Airframe and Powerplant (AFPM)

Community and Technical College
Airframe and Powerplant Program (https://www.ctc.uaf.edu/programs/aviation-maintenance/)
907-455-2800

AFPM F111 General Airframe and Powerplant
3 Credits
Offered As Demand Warrants
Shop practices, basic math, applied physics, FAA regulations, basic electricity, aircraft weight and balance, ground operations and servicing, cleaning and corrosion control, and materials and process. Preparation for the FAA Mechanics Airframe Structures Written, Oral and Practical Exam.
Prerequisites: Experience requirements of FAR 65.77.
Lecture + Lab + Other: 3 + 0 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F165 Mathematics for AMTs
0.5 Credit
Offered Fall
The course contains a thorough review of applied and technical mathematics, including common and decimal fractions and mixed numbers, extracting square roots and raising numbers to a given power; solving ratios, proportion and percentages; and performing fundamental algebraic operations as they relate to the construction of aircraft and their engines.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 0.8 + 1.2 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F166 Fundamentals of Electricity and Electronics
3.5 Credits
Offered Fall
A course in electrical theory and concepts. The course is directed toward the needs of the aviation mechanic and includes the study of Ohm's Law, electrical circuits, diagrams, batteries and a variety of electrical components.
Prerequisites: Student must be enrolled in the Airframe and Powerplant Certificate or Aviation Maintenance AAS program.
Lecture + Lab + Other: 3.1 + 2.4 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F167 Physics for AMTs
1 Credit
Offered Fall
A study of the principles and applications of mechanics with emphasis placed on levers, sound, fluid and heat dynamics. Basic aircraft structures and aerodynamic principles will be covered.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 1.3 + 0.4 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F168 Aircraft Technical Drawings
0.5 Credit
Offered Fall
A beginning course designed to build skill and knowledge of basic drafting. The student will learn to use drawings, symbols and schematic diagrams, make sketches of repairs and alterations, and use blueprint information, graphs and charts.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 0.6 + 0.9 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F169 Fluid Lines and Fittings
0.5 Credit
Offered Fall
A practical course covering the study of rigid, semi-rigid and flexible fluid lines and fittings, including their fabrication and installation.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 0.7 + 1 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F170 Aircraft Materials, Hardware and Processes
4.5 Credits
Offered Fall
This course covers basic shop practices, including the selection, identification and installation of aircraft hardware and materials; precision measuring tools and operations; basic heat-treating processes; and forms of non-destructive inspections.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 2.9 + 4.3 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F171 Cleaning and Corrosion Control
1 Credit
Offered Fall
This course covers the basic aircraft cleaning materials, methods and an in-depth study of aircraft corrosion control.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate and Powerplant Certificate program.
Lecture + Lab + Other: 1.3 + 1.3 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F172 Federal Aviation Regulations and Publications
2.5 Credits
Offered Fall
Federal Aviation regulations for maintenance of aircraft. Includes: maintenance forms, records, publications, privileges and limitations of aircraft mechanics and human factors.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 2.3 + 2.3 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F173 Weight and Balance
1.5 Credits
Offered Fall
A study of weighing procedures, weights, arms, moments, center of gravity computations and placarding. The student will compute loading an aircraft, completing required forms and weigh an aircraft.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 1.4 + 1.1 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F174 Ground Operations and Servicing
1.5 Credits
Offered Fall
This course includes both theory and practice in the starting, moving, servicing, securing and fueling aircraft and the safety considerations of working with and around aircraft.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 1.1 + 1.5 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F205 Airframe Structures
3 Credits
Offered As Demand Warrants
Aircraft wood, dope, fabric finishes, welding, sheet metal, assembly and rigging and inspection. Preparation for the FAA Mechanics Airframe Structures written, oral and practical exam.
Prerequisites: Experience requirements of FAR 65.77.
Lecture + Lab + Other: 3 + 0 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F206 Airframe System and Components
2 Credits
Offered As Demand Warrants
Aircraft electrical, hydraulic and pneumatic systems. Landing gear, instruments, fuel, communication and navigation, cabin atmosphere control, and fire protection systems. Inspection, checking, troubleshooting, repair and servicing. Preparation for the FAA Mechanics Airframe Structures written, oral and practical exam.
Prerequisites: Experience requirements of FAR 65.77.
Lecture + Lab + Other: 2 + 0 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F215 MOS Powerplant Theory/Maintenance
2 Credits
Offered As Demand Warrants
Jet engine fundamentals, analysis and testing. Inspecting turbo jets, turbo shaft and turbo fan engines. Overhaul, inspection and fundamentals of reciprocating engines. Preparation for the FAA Mechanics Airframe Structures written, oral and practical exam.
Prerequisites: Experience requirements of FAR 65.77.
Lecture + Lab + Other: 2 + 0 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F216 MOS Powerplant System/Components
3 Credits
Offered As Demand Warrants
Fuel metering, induction systems, propellers, control systems and powerplant electricity. Repair, inspection, service and troubleshooting. Preparation for the FAA Mechanics Airframe Structures written, oral and practical exam.
Prerequisites: Experience requirements of FAR 65.77.
Lecture + Lab + Other: 3 + 0 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F217 FAA Airframe & Powerplant Test Preparation
9 Credits
Offered As Demand Warrants
Preparation for the FAA Mechanics General, Airframe, Powerplant written, oral and practical exams.
Prerequisites: Must meet the experience requirements of 14 CFR 65.77 as evidenced by an approved FAA Form 8610-2.
Lecture + Lab + Other: 7.5 + 3 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F236 Aircraft Electrical Systems
4 Credits
Offered Summer
An overview of AC and DC airframe and powerplant electrical systems: wiring, control, indication and protection devices. Inspection, troubleshooting, service and repair of these systems including engine electrical systems and repair and service of electrical generating systems.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 2.9 + 5.4 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F237 Airframe Fuel Systems
1.5 Credits
Offered Fall
A practical course covering the inspection, servicing, troubleshooting and repair of aircraft fuel systems and components.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 1 + 1.6 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F238 Aircraft Fire Protection Systems
0.5 Credit
Offered Fall
This course covers basic fire science and the inspection, servicing, troubleshooting and repair of aircraft and engine fire detection and extinguishing systems.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 0.5 + 0.7 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F239 Aircraft Instrument Systems
1.5 Credits
Offered Fall
This course covers inspection, troubleshooting, removal and replacement of aircraft and engine instruments and indicating systems.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 1.1 + 1.5 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F241 Transport Category Aircraft Systems
0.5 Credit
Offered Spring
Introduction to transport category aircraft systems and components.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 0.7 + 0.7 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F242 Aircraft Reciprocating Engines
6 Credits
Offered Spring
A survey of the history, development and construction of various types of aircraft reciprocating engines. The student will engage in the repair, inspection, operation and troubleshooting of engines.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 4.4 + 8.5 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F243 Ice and Rain Control Systems
0.5 Credit
Offered Fall
Inspection, operation and troubleshooting of de-ice and anti-ice systems and rain removal systems.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 0.6 + 0.8 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F247 Turbine Engines
4 Credits
Offered Spring
Development, theory and operation of modern gas turbine engines. Included is the study of engine design, performance, accessories and subsystems along with an investigation of engine maintenance and overhaul.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 3.4 + 5.2 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F268 Communication and Navigation Systems
1 Credit
Offered Spring
Operation of aircraft avionics, autopilots and antennas including their inspection and installation.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 1.6 + 0.7 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F269 Ignition and Starting Systems
2 Credits
Offered Summer
Inspection and troubleshooting of reciprocating and gas turbine ignition systems and electrical starting systems, in addition to repair and bench testing of components.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 1.6 + 3.5 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F273 Environmental Systems
1 Credit
Offered Spring
This course covers the operation, inspection, troubleshooting, service and repair of aircraft pressurization, air conditioning, heating and oxygen systems.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 1.6 + 0.7 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F274 Engine Fuel Metering Systems
3 Credits
Offered Spring
This course covers the history, development and fundamental operation of fuel metering systems in aircraft powerplants. Technical data is used to inspect, troubleshoot, adjust and repair carburetors, fuel injection components and turbine engine fuel control units and the associated fuel system.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 2 + 2.9 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F275 Hydraulic and Pneumatic Systems
2 Credits
Offered Spring
This course covers the operation of hydraulic and pneumatic systems and their uses in aircraft. Included is the identification of hydraulic fluids, seals, hydraulic and pneumatic control devices, inspection and servicing and troubleshooting of systems.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 1.4 + 2.9 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F276 Propellers
0.5 Credit
Offered Spring
This course includes identification, nomenclature and aerodynamic theory of aircraft propellers. Operation, control and repair of both reciprocating and turbine engine installations will be covered.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 0.9 + 1.4 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F277 Landing Gear Systems
3 Credits
Offered Spring
This course covers the operation of mechanical and hydraulic retraction mechanisms, steering and anti-skid systems and the inspection, service and repair of those systems and components.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 2.2 + 3.2 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F279 Non-Metallic Structures
1.5 Credits
Offered Summer
This course covers the inspection and repair of non-metallic structures used in aircraft including: wood, plastics, upholstery and various types of composite structures. This course does not include aircraft fabric covering.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 1.2 + 1.5 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F281 Aircraft Fabric Covering and Finishes
1.5 Credits
Offered Summer
This course includes the selection, application, inspection and testing of fabric coverings as well as the selection of aircraft finishing materials such as primers, paints and dopes.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 1.8 + 3.6 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F283 Aircraft Sheetmetal Structures
3 Credits
Offered Spring
This course teaches the techniques of aircraft sheet metal fabrication, inspection and repair.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 2.6 + 5.4 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F285 Aircraft Welding
1.5 Credits
Offered Summer
This course teaches the use of contemporary welding methods on aircraft structures. This includes oxy-acetylene, inert gas and brazing techniques. The inspection of welded structure and safety procedures are stressed.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 1.4 + 2 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F287 Flight Controls
1.5 Credits
Offered Summer
This course teaches aerodynamic theory of both fixed- and rotary-wing aircraft and the systems and components used to control aircraft in flight. Students will learn how to inspect, rig and repair control systems and balance control surfaces.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 1.8 + 2.5 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F288 Airframe Inspection
1 Credit
Offered Summer
Building on skills learned in prior component-level classes, this course allows students to further develop and apply the skills necessary for the proper inspection and return to service of complete airframes. Proper inspection procedures and the legal aspects of aircraft inspection are discussed.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 0.5 + 2.1 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F289 Engine Inspection
1 Credit
Offered Summer
Building on skills learned in prior component-level classes, this course allows students to further develop and apply the skills necessary for the proper inspection and return to service of complete engine installations. Proper inspection procedures and the legal aspects of engine inspection are discussed.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 0.4 + 2.1 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F290 Airframe Testing
0.5 Credit
Offered Summer
This course serves as preparation for the FAA Aviation Mechanic Exam for General and Airframe subjects. Sample written, oral and practical exams are given for students pursuing the FAA Certificate with Airframe rating.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 0.7 + 0.7 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F291 Powerplant Testing
0.5 Credit
Offered Summer
This course serves as preparation for the FAA Aviation Mechanic Exam for General and Powerplant subjects. Sample written, oral and practical exams are given for students pursuing the FAA Mechanic Certificate with Powerplant rating.
Prerequisites: Admission to Aviation Maintenance AAS, Airframe and Powerplant Certificate, Airframe Certificate or Powerplant Certificate program.
Lecture + Lab + Other: 0.7 + 0.7 + 0
Grading System: Letter Grades with option of Plus/Minus

AFPM F325 Inspection Authorization Preparation
2 Credits
Offered As Demand Warrants
Prepares FAA certificated Airframe and Powerplant mechanics eligible for an inspection authorization under FAR 65.91 for the FAA tests to obtain their inspection authorization. Course also includes practical aspects of the privileges and limitations of the holder of an IA.
Prerequisites: FAA A & P Certificate, meet additional requirements of FAR 65.91.
Lecture + Lab + Other: 1 + 2 + 0
Grading System: Letter Grades with option of Plus/Minus