacturer specifications, and airworthiness directives. Students will conduct thorough inspections, perform maintenance procedures such as cleaning and testing, and learn to select appropriate maintenance materials. Additionally, the course covers human factors in aviation maintenance to enhance safety, efficiency, and team dynamics.

Objectives:

- Read, comprehend, and apply information from FAA and manufacturer's aircraft maintenance specifications, manuals, publications, Federal Aviation Regulations, Airworthiness Directives, and Advisory material.
- Perform inspections, identify and treat aircraft corrosion, check welds, and execute precision measurements to ensure airworthiness.
- Utilize appropriate methods for aircraft cleaning, basic heat testing, and nondestructive testing to maintain and enhance aircraft safety and functionality.
- Identify and select the correct cleaning materials, hardware, and other materials required for aircraft maintenance tasks.
- Discuss human factors in aviation maintenance to improve safety, efficiency, and team dynamics, focusing on error management, fatigue mitigation, and effective communication strategies.

Aircraft Structures **3 Credits/90 Clock-Hours**

This course provides a comprehensive introduction to aircraft structures, including the fuselage, wings, empennage, engine mounts, and landing gear components. Students will achieve proficiency in the use and installation of aircraft hardware, rivets, and special fasteners for structural assemblies. The curriculum covers wood structures and fabric covering processes, as well as accepted methods for repairing metal structures. Additionally, students will learn about organic finishes and application techniques, supplemented by laboratory applications and practical experience.

Objectives:

- Use and install aircraft hardware, including rivets and special fasteners, focusing on aluminum fabrication processes through hands-on lab experiences.
- Perform structural analytical calculations to determine repair strength requirements, allowable shear and bearing stress, and material forming limits, ensuring integrity and compliance with safety standards.
- Use machine tools to accurately form aircraft parts, enhancing technical capabilities in component manufacturing and assembly.

Aircraft Maintenance **3 Credits/90 Clock-Hours**

In this course, students will work hands-on on complete aircraft assemblies. They will acquire skills in maintaining, repairing, altering, and inspecting aircraft and their components, adhering to FAA industry standards. The curriculum includes rigging aircraft control surfaces, fabricating control cables, performing cable tension testing, inspecting and rigging landing gear systems, and learning to remove and install major airframe components.

Objectives:

- Maintain, repair, and alter aircraft, focusing on adherence to FAA industry standards, including structural repairs, aircraft finishes, and troubleshooting structural failure modes.

- Inspect, rig, and assemble aircraft systems, including landing gear alignment and rigging, wing removal, and installing major airframe components.
- Fabricate control cables, balance control surfaces, rig flap systems, and other control surfaces to ensure optimal aircraft performance.
- Explain the fundamental principles of helicopter flight and rigging, emphasizing aircraft weight and balance and helicopter-specific maintenance practices.

Aircraft Systems **3 Credits/90 Clock-Hours**

This course covers the theory and operation of aerospace environmental systems, communication, navigation and guidance systems, fuel and propellant systems, fire detection, and warning.

Objectives:

- Discuss environmental control, oxygen, fuel, and de-icing systems essential for providing a safe and comfortable environment in aircraft.
- Operate, inspect, and maintain key systems, including oxygen and pressurization systems, flight instruments, and fuel systems, to ensure aircraft readiness and safety.
- Diagnose and troubleshoot problems in various aircraft systems during malfunctions, enhancing reliability and performance during flights.
- Remove, bench test, reinstall, and repair system components to develop practical skills that are adaptable to different aircraft types.

Aircraft Hydraulic and Pneumatic Systems **3 Credits/90 Clock-Hours**

This course explores the theory and operation of aircraft hydraulic and pneumatic systems, including landing gear and brakes. It provides hands-on experience in a lab setting, where students learn to operate, design, and troubleshoot these systems. Through practical exercises with actual aircraft components, participants gain essential skills in maintenance and servicing, preparing them for careers in aviation and aerospace.

Objectives:

- Explain the theory and operational principles behind aircraft hydraulic and pneumatic systems.
- Operate basic systems effectively and basic hydraulic and pneumatic setups for aircraft.
- Diagnose and troubleshoot malfunctions within hydraulic and pneumatic systems to maintain functionality and safety.
- Maintain and service aircraft hydraulic and pneumatic components, ensuring they meet industry standards.

Composite Manufacturing Processes and Repair **3 Credits/90 Clock-Hours**

Composite manufacturing processes, composite materials survey, tooling design and fabrication, autoclave processes, vacuum bag techniques, filament winding processes, equipment requirements, materials cutting and storage, and composite materials testing.

Objectives:

- Prepare composite surfaces for painting and conduct thorough inspections, including tap tests to assess structural integrity.
- Perform various composite repair methods and techniques, including the use of appropriate fasteners and practices for structural repairs.
- Accurately measure and mix materials associated with composite construction to ensure high-quality fabrications.

- Inspect composite, plastic, and glass-laminated structures to identify defects and ensure compliance with industry standards.

FAA Regulations, Records, and Certification **2 Credits/60 Clock-Hours**

Students learn the maintenance forms, records, and regulations for releasing aircraft to airworthy status. Certification of maintenance technicians is also included.

Objectives:

- Obtain the necessary knowledge, risk management, and skill elements as required by the FAA's Airmen Certification Standards (ACS) Section 1-General, subsection i - Regulations, Maintenance Forms, Records, and Publications.
- Effectively and efficiently work in a team environment.

Aircraft Electrical Systems and Components **2 Credits/60 Clock-Hours**

Aircraft electrical power generating systems. Theory of generation, alternators, regulation, and control systems with laboratory application of principles and systems studied.

Objectives:

- Obtain the necessary knowledge, risk management, and skill elements as required by the FAA's Airmen Certification Standards (ACS) Section 1-General, subsection i - Regulations, Maintenance Forms, Records, and Publications.
- Demonstrate record keeping and necessary forms for FAA standards.
- Assess the airworthiness status of aircraft and maintenance schedules.
- Prepare for certification of maintenance technician status.

Aircraft Electrical Systems and Components Lab **2 Credits/60 Clock-Hours**

Aircraft electrical power generating systems. Theory of generation, alternators, regulation, and control systems with laboratory application of principles and systems studied.

Objectives:

- Obtain the necessary knowledge, risk management, and skill elements as required by the FAA's Airmen Certification Standards (ACS) section 1-A Fundamentals of Electricity and Electronics, 2-K Aircraft electrical systems, and 3-F Engine electrical systems.
- Troubleshoot and diagnose Aircraft electrical faults and circuits.
- Apply theory to the principles of aircraft electrical competencies.

UTAH SYSTEM OF HIGHER EDUCATION

Utah System of Higher Education
Unmanned Aircraft Systems
FY2026 / 31 Credits (930 Clock-Hours)

Unmanned Aircraft Systems

Institutions: USU-Eastern

Technical Certificate (Catalog Year: 2026, 31 Credits/930 Clock-Hours Required, CIP: 47.0109)

Foundational Courses (31 Credits/930 Clock-Hours)		Credits	Clock-Hours
TEAV 1130	Flight Principles	3	90
TEUA 1011	Unmanned Aircraft Systems Remote Pilot	3	90
TEUA 1021	Unmanned Aircraft Systems Part 107 Test	1	30
TEUA 1201	Unmanned Aircraft Systems Introduction to Fixed-Wings	3	90
TEUA 1301	Unmanned Aircraft Systems Introduction to Multirotor	3	90
TEUA 1501	Introduction to Unmanned Aircraft Systems Maintenance and Components	3	90
TEUA 2041	Aviation Meteorology	3	90
TEUA 2051	Unmanned Aircraft Systems Pilot in Command	3	90
TEUA 2101	Unmanned Aircraft Systems Flight Patterns and Maneuvers	3	90
TEUA 2651	Drones for Hire	3	90
TEUA 2701	Unmanned Aircraft Systems Introduction to Aerial Photography	3	90

Utah System of Higher Education
Unmanned Aircraft Systems
FY2026 / 31 Credits (930 Clock-Hours)

PROGRAM DESCRIPTION

The Unmanned Aircraft Systems program will prepare students to become FAA certificated as a remote pilot and gain introductory experience in flying and programming both fixed-wing and multirotor drones. Students will also gain introductory experience in maintaining and repairing aircraft, as well as collecting, analyzing, and reporting data and deliverables.

Objectives:

- Apply factual knowledge of FAA requirements, regulations, and expectations in industry as well as for the Part 107 exam.
- Identify sUAS components, uses, designs, and applications related to industry.
- Perform basic skills in flight, repair, and construction techniques in both fixed-wing and multirotor drones.
- Utilize soft skills in documentation styles, reflection, in-class and online discussion, and analysis related to drone deliverables.

FOUNDATIONAL COURSE DESCRIPTIONS

Flight Principles **3 Credits/90 Clock-Hours**

This course provides an introduction to the fundamentals of flight theory and the physics that govern flight. It covers the operation of aircraft control systems essential to flight and teaches the techniques for ground handling and servicing of aircraft.

Objectives:

- Explain Fundamental Flight Theory and Physics, including the aerodynamics and physics that govern how aircraft fly and operate.
- Identify Aircraft Control System Operations, including the essential systems crucial for flight, and explain how each component functions and interacts within the system.
- Demonstrate Ground Handling and Servicing Techniques by performing practical skills related to safe and efficient operations.

Unmanned Aircraft Systems Remote Pilot **3 Credits/90 Clock-Hours**

This course covers the rapidly expanding technology of small Unmanned Aircraft Systems (sUAS) and the legalities of flying drones. Topics include aviation safety, rules and regulations, Federal Aviation Administration (FAA) commercial certification preparation, and a flight lab component.

Objectives:

- Discuss the rapidly expanding Unmanned Aircraft System (UAS) industry and prepare to enter this competitive market.
- Describe the current regulations outlined in FAA Part 107.
- Demonstrate proficiency related to the concepts and required information essential to pass the FAA ground exam and register as Remote Pilot Operators.
- Demonstrate basic flight skills.

Unmanned Aircraft Systems Part 107 Test **1 Credit/30 Clock-Hours**

This is our FAA Certification Class in which students submit their Part 107 exam sheet and recurrent training certificate.

Objectives:

- Complete the FAA Part 107 Certification test.
- Verify completion of the FAA Part 107 Certification test by uploading their score sheet.

Unmanned Aircraft Systems Introduction to Fixed-Wings **3 Credits/90 Clock-Hours**

Students learn the basics of small Unmanned Aircraft Systems (sUAS) fixed-wing design and construction to include flight characteristics of new or modified builds. They build, program, fly, and modify their own fixed-wing drone.

Objectives:

- Build fixed-wing drones using appropriate construction and design methods, flight principles, and programming techniques.
- Demonstrate use of proper tools and components for fixed-wing construction and repair.

Unmanned Aircraft Systems Introduction to Multirotor **3 Credits/90 Clock-Hours**

Students learn the basics of small Unmanned Aircraft Systems (sUAS) multirotor design and construction, which includes building a multirotor from a kit, programming a flight controller, and tuning motors appropriately. Students will document and conduct test flights with their drones.

Objectives:

- Explain the documentation process and how it applies to industry standards.
- Identify sUAS components.
- Use industry best practices in documentation, tool and equipment logs, supply upkeep, and communication processes.
- Create and design a multi-rotor build complete with appropriate documentation.

Introduction to Unmanned Aircraft Systems Maintenance and Components
3 Credits/90 Clock-Hours

Students will be introduced to various tools and techniques for sUAS and UAS maintenance. Throughout the course, students utilize maintenance records and equipment logs. Students will also gain factual knowledge of sUAS components, checklists, tools, tuning techniques, and building techniques.

Objectives:

- Explain drone components and use cases.
- Apply documentation styles to maintenance and equipment logs.
- Use proper tools and techniques for given scenarios.
- Identify industry tools and techniques related to the maintenance of sUAS.

Aviation Meteorology **3 Credits/90 Clock-Hours**

This course will cover the basics of weather for modern aircraft pilots, whether manned or unmanned. It instructs the basics of weather patterns, key points to watch before you fly, and weather reporting methods and techniques.

Objectives:

- Identify terminology, classification, methods, and trends as gained through readings, lectures, research, case studies, and classroom discussions.
- Develop skills related to weather observation, predication, and effect on flight in relation to points of view needed by professionals in the field most closely related to this course through research, case studies, assignments, guest speakers, and reflections.

- Analyze and critically evaluate ideas, arguments, and points of view through research, case studies, assignments, and peer reviews.

Unmanned Aircraft Systems Pilot In Command **3 Credits/90 Clock-Hours**

This course explores the methods and applications for becoming a Pilot in Command (PIC) in sUAS operations. It focuses on technical writing, expanding the rules of drones, and creating and maintaining a crew concept in drone operations.

Objectives:

- Control and oversee a drone operation.
- Apply the rules and regulations for using sUAS in the industry.
- Demonstrate technical writing and other soft skills related to industry expectations.
- Communicate on a large business scale to complete a commercial project.

Unmanned Aircraft Systems Flight Patterns and Maneuvers **3 Credits/90 Clock-Hours**

In this course, students develop their flying skills with manual flight in both fixed-wing and multirotor drones. Emphasis is placed on logging additional flying hours through traffic patterns, maneuvers, and practice search and rescue flight paths.

Objectives:

- Comfortably maneuver a variety of drones and a variety of flight modes.
- Fly a fixed-wing drone manually and log those hours.
- Explain maintenance techniques and checklists for multirotor and fixed-wing type drones.

Drones for Hire **3 Credits/90 Clock-Hours**

This course is an internship-intensive class that helps students prepare for sUAS work in industry. Students learn how to write a drone-focused resume, interview for, and complete real-life or scenario-based projects using sUAS skills.

Objectives:

- Complete a community project by applying technical knowledge, applicable skills, and various soft skills such as time management and communication.
- Complete a reflection paper and professional presentation applicable to portfolio development.
- Demonstrate writing techniques to create a resume and LinkedIn account and begin a portfolio.
- Explain various deliverables related to industry development.

Unmanned Aircraft Systems Introduction to Aerial Photography **3 Credits/90 Clock-Hours**

Students will be introduced to various multirotor flight techniques and maneuvers as they apply to aerial photography and videography. Students will also be introduced to basic photo and video editing and demonstrate an understanding of basic critique skills and purpose.

Objectives:

- Use aerial photo and video techniques according to audience and purpose.
- Apply flight practice to aerial photo and video creation.
- Critique and analyze a project according to audience and purpose.
- Demonstrate safe and efficient in-flight operation of a rotary sUAS.