UTAH SYSTEM OF HIGHER EDUCATION

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

Foundational Courses

TEMT 1005 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.

TEAV 1000 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.

TEAV 1010 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.

TEAV 1020 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.

TEAV 1130 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.

TEAV 1140 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.

TEAV 1170 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.

TEAV 1240 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.

TEAV 2170 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.

TEAV 2180 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.

TEAV 2200 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.

TEAV 2420 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.

TEAV 2430 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.

TEAV 2440 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.