

## Definition

This program is designed to prepare students for careers in the Aeronautical and Aviation industry.

## Staff

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## Program Description

The certificate and associate degree programs include course work to help students prepare for the Airframe and Powerplant (A&P) license exams.

Students must receive a minimum grade of “C” or better in all required core courses and the specific courses listed as program electives in order to qualify for the degree or certificate.

## Career Options

Aircraft Dispatcher

Aircraft Operator

Airframe and Powerplant Repair

Airport Management (General Aviation and Airline Related Operator)

Structural Assembler

(Some of these careers may require education beyond the two-year college level.)

## Program Learning Outcomes

1. Analyze and evaluate critical aspects of the aerospace industry related to safe work practices, standards and tolerances, standard shop practices, proper use of tools, power equipment, and personal protective equipment.
2. Analyze, evaluate, troubleshoot, and repair structural, propulsion, electrical, and guidance systems to meet air worthy standards.
3. Evaluate and apply Federal Aviation Regulations, technical maintenance data, and acceptable industry standards pertinent to proper maintenance and safety standards.

## Certificate Programs

Three A&P certificates (General Aircraft Maintenance, Aircraft Airframe, and Aircraft Powerplant) are designed for those individuals seeking an Aircraft License. After earning these certificates a student may seek permission from the Federal Aviation Administration to take the necessary exams for an Airframe and Powerplant license.

### General Aircraft Maintenance

This program provides the basic understanding and principles of basic electricity, basic physics, math, fluid lines and fittings, materials and processes, cleaning and corrosion control, maintenance publications, mechanics privileges and limitations, maintenance forms and records, weight and balance, ground handling and aircraft drawings.

### Required Courses:

The following courses (18 units minimum) are required for the certificate:

	<b>units</b>
AERO 120, Aircraft General I*	7.5
AERO 121, Aircraft General II*	7.5
Program Elective	<u>3</u>

**Total 18**

For a recommended plan of study for the certificate, please refer to the Associate Degree plan minus the general education requirements.

### Program Electives:

	<b>units</b>
AFAB 110, Introduction to Aircraft Structures, Blueprint and Manufacturing Documentation	3
AFAB 115, Aircraft Structures	8
AFAB 120, Composites Fabrication and Repair	7
AFAB 130, Aerospace Workplace Issues and Ethics	4
AFAB 210, Aircraft Production Systems	4
ELTE 252, Intro. to Avionics	3
ELTE 254, Radio Telephone License	3

\* Offered during Summer Semester only. Students may begin with either AERO 120 or AERO 121.

**NOTE:** Students may begin the program at any point in the certificate plan.

### Aircraft Airframe

This program provides in-depth understanding and principles along with “hands-on” experience to aircraft airframe structures. It entails the following subjects: sheet metal structures, wood structures, dope and fabric, aircraft airframe inspection, assembly and rigging, hydraulic and pneumatic systems, aircraft electrical systems, cabin atmosphere controls, fuel systems, ice and rain systems, fire protection systems, instrument systems, position and warning systems, landing gear systems, and navigation and communication systems. Depending on the individuals’ aircraft experience and previous licenses, some individuals will have to qualify for the General Aircraft Maintenance certificate in order to receive the FAA Aircraft Airframe Certificate of completion.

**Contact instructor for further information.**

<b>Required Courses:</b>	<b>units</b>
The following courses (30 units) are required for the certificate:	
AERO 230, Aircraft Airframe I	15
AERO 231, Aircraft Airframe II	<u>15</u>
	<b>Total 30</b>

For a recommended plan of study for the certificate, please refer to the Associate Degree plan minus the general education requirements.

**Aircraft Powerplant**

This program provides an in-depth understanding, “hands-on” experience and principles in powerplant operation. This course entails the following subjects: reciprocating engines, turbines, lubrication systems, engine fuel systems, fuel metering systems, induction systems, ignition systems, engine electrical systems, engine cooling systems, engine exhaust system, engine instrument systems, engine fire protection systems and propellers. Depending on the individuals’ aircraft experience and previous licenses, some individuals will have to qualify for the General Aircraft Maintenance certificate in order to receive the FAA Aircraft Powerplant Certificate of completion. **Contact instructor for further information.**

<b>Required Courses:</b>	<b>units</b>
The following courses (30 units) are required for the certificate:	
AERO 240, Aircraft Powerplant I	15
AERO 241, Aircraft Powerplant II	<u>15</u>
	<b>Total 30</b>

For a recommended plan of study for the certificate, please refer to the Associate Degree plan minus the general education requirements.

**Airframe and Powerplant License**

Students who wish to obtain an FAA Airframe and Powerplant license should complete the following courses:

AERO 120, Aircraft General I	7.5
AERO 121, Aircraft General II	7.5
AERO 230, Aircraft Airframe I	15
AERO 231, Aircraft Airframe II	15
AERO 240, Aircraft Powerplant I	15
AERO 241, Aircraft Powerplant II	15

**Associate Degrees**

**General Aircraft Maintenance**

The requirements for an associate degree in General Aircraft Maintenance may be satisfied by completing the 15 units of required courses from the certificate, selecting a minimum of 3 units from the restricted list of program electives, 21 units of general education requirements, and sufficient electives to total 60 units. (See Graduation/Associate Degree Requirements.)

Students who complete the associate degree have enhanced employability in the field of aviation maintenance. They have enhanced promotional opportunities into supervisory and management positions as they gain experience with various agencies. The associate degree will also provide students with a broad range of knowledge with which to evaluate and appreciate the physical environment, the culture, and the society in which they live and with the ability to think and communicate clearly and effectively.

Except in cases of a prerequisite requirement, it is not required to take courses in exactly this sequence; they are recommended in this order to facilitate success.

*Recommended Plan of Study*

<b>First Semester</b>	<b>units</b>
Course from GE requirement Area A	3
Course from GE requirement Area B	3
Course from GE requirement Area D1	3
Program Elective	<u>3</u>
	<b>Total 12</b>

<b>Second Semester</b>	<b>units</b>
Course from GE requirement Area C	3
Course from GE requirement Area D2	3
Course from GE requirement Area E	3
Elective	<u>3</u>
	<b>Total 12</b>

<b>Summer</b>	<b>units</b>
AERO 120, Aircraft General I* <b>or</b>	
AERO 121, Aircraft General II*	<u>.5</u>
	<b>Total 7.5</b>

<b>Third Semester</b>	<b>units</b>
Course from GE requirement Area F	3
Electives	<u>9</u>
	<b>Total 12</b>

<b>Fourth Semester</b>	<b>units</b>
Electives	<u>9</u>
	<b>Total 9</b>

<b>Summer</b>	<b>units</b>
AERO 120, Aircraft General I* <b>or</b>	
AERO 121, Aircraft General II*	<u>7.5</u>
	<b>Total 7.5</b>

**Degree Total 60**

**Program Electives:**

Please refer to the Program Electives listed under the certificate program.

\* Offered during Summer semester only. Students may begin with either AERO 120 or AERO 121.

**NOTE:** Semester order for courses and time to complete may vary for night students.

**Aircraft Airframe**

The requirements for an associate degree in Aircraft Airframe Maintenance may be satisfied by completing the 30 units of required courses from the certificate, 21 units of general education requirements, and sufficient electives to total 60 units. (See Graduation/Associate Degree Requirements.)

Students who complete the associate degree have enhanced employability in the field of aviation maintenance. They have enhanced promotional opportunities into supervisory and management positions as they gain experience with various agencies. The associate degree will also provide students with a broad range of knowledge with which to evaluate and appreciate the physical environment, the culture, and the society in which they live and with the ability to think and communicate clearly and effectively.

Except in cases of a prerequisite requirement, it is not required to take courses in exactly this sequence; they are recommended in this order to facilitate success.

*Recommended Plan of Study*

<b>First Semester</b>	<b>units</b>
AERO 230, Aircraft Airframe I	<u>15</u>
<b>Total</b>	<b>15</b>

<b>Second Semester</b>	<b>units</b>
AERO 231, Aircraft Airframe II	<u>15</u>
<b>Total</b>	<b>15</b>

<b>Third Semester</b>	<b>units</b>
Course from GE requirement Area A	3
Course from GE requirement Area D1	3
Course from GE requirement Area E	3
Course from GE requirement Area F	3
Elective	<u>3</u>
<b>Total</b>	<b>15</b>

<b>Fourth Semester</b>	<b>units</b>
Course from GE requirement Area B	3
Course from GE requirement Area C	3
Course from GE requirement Area D2	3
Electives	<u>6</u>
<b>Total</b>	<b>15</b>

**Degree Total 60**

**NOTE:** Semester order for courses and time to complete may vary for night students.

**Aircraft Powerplant**

The requirements for an associate degree in Aircraft Powerplant maintenance may be satisfied by completing the 30 units of required courses from the certificate, 21 units of general education requirements, and sufficient electives to total 60 units. (See Graduation/Associate Degree Requirements.)

Students who complete the associate degree have enhanced employability in the field of aviation maintenance. They have enhanced promotional opportunities into supervisory and management positions as they gain experience with various agencies. The associate degree will also provide students with a broad range of knowledge with which to evaluate and appreciate the physical environment, the culture, and the society in which they live and with the ability to think and communicate clearly and effectively.

Except in cases of a prerequisite requirement, it is not required to take courses in exactly this sequence; they are recommended in this order to facilitate success.

*Recommended Plan of Study*

<b>First Semester</b>	<b>units</b>
AERO 240, Aircraft Powerplant I	<u>15</u>
<b>Total</b>	<b>15</b>

<b>Second Semester</b>	<b>units</b>
AERO 241, Aircraft Powerplant II	<u>15</u>
<b>Total</b>	<b>15</b>

<b>Third Semester</b>	<b>units</b>
Course from GE requirement Area A	3
Course from GE requirement Area D1	3
Course from GE requirement Area E	3
Course from GE requirement Area F	3
Elective	<u>3</u>
<b>Total</b>	<b>15</b>

<b>Fourth Semester</b>	<b>units</b>
Course from GE requirement Area B	3
Course from GE requirement Area C	3
Course from GE requirement Area D2	3
Electives	<u>6</u>
<b>Total</b>	<b>15</b>

**Degree Total 60****Transfer**

The Airframe and Powerplant Certificate courses are transferable to most four-year institutions offering an Aviation Mechanics Degree. Requirements may vary, so check the appropriate catalog(s) and consult with a counselor.

**Prerequisite Completion**

If a course is listed as a prerequisite for another course, that prerequisite course must be completed with a satisfactory grade in order to enroll in the next course. According to Title 5, Section 55200(d), a satisfactory grade is a grade of "A," "B," "C" or "P". Classes in which the Pass/No Pass option is available are indicated with an asterisk (\*) before the course title. See "Pass/No Pass Option" in the catalog for full explanation.

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## Airframe and Powerplant Courses

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**AERO 120 \*AIRCRAFT GENERAL I**

7.5 units

225 hours total

**Advisory:** Eligibility for ENGL 100A, READ 099 and MATH 070.

Fundamental concepts of aircraft maintenance. Topics include aircraft mathematics, basic electricity, fluid lines and fittings, materials, and processes. Intended for students who wish to attain FAA General Mechanic Certificate. (AVC)

**AERO 121 \*AIRCRAFT GENERAL II**

7.5 units

225 hours total

**Advisory:** Eligibility for ENGL 100A, READ 099 and MATH 070.

Provides training in the processes involving cleaning and corrosion control, maintenance publications, mechanic privileges/limitations, maintenance forms and records, ground operation, weight and balance, and aircraft drawings. The student will meet qualifying standards for the FAA comprehensive testing leading to a General Mechanic Certificate. (AVC)

**AERO 199 \*OCCUPATIONAL WORK EXPERIENCE**

1–8 units

hours vary

**Prerequisite:** To participate in work experience, students must have a job or internship which is either paid or voluntary and have the approval of the supervisor and instructor supervising work experience in the specific subject area. **PRIOR TO ENROLLING**, students must attend a scheduled orientation or meet individually with the supervising instructor for an individual orientation.

Occupational Work Experience Education is supervised employment designed to provide students a realistic learning experience through work. The ultimate goal is to teach students those skills and attitudes that will equip them to function and adapt as an employee in a variety of situations and jobs. Occupational Work Experience Education is supervised employment extending classroom-based occupational learning at an on-the-job learning station related to the students' educational major or occupational goal. Credit may be accrued at the rate of one to eight units per semester. For the satisfactory completion of all types of Cooperative Work Experience Education (WE 197 and WE 199), students may earn up to a total of sixteen semester credit hours. (AVC) (R3)

**AERO 230 \*AIRCRAFT AIRFRAME I**

15 units

25 hours weekly

**Advisory:** Eligibility for ENGL 100A, READ 099 and MATH 070.

Inform and train students to become familiar with the techniques and operations involved with aircraft wood structures, finishes, covering, sheet metal and non-metallic structures, welding, assembly and rigging, aircraft inspection, and aircraft fuel systems. Students will meet qualifying standards for the FAA comprehensive testing leading to an Airframe Mechanic Certificate. (AVC)

**AERO 231 \*AIRCRAFT AIRFRAME II**

15 units

25 hours weekly

**Advisory:** Eligibility for ENGL 100A, READ 099 and MATH 070.

Inform and train students to become familiar with the techniques and operations involved with aircraft instruments, communication and navigation, position and warning, cabin atmosphere, ice and rain, fire protection, aircraft electrical, hydraulic and pneumatic, and landing gear systems. Students will meet qualifying standards for the FAA comprehensive testing leading to an Airframe Mechanic Certificate. (AVC)

**AERO 240 \*AIRCRAFT POWERPLANT I**

15 units

25 hours weekly

**Advisory:** Eligibility for ENGL 100A, READ 099 and MATH 070.

Provides instruction related to aircraft reciprocating and turbine engines. Topics include inspection, fuel systems, unducted fans and auxiliary power units. Intended for students who wish to attain FAA Powerplant Mechanic Certificate. (AVC)

**AERO 241 \*AIRCRAFT POWERPLANT II**

15 units

25 hours weekly

**Advisory:** Eligibility for ENGL 100A, READ 099 and MATH 070.

Provides instruction related to aircraft reciprocating and turbine engines. Topics include lubrication systems, induction systems, cooling systems, exhaust systems, electrical and instruments systems, fire systems and propellers. Intended for students who wish to attain FAA Powerplant Mechanic Certificate. (AVC)