# Airframe and Powerplant (AFPM)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Lecture + Lab + Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFPM F111</td>
<td>General Airframe and Powerplant</td>
<td>3</td>
<td>As Demand</td>
<td>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.</td>
<td>Experience requirements of FAR 65.77.</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>AFPM F145</td>
<td>Basic Mathematics</td>
<td>1</td>
<td>Fall</td>
<td>Review of applied and technical mathematics related to the construction and engines of aircrafts. Common, decimal, fractions and mixed numbers; extracting square roots and raising numbers to a given power; solving ratios, proportions and percentage problems; fundamental algebraic operations.</td>
<td>Admission to A &amp; P Program.</td>
<td>1 + 0 + 0</td>
</tr>
<tr>
<td>AFPM F146</td>
<td>Basic Electricity</td>
<td>2</td>
<td>Fall</td>
<td>Electrical theory and concepts for the aviation mechanic. Ohm's law, electrical circuits, diagrams, batteries and a variety of electrical components.</td>
<td>Admission to A &amp; P Program.</td>
<td>2 + 0 + 0</td>
</tr>
<tr>
<td>AFPM F147</td>
<td>Physics for Mechanics</td>
<td>0.5</td>
<td>Fall</td>
<td>Applications of mechanics; levers, sound, fluid and heat dynamics. Basic aircraft structures and aerodynamics. (Course does not fulfill natural science requirements for any degree.)</td>
<td>Admission to A &amp; P Program.</td>
<td>0.5 + 0 + 0</td>
</tr>
<tr>
<td>AFPM F148</td>
<td>Aircraft Drawing</td>
<td>1</td>
<td>Fall</td>
<td>Basic drafting. Drawings, symbols and schematic diagrams, sketches of repairs and alterations, blueprint information, graphs and charts.</td>
<td>Admission to A &amp; P Program.</td>
<td>1 + 0 + 0</td>
</tr>
<tr>
<td>AFPM F149</td>
<td>Fluid Lines and Fittings</td>
<td>0.5</td>
<td>Fall</td>
<td>Rigid and flexible fluid lines and fittings, fabrication and installation.</td>
<td>Admission to A &amp; P Program.</td>
<td>0.5 + 0 + 0</td>
</tr>
<tr>
<td>AFPM F150</td>
<td>Materials and Processes</td>
<td>2</td>
<td>Fall</td>
<td>Basic shop practices, including selection, identification and installation of aircraft hardware and materials, precision measuring tools and operations, basic heat treating processes, forms of nondestructive inspections.</td>
<td>Admission to A &amp; P Program.</td>
<td>2 + 0 + 0</td>
</tr>
<tr>
<td>AFPM F151</td>
<td>Cleaning and Corrosion Control</td>
<td>1</td>
<td>Fall</td>
<td>Basic aircraft cleaning materials, methods and corrosion control.</td>
<td>Admission to A &amp; P Program.</td>
<td>1 + 0 + 0</td>
</tr>
<tr>
<td>AFPM F152</td>
<td>Federal Aviation Regulations</td>
<td>1</td>
<td>Fall</td>
<td>Federal Aviation Regulations for maintenance of aircraft. Maintenance forms and records, publications, privileges and limitations of aircraft mechanics.</td>
<td>Admission to A &amp; P Program.</td>
<td>1 + 0 + 0</td>
</tr>
<tr>
<td>AFPM F153</td>
<td>Weight and Balance</td>
<td>1</td>
<td>Fall</td>
<td>Weighing procedures, weight, arms, moments, center of gravity computations and placarding. Aircraft loading, required forms, weighing.</td>
<td>Admission to A &amp; P Program.</td>
<td>1 + 0 + 0</td>
</tr>
<tr>
<td>AFPM F154</td>
<td>Ground Operations and Servicing</td>
<td>0.5</td>
<td>Fall</td>
<td>Starting, moving, servicing, securing and fueling aircraft.</td>
<td>Admission to A &amp; P Program.</td>
<td>0.5 + 0 + 0</td>
</tr>
<tr>
<td>AFPM F205</td>
<td>Airframe Structures</td>
<td>3</td>
<td>As Demand</td>
<td>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.</td>
<td>Experience requirements of FAR 65.77.</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>AFPM F206</td>
<td>Airframe System and Components</td>
<td>2</td>
<td>As Demand</td>
<td>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.</td>
<td>Experience requirements of FAR 65.77.</td>
<td>2 + 0 + 0</td>
</tr>
</tbody>
</table>
AFPM F215  MOS Powerplant Theory/Maintenance
2 Credits
Offered As Demand Warrants
Prerequisites: Experience requirements of FAR 65.77.
Lecture + Lab + Other: 2 + 0 + 0

AFPM F216  MOS Powerplant System/Components
3 Credits
Offered As Demand Warrants
Prerequisites: Experience requirements of FAR 65.77.
Lecture + Lab + Other: 3 + 0 + 0

AFPM F230  Aircraft Electrical Systems
2.5 Credits
Offered Spring
Wiring, control, indication and protection devices for AC and DC systems. Inspection, troubleshooting service and repair of these systems.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 2.5 + 0 + 0

AFPM F231  Powerplant Electrical Systems
1.5 Credits
Offered Fall
Installation, inspection, testing, servicing engine electrical system wiring, controls, indicators and protective devices. Repair and service of electrical generating systems.
Prerequisites: Admission to A&P program.
Lecture + Lab + Other: 1.5 + 0 + 0

AFPM F235  Aircraft Reciprocating Engines
4.5 Credits
Offered Spring
History and development of the aircraft reciprocating engine. Repair, overhaul and inspection of various types of engines. Operation and troubleshooting of engines.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 4.5 + 0 + 0

AFPM F240  Turbine Engines
2 Credits
Offered Summer
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 2 + 0 + 0

AFPM F244  Lubricating Systems
1.5 Credits
Offered Spring
Identification and selection of lubricants for aircraft powerplants. Inspection, service, troubleshooting and repair of the lubrication systems and components.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 1.5 + 0 + 0

AFPM F245  Ignition Systems
2 Credits
Offered Summer
Overhaul, inspection and troubleshooting of reciprocating and gas turbine ignition systems. Repair and bench testing of components.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 2 + 0 + 0

AFPM F246  Fuel Metering Systems
2 Credits
Offered Spring
Prerequisites: Admission to the A & P Program.
Lecture + Lab + Other: 2 + 0 + 0

AFPM F248  Induction Systems
0.5 Credit
Offered Spring
Operation and service of aircraft induction, preheat, anti-ice and supercharger systems.
Prerequisites: Admission to A&P program.
Lecture + Lab + Other: 0.5 + 0 + 0

AFPM F249  Powerplant Cooling Systems
0.5 Credit
Offered Spring
Inspection, service and repair of engine cooling systems – both air and liquid cooled installations.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 0.5 + 0 + 0

AFPM F250  Powerplant Exhaust Systems
0.5 Credit
Offered Spring
Inspection, service and repair of engine exhaust systems. Includes operations of turbo compounded engines, thrust reversers and noise suppressors.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 0.5 + 0 + 0

AFPM F251  Fuel Systems
1.5 Credits
Offered Fall
Inspection, servicing, troubleshooting and repair of aircraft and engine fuel systems and components.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 1.5 + 0 + 0

AFPM F252  Propellers
2 Credits
Offered Spring
Identification and nomenclature of aircraft propellers. Operation, control and repair of both reciprocating and turbine engine installations.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 2 + 0 + 0

AFPM F253  Transport Category Aircraft
1 Credit
Offered Spring
Introduction to transport category aircraft systems and components.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 1 + 0 + 0
AFPM F254  Ice and Rain Control Systems  
0.5 Credit 
Offered Spring 
Inspection, operation and troubleshooting of de-ice and anti-ice systems. 
Prerequisites: Admission to A&P program. 
Lecture + Lab + Other: 0.5 + 0 + 0 

AFPM F255  Fire Protection Systems  
0.5 Credit 
Offered Fall 
Inspection, servicing, troubleshooting and repair of aircraft and engine fire detection and extinguishing systems. 
Prerequisites: Admission to A & P Program. 
Lecture + Lab + Other: 0.5 + 0 + 0 

AFPM F256  Communications and Navigation Systems  
0.5 Credit 
Offered Spring 
Operation of aircraft avionics, autopilots and antennas, including inspection and installation. 
Prerequisites: Admission to A & P program. 
Lecture + Lab + Other: 0.5 + 0 + 0 

AFPM F257  Instrument Systems  
0.5 Credit 
Offered Fall 
Inspection, troubleshooting, removal and replacement of aircraft and engine instruments and indicating systems. 
Prerequisites: Admission to A & P Program. 
Lecture + Lab + Other: 0.5 + 0 + 0 

AFPM F258  Cabin Atmosphere Control Systems  
1 Credit 
Offered Spring 
Aircraft pressurization, air conditioning, heating and oxygen systems. Operation, inspection, troubleshooting, service and repair. 
Prerequisites: Admission to A & P program. 
Lecture + Lab + Other: 1 + 0 + 0 

AFPM F259  Hydraulic and Pneumatic Systems  
1.5 Credits 
Offered Spring 
Operation of hydraulic and pneumatic systems and uses in aircraft. Identification of hydraulic fluids, seals, hydraulic and pneumatic control devices, inspection and servicing and troubleshooting. 
Prerequisites: Admission to A&P program. 
Lecture + Lab + Other: 1.5 + 0 + 0 

AFPM F260  Aircraft Landing Gear Systems  
1.5 Credits 
Offered Spring 
Simple and complex landing gear systems. Operation, service and repair of mechanical and hydraulic retraction mechanisms. Wheel, tire and brake service. Aircraft speed and configuration warning systems, electric brake controls, anti-skid systems, landing gear position and warning systems. 
Prerequisites: Admission to A & P Program. 
Lecture + Lab + Other: 1.5 + 0 + 0 

AFPM F261  Nonmetallic Structures  
1 Credit 
Offered Summer 
Inspection, service and repair of wood structures. Preliminary and secondary repair of interior and service of plastic, honeycomb, bonded, and composite and laminated structures. 
Prerequisites: Admission to A & P Program. 
Lecture + Lab + Other: 1 + 0 + 0 

AFPM F262  Aircraft Coverings  
1 Credit 
Offered Summer 
Selection, application, inspection and testing of fabric and fiberglass coverings and methods of repair. 
Prerequisites: Admissions to A & P Program. 
Lecture + Lab + Other: 1 + 0 + 0 

AFPM F263  Aircraft Finishes  
0.5 Credit 
Offered Summer 
Identification and selection of aircraft finishing materials. Application of paints, dopes, primers and trim. 
Prerequisites: Admission to A & P Program. 
Lecture + Lab + Other: 0.5 + 0 + 0 

AFPM F264  Sheet Metal Structures  
3 Credits 
Offered Spring 
Aircraft sheet metal fabrication, inspection and repair, including rivets and fasteners. 
Prerequisites: Admission to A & P Program. 
Lecture + Lab + Other: 3 + 0 + 0 

AFPM F265  Aircraft Welding  
1.5 Credits 
Offered Summer 
Contemporary welding methods on aircraft structures. Oxyacetylene, arc, inert gas and brazing techniques. Inspection of welded structure and safety procedures. 
Lecture + Lab + Other: 1.5 + 0 + 0 

AFPM F266  Assembly and Rigging  
1.5 Credits 
Offered Fall 
Aerodynamic theory and function of aircraft control surfaces. Fabrication and installation of control devices for fixed and rotary wing aircraft; jacking and control surface balance. 
Prerequisites: Admission to A & P Program. 
Lecture + Lab + Other: 1.5 + 0 + 0 

AFPM F267  Airframe Inspections  
0.5 Credit 
Offered Summer 
Inspection and return of aircraft to service. Procedural and legal aspects of 100 hour, annual and periodic inspections. 
Prerequisites: Admission to A & P Program. 
Lecture + Lab + Other: 0.5 + 0 + 0 

AFPM F270  Airframe Testing  
0.5 Credit 
Offered Summer 
Preparation for the Federal Aviation Administration written, oral and practical exams for the powerplant mechanics' license. 
Prerequisites: Admission to A & P Program. 
Lecture + Lab + Other: 0.5 + 0 + 0
AFPM F271 Powerplant Inspections
0.5 Credit
Offered Summer
Methodology and record keeping for inspection of aircraft reciprocating and gas turbine engines.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 0.5 + 0 + 0

AFPM F272 Powerplant Testing
0.5 Credit
Offered Summer
Preparation for the Federal Aviation Administration written, oral and practical exams for the powerplant mechanics' license.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 0.5 + 0 + 0

AFPM F325 Inspection Authorization Preparation
2 Credits
Offered As Demand Warrants
Technical background training for the working airframe and powerplant mechanic in selecting, reviewing and utilizing the appropriate federal regulatory and advisory information as well as the manufacturer's maintenance information to inspect and return to service aircraft, engines, propellers, appliances and related parts in accordance with FAR Part 65.95. Final exam is the FAA Inspection Authorization exam administered by an FAA airworthiness inspector.
Prerequisites: FAA A & P Certificate, meet additional requirements of FAR 65.91.
Lecture + Lab + Other: 1 + 2 + 0