

# Aviation Maintenance Technologies

The Aviation Maintenance Technologies Department at Cincinnati State offers a Federal Aviation Administration (FAA) approved degree program in Aviation Maintenance Technology and two certificate programs. Each program prepares graduates for a career maintaining and servicing aircraft components and systems.

All technical courses are conducted at the Cincinnati State airport facility, located on the Cincinnati State West Campus in Harrison, Ohio. Some non-technical courses are offered at the West Campus, or may be taken on the main campus or, in some cases, through online instruction.

## Aviation Maintenance Technology (AMT)

Aviation maintenance technicians keep aircraft operating safely and efficiently by servicing, repairing, and overhauling aircraft components and systems. Graduates of the program earn an Associate of Applied Science degree in conjunction with federal licensing. Coursework covers every system of today's aircraft. Mechanical skills are developed using the fleet of aircraft owned by Cincinnati State.

The aviation facility, located on the Cincinnati State West Campus in Harrison, Ohio, includes airframe, powerplant, and avionics labs. In addition, this facility houses a hangar equipped with seven aircraft and a lab equipped with computer-based training on modern transport aircraft.

## Aviation Mechanics Certificates (AVAC, AVONC, and AVPC)

The Aviation Maintenance Technology program includes three certificate programs, Aviation Mechanics Airframe, Avionics, and Aviation Mechanics Powerplant. Following successful completion of the Airframe and/or Powerplant certificate requirements, students may take FAA licensing tests. Certification requirements are subject to current Federal Aviation Administration requirements and may change without notice.

The Avionics Certificate provides advanced skills in aviation electronics for students who are FAA-certified aviation mechanics. Graduates are able to troubleshoot and repair in a flight-line environment: onboard computers, automatic pilot, instrument navigation and communication equipment, and powerplant electronic control systems. Potential employers include corporate aviation departments and airlines. Certification requirements are subject to current Federal Aviation Requirements and may change without notice.

## Aviation Maintenance Technology (AMT)

All degree-seeking students must complete a First Year Experience (FYE) course as part of the first 12 credit hours taken at Cincinnati State.

Semester 1		Lec	Lab	Credits
AMT 100	Aviation Standard Practices	4	6	6
AMT 105	Aircraft Orientation	2	5	4
MAT 121	Technical Algebra and Geometry with Statistics	2	2	3
AMT 110	Aircraft Electricity	3	3	4
AMT 115	Aircraft Weight and Balance	3	3	4
<b>Semester 2</b>				
ENG 101	English Composition 1	3	0	3
AMT 130	Aircraft Welding Processes	2	2	3
AMT 135	Aircraft Landing Gear Systems	3	5	5
AMT 140	Airframe Electrical Systems	4	4	6
AMT 120	Aircraft Non-Metal Structures	3	4	5
PHY 121	Technical Physics 1	2	3	3
<b>Semester 3</b>				
PHY 122	Technical Physics 2	2	3	3
AMT 125	Aircraft Metal Structures	3	5	5
AMT 145	Airframe Electronic Systems	2	1	2
AMT 150	Airframe Systems	3	3	4
AMT 155	Airframe Assembly and Rigging	3	4	5
AMT 160	Airframe Inspection	1	3	2
<b>Semester 4</b>				
ENG 104	English Composition 2: Technical Communication	3	0	3

AMT 215	Aircraft Propellers	2	2	4
AMT 191	Part-Time Cooperative Education 1: Aviation Maintenance Technology	1	20	1
AMT 201	Powerplant Maintenance 1	6	4	8
<b>Semester 5</b>				
PSY 100	Applied Psychology: Human Relations	3	0	3
COMM 110	Public Speaking	3	0	3
AMT 192	Part-Time Cooperative Education 2: Aviation Maintenance Technology	1	20	1
ECO 1XX Economics Elective				3
AMT 202	Powerplant Maintenance 2	5	5	7
AMT 205	Starting and Ignition Systems	3	4	5
<b>Semester 6</b>				
PHI 110	Ethics	3	0	3
AMT 193	Part-Time Cooperative Education 3: Aviation Maintenance Technology	1	20	1
AMT 203	Powerplant Maintenance 3	4	2	5
AMT 210	Engine Fuel and Lubrication Systems	5	5	7
Total Credits:		85	138	121

## Electives

### Economics Elective

ECO 105	Principles of Microeconomics	3
ECO 110	Principles of Macroeconomics	3

## Aviation Mechanics Airframe Certificate (AVAC)

<b>Semester 1</b>		<b>Lec</b>	<b>Lab</b>	<b>Credits</b>
AMT 100	Aviation Standard Practices	4	6	6
AMT 105	Aircraft Orientation	2	5	4
AMT 110	Aircraft Electricity	3	3	4
AMT 115	Aircraft Weight and Balance	3	3	4
MAT 121	Technical Algebra and Geometry with Statistics	2	2	3
<b>Semester 2</b>				
ENG 101	English Composition 1	3	0	3
AMT 120	Aircraft Non-Metal Structures	3	4	5
PHY 121	Technical Physics 1	2	3	3
AMT 130	Aircraft Welding Processes	2	2	3
AMT 135	Aircraft Landing Gear Systems	3	5	5
AMT 140	Airframe Electrical Systems	4	4	6
<b>Semester 3</b>				
PHY 122	Technical Physics 2	2	3	3
AMT 125	Aircraft Metal Structures	3	5	5
AMT 145	Airframe Electronic Systems	2	1	2
AMT 150	Airframe Systems	3	3	4
AMT 155	Airframe Assembly and Rigging	3	4	5

AMT 160	Airframe Inspection	1	3	2
Total Credits:		45	56	67

## Avionics Certificate (AVONC)

<b>Semester 1</b>		<b>Lec</b>	<b>Lab</b>	<b>Credits</b>
AMT 100	Aviation Standard Practices	4	6	6
AMT 105	Aircraft Orientation	2	5	4
AMT 110	Aircraft Electricity	3	3	4
AMT 115	Aircraft Weight and Balance	3	3	4
MAT 121	Technical Algebra and Geometry with Statistics	2	2	3
<b>Semester 2</b>				
ENG 101	English Composition 1	3	0	3
AMT 140	Airframe Electrical Systems	4	4	6
AMT 150	Airframe Systems	3	3	4
AMT 155	Airframe Assembly and Rigging	3	4	5
<b>Semester 3</b>				
PHY 121	Technical Physics 1	2	3	3
AMT 271	Avionics 1	3	2	4
<b>Semester 4</b>				
PHY 122	Technical Physics 2	2	3	3
AMT 272	Avionics 2	3	2	4
Total Credits:		37	40	53

## Aviation Mechanics Powerplant Certificate (AVPC)

<b>Semester 1</b>		<b>Lec</b>	<b>Lab</b>	<b>Credits</b>
AMT 100	Aviation Standard Practices	4	6	6
AMT 105	Aircraft Orientation	2	5	4
AMT 110	Aircraft Electricity	3	3	4
AMT 115	Aircraft Weight and Balance	3	3	4
MAT 121	Technical Algebra and Geometry with Statistics	2	2	3
<b>Semester 2</b>				
ENG 101	English Composition 1	3	0	3
PHY 121	Technical Physics 1	2	3	3
AMT 201	Powerplant Maintenance 1	6	4	8
AMT 215	Aircraft Propellers	2	2	4
<b>Semester 3</b>				
PHY 122	Technical Physics 2	2	3	3
AMT 202	Powerplant Maintenance 2	5	5	7
AMT 205	Starting and Ignition Systems	3	4	5
<b>Semester 4</b>				
AMT 203	Powerplant Maintenance 3	4	2	5
AMT 210	Engine Fuel and Lubrication Systems	5	5	7
Total Credits:		46	47	66

## Courses

### **AMT 100 Aviation Standard Practices**

**6 Credits. 4 Lecture Hours. 6 Lab Hours.**

A course that uses FAA-approved instruction for foundation concepts and techniques in aviation maintenance. Topics include: fluid lines and fittings, materials and processes, and cleaning and corrosion control.

Prerequisites: AFL 085 or appropriate placement test score

### **AMT 105 Aircraft Orientation**

**4 Credits. 2 Lecture Hours. 5 Lab Hours.**

A course on foundation concepts in aviation maintenance. Topics include: aircraft drawings, ground operations and servicing, mechanic privileges, and basic concepts of physics.

Prerequisites: AFL 085 or appropriate placement test score

### **AMT 110 Aircraft Electricity**

**4 Credits. 3 Lecture Hours. 3 Lab Hours.**

A course that uses FAA-approved instruction for foundation concepts and techniques in aviation maintenance. Topics include: basic concepts of math, physics, and electricity; aircraft drawings; and maintenance forms and records.

Prerequisites: MAT 120 or appropriate placement test score

### **AMT 115 Aircraft Weight and Balance**

**4 Credits. 3 Lecture Hours. 3 Lab Hours.**

A course on foundation concepts and techniques related to aircraft weight and balance. Topics include: maintenance forms and records, and maintenance publications.

Prerequisites: MAT 120 or appropriate placement test score

### **AMT 120 Aircraft Non-Metal Structures**

**5 Credits. 3 Lecture Hours. 4 Lab Hours.**

A course on wood structures, aircraft covering, aircraft finishes, and inspection of bonded structures.

Prerequisites: AMT 105

### **AMT 125 Aircraft Metal Structures**

**5 Credits. 3 Lecture Hours. 5 Lab Hours.**

A course on repairing and maintaining sheet metal structures. Topics include: selecting and installing rivets and fasteners, forming and bending sheet metal, and laying out repairs.

Prerequisites: AMT 100 and AMT 105

### **AMT 130 Aircraft Welding Processes**

**3 Credits. 2 Lecture Hours. 2 Lab Hours.**

A course on welding of magnesium, titanium, aluminum, and steel in aircraft. The course does not prepare students for certification specific to welding.

Prerequisites: None

### **AMT 135 Aircraft Landing Gear Systems**

**5 Credits. 3 Lecture Hours. 5 Lab Hours.**

A course on repairing and maintaining aircraft landing gear systems and hydraulic and pneumatic power systems.

Prerequisites: AMT 105 and MAT 121

### **AMT 140 Airframe Electrical Systems**

**6 Credits. 4 Lecture Hours. 4 Lab Hours.**

A course on troubleshooting aircraft electrical systems and inspecting direct current generators.

Prerequisites: AMT 105 and AMT 110

### **AMT 145 Airframe Electronic Systems**

**2 Credits. 2 Lecture Hours. 1 Lab Hour.**

A course on aircraft instrument systems and communication and navigation systems.

Prerequisites: AMT 105 and AMT 110

### **AMT 150 Airframe Systems**

**4 Credits. 3 Lecture Hours. 3 Lab Hours.**

A course on systems for cabin atmosphere and control, position and warning, ice and rain control, fire protection, and aircraft fuel.

Prerequisites: AMT 100, AMT 105, and AMT 110

### **AMT 155 Airframe Assembly and Rigging**

**5 Credits. 3 Lecture Hours. 4 Lab Hours.**

A course on balancing rigging, and inspecting primary and secondary flight controls of rotor and fixed wing aircraft.

Prerequisites: AMT 100, AMT 105, and MAT 121

**AMT 160 Airframe Inspection****2 Credits. 1 Lecture Hour. 3 Lab Hours.**

A course on inspection of airframes and sheet metal structures, repair of sheet metal structures, and conformity inspections on rotor and fixed wing aircraft.

Prerequisites: AMT 105 and AMT 115

**AMT 191 Part-Time Cooperative Education 1: Aviation Maintenance Technology****1 Credit. 1 Lecture Hour. 20 Lab Hours.**

Students seeking an associate's degree participate in their first part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: AMT 100

**AMT 192 Part-Time Cooperative Education 2: Aviation Maintenance Technology****1 Credit. 1 Lecture Hour. 20 Lab Hours.**

Students seeking an associate's degree participate in their first part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: AMT 191

**AMT 193 Part-Time Cooperative Education 3: Aviation Maintenance Technology****1 Credit. 1 Lecture Hour. 20 Lab Hours.**

Students seeking an associate's degree participate in their third part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: AMT 192

**AMT 194 Part-Time Cooperative Education 4: Aviation Maintenance Technology****1 Credit. 1 Lecture Hour. 20 Lab Hours.**

Students seeking an associate's degree participate in their fourth part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: AMT 193

**AMT 195 Part-Time Cooperative Education 5: Aviation Maintenance Technology****1 Credit. 1 Lecture Hour. 20 Lab Hours.**

Students seeking an associate's degree participate in their fifth part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: AMT 194

**AMT 196 Part-Time Cooperative Education 6: Aviation Maintenance Technology****1 Credit. 1 Lecture Hour. 20 Lab Hours.**

Students seeking an associate's degree participate in their sixth part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: AMT 195

**AMT 198 First Year Special Topics in Aviation Maintenance Technology****1-9 Credits. 0 Lecture Hour. 0 Lab Hour.**

A course on selected topics related to Aviation Maintenance Technology, which gives students opportunities to study information not currently covered in other courses. Grades issued are A, B, C, D, or F.

Prerequisites: Instructor Approval

**AMT 199 First Year Independent Project in Aviation Maintenance Technology****1-9 Credits. 0 Lecture Hour. 0 Lab Hour.**

A project related to Aviation Maintenance Technology that is completed by one or more students to meet specific educational goals. Projects must have prior approval and supervision by Aviation Maintenance Technology faculty. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: Instructor Approval

**AMT 201 Powerplant Maintenance 1****8 Credits. 6 Lecture Hours. 4 Lab Hours.**

A course that uses FAA-approved instruction for concepts and techniques in inspection and repair of radial engines; overhaul of reciprocation engines; and inspection, check, service and repair of reciprocating engines and engine systems.

Prerequisites: AMT 100 and AMT 105

**AMT 202 Powerplant Maintenance 2**

**7 Credits. 5 Lecture Hours. 5 Lab Hours.**

A continuation of AMT 201, using FAA-approved instruction for concepts and techniques in installation, troubleshooting, and removal of reciprocating engines; overhaul of turbine engines; and induction and engine airflow systems.

Prerequisites: AMT 201

**AMT 203 Powerplant Maintenance 3**

**5 Credits. 4 Lecture Hours. 2 Lab Hours.**

A continuation of AMT 202, using FAA-approved instruction in the subject areas of inspection, check, service, and repair of turbine engines and turbine engine installations; installation, troubleshooting, and removal of turbine engines; performing powerplant conformity and airworthiness inspection; engine exhaust and reverser systems; unducted fans; and auxiliary power units.

Prerequisites: AMT 202

**AMT 205 Starting and Ignition Systems**

**5 Credits. 3 Lecture Hours. 4 Lab Hours.**

A course that uses FAA-approved instruction for concepts and techniques in ignition and starting systems for reciprocating and turbine aircraft engines.

Topics include: inspection, troubleshooting, and repair.

Prerequisites: AMT 105 and AMT 110

**AMT 210 Engine Fuel and lubrication Systems**

**7 Credits. 5 Lecture Hours. 5 Lab Hours.**

A course that uses FAA-approved instruction for concepts and techniques in lubrication systems, fuel metering systems, and engine fuel systems.

Prerequisites: AMT 100 and AMT 105

**AMT 215 Aircraft Propellers**

**4 Credits. 2 Lecture Hours. 2 Lab Hours.**

A course that uses FAA-approved instruction for concepts and techniques in removal, installation, inspection, and repair of fixed and variable pitch aircraft propellers and propeller governing systems.

Prerequisites: AMT 105 and AMT 115

**AMT 271 Avionics 1**

**4 Credits. 3 Lecture Hours. 2 Lab Hours.**

A course on concepts and skills for repair of avionics equipment. Topics include: procedures used by air carriers and repair stations; avionics publications, forms, and records; tools and equipment; buildup of wire bundles; review of Boolean Algebra; and ARINC codes.

Prerequisites: AMT 155

**AMT 272 Avionics 2**

**4 Credits. 3 Lecture Hours. 2 Lab Hours.**

A continuation of AMT 271. Topics include: logic gates, troubleshooting analog and digital electronic systems to line replicable units, amplifier theory, on-board navigation and maintenance computer systems, and intercom and passenger entertainment systems.

Prerequisites: AMT 271

**AMT 291 Full-Time Cooperative Education 1: Aviation Maintenance Technology**

**2 Credits. 1 Lecture Hour. 40 Lab Hours.**

Students seeking an associate's degree participate in their first full-time field learning experience related to their degree. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: None

**AMT 292 Full-Time Cooperative Education 2: Aviation Maintenance Technology**

**2 Credits. 1 Lecture Hour. 40 Lab Hours.**

Students seeking an associate's degree participate in their second full-time field learning experience related to their degree. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: AMT 291

**AMT 293 Full-Time Cooperative Education 3: Aviation Maintenance Technology**

**2 Credits. 1 Lecture Hour. 40 Lab Hours.**

Students seeking an associate's degree participate in their third full-time field learning experience related to their degree. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: AMT 292

**AMT 294 Internship 1: Aviation Maintenance Technology**

**2 Credits. 1 Lecture Hour. 40 Lab Hours.**

Students seeking an associate's degree participate in their first unpaid field learning experience related to their degree. Students must follow applicable policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: AMT 100

**AMT 295 Internship 2: Aviation Maintenance Technology**

**2 Credits. 1 Lecture Hour. 40 Lab Hours.**

Students seeking an associate's degree participate in their second unpaid field learning experience related to their degree. Students must follow applicable policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: AMT 294

**AMT 298 Second Year Special Topics in Aviation Maintenance Technology**

**1-9 Credits. 0 Lecture Hour. 0 Lab Hour.**

A course on selected topics related to Aviation Maintenance Technology, which gives students opportunities to study information not currently covered in other courses. Grades issued are A, B, C, D, or F.

Prerequisites: Instructor Approval

**AMT 299 Second Year Independent Project in Aviation Maintenance Technology**

**1-9 Credits. 0 Lecture Hour. 0 Lab Hour.**

A project related to Aviation Maintenance Technology that is completed by one or more students to meet specific educational goals. Projects must have prior approval and supervision by Aviation Maintenance Technology faculty. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: Instructor Approval