

66 Aeronautical and Aviation Technology

Definition

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

Staff

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Program Advisement:

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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.)

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: units

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

AERO 120, Aircraft General I* 7.5

AERO 121, Aircraft General II* 7.5

Program Elective 3

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: units

AERO 101, Fundamentals of Aviation Technology 3

AERO 180, SPACETEC Core Certification Readiness 1-3

AERO 280, Aircraft General-Written Test Review 3

AERO 281, Aircraft Airframe-Written Test Review 3

AERO 282, Aircraft Powerplant-Written Test Review 3

AFAB 110, Basic Blueprint Interpretation 4

AFAB 115, Aircraft Structures 6

AFAB 120, Composites Fabrication and Repair 6

AFAB 130, Aerospace Workplace Issues and Ethics 4

AFAB 210, Aircraft Production Systems 6

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.**

Required Courses: units

The following courses (30 units) are required for the certificate:

AERO 230, Aircraft Airframe I 15

AERO 231, Aircraft Airframe II 15

Total 30

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.**

Required Courses: units

The following courses (30 units) are required for the certificate:

AERO 240, Aircraft Powerplant I 15

AERO 241, Aircraft Powerplant II 15

Total 30

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 15 units of required courses, selecting an additional 3 units from the restricted list of program electives, 21 units of general education requirements, and sufficient elective credits 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

First Semester	units
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>
Total	12

Second Semester	units
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>
Total	12

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

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

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

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

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 30 units of required courses, 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

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

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

Third Semester	units
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>
Total	15

Fourth Semester	units
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>
Total	15

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 30 units of required courses, 21 units of general education requirements, and sufficient elective credits 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

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

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

Third Semester	units
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>
	Total 15

Fourth Semester	units
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>
	Total 15

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.

Airframe and Powerplant Courses

AERO 101 *FUNDAMENTALS OF AVIATION TECHNOLOGY

3 units
4 hours weekly
Advisory: Eligibility for ENGL 099, READ 099 and MATH 070.

Intended for students who are interested in a career in the aviation industry. Students will learn about the history and concepts of aviation technology. Also provides instruction and hands-on practice in fundamental concepts involving aircraft maintenance. Includes basic aircraft structures, mathematics, blueprint reading, and proper use and care of tools and equipment. Students will be involved in the restoration of a vintage aircraft. (AVC)

AERO 120 *AIRCRAFT GENERAL I

7.5 units
225 hours total
Advisory: Eligibility for ENGL 099, 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 099, 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 180 *SPACETEC CORE CERTIFICATION READINESS

1-3 units
18-54 hours total
Advisory: Eligibility for ENGL 099, READ 099 and MATH 070.

This course is designed to prepare students for the SpaceTEC Core certification written exam. Students will be pre-tested to determine their level of expertise; then the course material and level of instruction will be tailored to their specific needs. Upon the successful completion of this course and the subsequent successful passing of the SpaceTEC written and practical exams, students will be awarded the SpaceTEC Core Certificate/License. **BEFORE ENROLLING**, students must meet at least one of the following verifiable criteria: have a two year technical college program degree or have/had a two year technical military assignment or hold FAA Airframe & Powerplant certificate, or have two or more years of on the job training and experience in the aerospace industry. (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. (CSU, AVC) **(R3)**

AERO 230 *AIRCRAFT AIRFRAME I

15 units

25 hours weekly

Advisory: Eligibility for ENGL 099, 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 099, 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 099, 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 099, 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)

AERO 280 AIRCRAFT GENERAL - WRITTEN TEST REVIEW

3 units

3 hours weekly

Advisory: Eligibility to take FAA written mechanics examination.

Preparation for the FAA Aircraft General Mechanics written examination. Subject matter includes technical material relative to current practice and FAA regulations. (AVC)

AERO 281 AIRCRAFT AIRFRAME - WRITTEN TEST REVIEW

3 units

3 hours weekly

Advisory: Eligibility to take FAA written mechanics examination.

Preparation for the FAA Aircraft Airframe Mechanics written examination. Subject matter includes technical material relative to current practice and FAA regulations. (AVC)

AERO 282 AIRCRAFT POWERPLANT - WRITTEN TEST REVIEW

3 units

3 hours weekly

Advisory: Eligibility to take FAA written mechanics examination.

Preparation for the FAA Aircraft Powerplant Mechanics written examination. Subject matter includes technical material relative to current practice and FAA regulations. (AVC)