

AVIATION MAINTENANCE TECHNOLOGY

Objectives for Aviation Maintenance Programs

These programs in Aviation Maintenance share a common core of courses required for the FAA Airframe and Powerplant License. In order to achieve a certificate of completion and qualify for the FAA written, oral, and practical examinations, a student must maintain a 2.00 cumulative grade point average and receive no course grade of "F." In addition, the student must pass all of the Departmental Comprehensive Examinations (General, Airframe and Powerplant). For the student's first license, the General exam must be taken with either the Airframe or Powerplant exam, and both exams must be passed on the same day. For more details about the comprehensive examinations, please contact the department directly.

Students in the Aviation Maintenance Technology Bachelor's program must not only complete their Departmental Comprehensive Examinations, but must also earn their Federal Aviation Administration Airframe and Powerplant Certifications.

For information that pertains to all aviation students, see Aviation Majors (<https://catalog.lewisu.edu/undergraduate/aviation-science-technology/aviation-majors/>).

Programs Bachelor

- Aviation Maintenance Technology / Bachelor of Science (<https://catalog.lewisu.edu/undergraduate/aviation-science-technology/aviation-maintenance-technology/aviation-maintenance-technology-bachelor-science/>)

Associate

- Aviation Maintenance Technology / Associate Degree (<https://catalog.lewisu.edu/undergraduate/aviation-science-technology/aviation-maintenance-technology/aviation-maintenance-technology-associate-degree/>)

Minor

- Aviation Maintenance Technology / Minor (<https://catalog.lewisu.edu/undergraduate/aviation-science-technology/aviation-maintenance-technology/aviation-maintenance-technology-minor/>)

Non-Degree

- Aviation Maintenance Technology Certificate (<https://catalog.lewisu.edu/undergraduate/aviation-science-technology/aviation-maintenance-technology/aviation-maintenance-technology-certificate/>)

Courses

AVMT 10200 - Introduction to Aviation (1)

This general course is designed to acquaint student's with the many aspects of and career opportunities in the aviation industry.

AVMT 10500 - Aviation Technical Writing (3)

This class studies grammar, spelling, composition of letters of application, resumes, references and the use of a word processor. A technical project report is completed during the semester. 45 contact hours (45 lecture). Meets requirements of 14 CFR 147.

AVMT 10600 - Aviation Fundamentals (4)

Students learn about aerodynamics, aircraft design, stability, control, Federal Aviation Administration regulations and publications, weight and balance, and ground handling of aircraft. 90 contact hours (60 lecture/30 lab). Meets requirements of 14 CFR 147.

AVMT 10601 - Aviation Fundamentals Lab (0)

Corequisite: AVMT 10600

AVMT 11000 - Aircraft Structures 1 (4)

The focus of this course is riveting and sheet metal repair, including aluminum, forming and layout and oxyacetylene welding operation. Corrosion and corrosion control are also studies. 180 contact hours (60 lecture/120 lab). Meets requirements of 14 CFR 147.

AVMT 11001 - Aircraft Structures Lab (0)

Corequisite: AVMT 11000

AVMT 12000 - Aircraft Electricity 1 (4)

This course provides a study of DC electrical circuits, Ohm's Law, magnetism, generators, regulators, motors, aircraft electrical circuit components, wiring diagrams, batteries and electrical meters. 120 contact hours (60 lecture/60 lab). Meets requirements of 14 CFR 147.

AVMT 12001 - Aircraft Electricity Lab (0)

Corequisite: AVMT 12000

AVMT 13000 - Airframe Inspection (3)

This combined lecture/laboratory course familiarizes the student with liquid penetrant, magnetic particle, eddy current, radiographic, sonic and ultrasonic evaluation procedures applicable to aircraft structures and engines using nondestructive testing methods. Students will learn and apply concepts to successfully conduct airframe inspections. Meets requirements of 14 CFR 147.

Attributes: Experiential Learning Gen Ed

AVMT 13001 - Airframe Inspection Lab (0)

Corequisite: AVMT 13000

AVMT 13500 - Drafting and Blueprint Reading (3)

Lettering and use of equipment are studied, including orthographic projections, sectioning, auxiliary views, isometric and oblique views and reading of electrical, mechanical and hydraulic drawings. 45 contact hours (45 combined lecture/lab). Meets requirements of 14 CFR 147.

AVMT 20000 - Aircraft Instruments (4)

This course provides a study of pressure, mechanical and electrical instruments; compass system; gyro instruments and systems; radio communications and navigation equipment; and auto pilot systems. 120 contact hours (60 lecture/60 lab). Meets requirements of 14 CFR 147. Prerequisite: AVMT 12000 (may be taken concurrently) or AVTR 12000 (may be taken concurrently)

AVMT 20001 - Aircraft Instruments Lab (0)

Corequisite: AVMT 20000

AVMT 20100 - Aviation Math and Physics (4)

Students study the laws of physics with aviation applications, including structure of matter, gas laws, heat transfer, and properties of liquids while implementing basic algebraic concepts into practice. Meets requirements of 14 CFR 147.

Attributes: Science General Education

AVMT 20200 - Aviation Physics 2 (3)

This course provides an advanced study of physics focusing on strength of materials, light, sound and atomic energy. 45 contact hours (45 combined lecture/lab).

Prerequisite: AVMT 20100 (may be taken concurrently)

AVMT 21000 - Aircraft Structures 2 (4)

A continuation of AVMT 11000, this course focuses on types of airframe structures, including wood and fabric applications and repairs, aircraft assembly and rigging, use and repairs of plastics and honeycomb repairs. 180 contact hours (60 lecture/120 lab). Meets requirements of 14 CFR 147.

AVMT 21001 - Aircraft Structures 2 Lab (0)

Corequisite: AVMT 21000

AVMT 22000 - Aircraft Electricity 2 (4)

A continuation of AVMT 12000, this course focuses on AC circuits, capacitance and inductance, AC generators, transformers, resonant circuits, electron tubes and solid state components. 120 contact hours (60 lecture/60 lab). Meets requirements of 14 CFR 147.

Prerequisite: AVMT 12000 (may be taken concurrently)

AVMT 22001 - Aircraft Electricity 2 Lab (0)

Corequisite: AVMT 22000

AVMT 23000 - Aircraft Systems 1 (3)

Students learn about hydraulic systems, oxygen systems, fire detection, firefighting systems, pneumatic systems, and water and waste systems. Meets requirements of 14 CFR 147.3C.

AVMT 23001 - Aircraft Systems 1 Lab (0)

Corequisite: AVMT 23000

AVMT 25100 - Avionics 1 (2)

This course focuses on principles and approved installation procedures for aircraft radio communications, navigation equipment and related items. Lectures and lab are supplemented with slides, films, and a tour. 45 contact hours (45 combined lecture/lab).

Prerequisite: AVMT 12000 (may be taken concurrently)

Program Restrictions: Must be enrolled in the following Program: Unmanned Aircraft Systems .

AVMT 25101 - Avionics 1 Lab (0)**AVMT 31000 - Aircraft Reciprocating Engines (4)**

This course in the construction and operation of all types of reciprocating engines includes study of engine nomenclature, operating principles, horsepower, calculations, engine efficiencies and cylinder arrangement, as well as methods of disassembly, cleaning, inspection, magnaflux, repairs and assembly and regulations pertaining to repair and overhaul procedures. 105 contact hours (45 lecture/60 lab). Meets requirements of 14 CFR 147.

AVMT 31001 - Aircraft Reciprocating Engines Lab (0)

Corequisite: AVMT 31000

AVMT 32000 - Aircraft Systems 2 (3)

Students learn about aircraft jacking, aircraft fuel systems; landing gear systems; wheels, tires, and brakes; air conditioning; heating; anti- and de-icing systems; and cabin pressurization systems. Meets requirements of 14 CFR 147.3C.

Prerequisite: AVMT 23000

AVMT 32001 - Aircraft Systems Lab (0)

Corequisite: AVMT 32000

AVMT 33000 - Aircraft Engine Accessories (4)

Aircraft fuel systems, float type carburetors, pressure injection carburetors, direct injection systems, water injection, jet engine fuel controls, types of ignition systems, magneto theory, magneto timing, spark plugs and use of the engine analyzer are covered. 180 contact hours (90 lecture/90 lab). Meets requirements of 14 CFR 147.

AVMT 33001 - Aircraft Engine Accessories Lab (0)

Corequisite: AVMT 33000

AVMT 34000 - Composite Material Fabrication and Repair (3)

A study of the various types of composites used on aircraft, part of this course includes vacuum bag manufacturing and repair of a honeycomb panel by each student in the laboratory. 45 contact hours (45 combined lecture/lab).

AVMT 34001 - Composite Material Fabrication and Repair Lab (0)

Corequisite: AVMT 34000

AVMT 34500 - Trends in Aviation and Aerospace Technology (3)

This class covers the trends that are relevant to technological advancements within the aviation and aerospace industry. Career opportunities, commercial trends, and the use of new technologies to enhance aviation and aerospace performance are discussed.

Prerequisite: UNIV 20400 (may be taken concurrently) and UNIV 20600 (may be taken concurrently)

AVMT 35100 - Avionics 2 (2)

A sequel to Avionics 1, this course continues the study of the principles and approved installation procedures for aircraft radio communication, navigation equipment and related topics. Subjects covered include advanced navigation aids, such as RNAV, LORAN, GPS, RADAR, and auto pilots. 30 contact hours (30 combined lecture/lab).

Prerequisite: AVMT 12000 (may be taken concurrently) and AVMT 20000 (may be taken concurrently) and AVMT 25100 (may be taken concurrently)

AVMT 35101 - Avionics 2 Lab (0)**AVMT 41000 - Gas Turbine Powerplants (4)**

This course provides a study of the history of jet engines, turbojet and turboprop engine components and systems, gas turbine troubleshooting and trimming. 150 contact hours (60 lecture/90 lab). Meets requirements of 14 CFR 147.

AVMT 41001 - Gas Turbine Powerplants Lab (0)**AVMT 42000 - Aircraft Propellers (4)**

The theory and operation of propellers and governors, as well as overhaul and servicing of fixed-pitch, ground-adjustable, controllable and turboprop propellers are studied. 120 contact hours (60 lecture/60 lab). Meets requirements of 14 CFR 147.

AVMT 42001 - Aircraft Propellers Lab (0)

AVMT 42500 - Aviation and Aerospace Propulsion Systems (3)

To propel aircraft through the stratosphere with greater efficiency, faster speeds, and less carbon emissions, new propulsion systems have been engineered. This class covers commercial aircraft Turbofan Engines, Scramjet, Space Rocketry and Thruster propulsion systems.

Prerequisite: AVMT 31000 (may be taken concurrently) and AVMT 41000 (may be taken concurrently)

AVMT 42700 - Advanced Aviation and Aerospace Structures (3)

This class covers advanced aluminum sheet metal repairs and advanced composite concepts and projects. The cutting edge of aircraft structural technology is addressed including commercial applications

Prerequisite: AVMT 11000 (may be taken concurrently) and AVMT 21000 (may be taken concurrently)

AVMT 43000 - Aircraft Inspection and Engine Testing (4)

This course reviews types of inspections, use of inspection forms, log book entries, use of FAA publications, shop management responsibilities, engine operating procedures, troubleshooting, symptoms and diagnoses and engine instrumentation. 180 contact hours (60 lecture/120 lab).

Meets requirements of 14 CFR 147.

Prerequisite: AVMT 31000 (may be taken concurrently) and AVMT 33000 (may be taken concurrently)

Attributes: Experiential Learning Gen Ed

AVMT 43001 - Aircraft Inspection and Engine Testing Lab (0)**AVMT 43500 - Aviation and Aerospace Accessory Systems (3)**

Aircraft require advanced sub-systems to operate at high operational levels. Life support systems, pneumatics, bleed-air, pressurization, fly-by-wire or optic, and hydraulic systems are covered. With advancements in satellite navigation, advanced computer guidance and advanced multifunction display systems are also addressed in detail.

Prerequisite: AVMT 33000 (may be taken concurrently)

AVMT 46000 - Aviation Shop Management (3)

Students will apply fundamental skillsets required to an active aircraft maintenance shop. Students will improve areas found to be deficient and will learn to streamline maintenance hangar operations.

AVMT 46100 - Aviation Maintenance Management (3)

This course will familiarize the student with the functions and responsibilities of an aviation maintenance manager. Maintenance management at fixed based operator, commuter/regional airline, and major air carrier levels will be studied. Aviation maintenance management problem areas will be reviewed using case study methodologies.

Prerequisite: BSAD 20000 (may be taken concurrently) and BSAD 36000 (may be taken concurrently)

AVMT 47000 - Helicopter Maintenance and Theory (4)

Students learn about the design, operation, and maintenance of small- to medium-size helicopters. Part of the time is spent on the actual overhaul of light helicopters. 60 contact hours (60 combined lecture/lab).

AVMT 49500 - Aviation and Aerospace Technology Capstone Experience (3)

Students will demonstrate mastery of the entire Aviation and Aerospace Technology program. Students will be asked to repair anomalies, build models, test systems, and demonstrate an in-depth knowledge of advanced aviation and aerospace technology. A written report and project portfolio will be required. The paper and projects will be collaborative and will include input on pertinent topics from the instructor.

Prerequisite: AVMT 34500 (may be taken concurrently) and AVMT 42500 (may be taken concurrently) and AVMT 42700 (may be taken concurrently) and AVMT 43500 (may be taken concurrently) and UNIV 20400 (may be taken concurrently) and UNIV 20600 (may be taken concurrently)

AVMT 49800 - Aviation Internship (0-4)

Students are placed in various aviation-related positions, arranged with an advisor, to provide them with on-the-job experience. A minimum of 120 contact hours required.

Class Restrictions: Must be enrolled in one of the following Classes: Junior or Senior.

AVMT 49900 - Independent Study (3)

This course is designed to meet the needs of aviation majors by allowing them to study an advanced topic not found in regular courses.

Class Restrictions: Must be enrolled in one of the following Classes: Junior or Senior.