

Aeronautics

Airframe Maintenance Technician

Program Description

Practical and theoretical knowledge in basic maintenance techniques, plus the special requirements of either airframe or powerplant work. Upon satisfactory completion of the required courses, the student is eligible to take the Federal Aviation Administration written oral and practical examination for airframe or powerplant license.

Certificate of Achievement and Associate in Science Degree

A Certificate of Achievement can be obtained upon completion of one of the 41-unit majors listed below. An Associate in Science Degree can be obtained upon completion of the units required for the major in either Airframe or Powerplant or Airframe and Powerplant and general education requirements.

The Federal Aviation Administration (FAA) requires 1900 hours (four full semesters and one four week summer session) of instruction to complete the combination airframe and powerplant curriculum. All courses in the major must be completed with a grade of C or better or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes

Students who complete the Certificate of Achievement/ Associate Degree will be able to:

1. Demonstrate proficient, entry-level aviation maintenance skills in airframe and powerplant with emphasis on aircraft engines, aircraft structures, and aircraft systems.
2. Have a working knowledge to inspect, maintain, service and repair aircraft electrical, engine (piston and turbine), airframe structure, flight control, hydraulic, pneumatic, fuel, navigation and instrument systems and other aircraft components specified by Federal Aviation Regulation Part 147.
3. Obtain an FAA, Airframe and Powerplant License upon completion of the Federal Aviation Administration (FAA) knowledge, oral, practical and written examination in general, airframe, and powerplant subjects.

REQUIRED COURSES	Units
AERO 055 Aviation Maintenance Technician General I	10
AERO 102 Airframe Maintenance I	10
AERO 103 Aviation Maintenance Technician General II	10
AERO 105 Airframe Maintenance II	10
AERO 118 FAA Airframe Test Review & Qualification	1
Total Units	41

Recommended Electives:
AERO 150 FAA Special Projects-Airframe Enhancement
OCED 090 Occupational Work Experience
OCED 091 General Work Experience

To obtain the combination Airframe & Powerplant Maintenance Technician certificate or degree, also complete the three courses listed below:	Units
AERO 106 Powerplant Maintenance I	10
AERO 107 Powerplant Maintenance II	10
AERO 119 FAA Powerplant Test Review & Qualification	1
Total Units	21

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Powerplant Maintenance Technician

Program Description

Practical and theoretical knowledge in basic maintenance techniques, plus the special requirements of either airframe or powerplant work. Upon satisfactory completion of the required courses, the student is eligible to take the Federal Aviation Administration written, oral and practical examination for airframe or powerplant license.

Certificate of Achievement and Associate in Science Degree

A Certificate of Achievement can be obtained upon completion of one of the 41-unit majors listed below. An Associate in Science Degree can be obtained upon completion of the units required for the major in either Airframe or Powerplant or Airframe and Powerplant and general education requirements.

The Federal Aviation Administration (FAA) requires 1900 hours (four full semesters and one four week summer session) of instruction to complete the combination airframe and powerplant curriculum. All courses in the major must be completed with a grade of C or better or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes

Students who complete the Certificate of Achievement/ Associate Degree will be able to:

1. Demonstrate proficient, entry-level aviation maintenance skills in airframe and powerplant with emphasis on aircraft engines, aircraft structures, and aircraft systems.
2. Have a working knowledge to inspect, maintain, service and repair aircraft electrical, engine (piston and turbine), airframe structure, flight control, hydraulic, pneumatic, fuel, navigation and instrument systems and other aircraft components specified by Federal Aviation Regulation Part 147.
3. Obtain an FAA, Airframe and Powerplant License upon completion of the Federal Aviation Administration (FAA) knowledge, oral, practical and written examination in general, airframe, and powerplant subjects.

REQUIRED COURSES	Units
AERO 055 Aviation Maintenance Technician	
General I.....	10
AERO 103 Aviation Maintenance Technician	
General II	10
AERO 106 Powerplant Maintenance I	10
AERO 107 Powerplant Maintenance II	10
AERO 119 FAA Powerplant Test Review	
& Qualification	1
Total Units	41

Recommended Electives :

AERO 150 FAA Special Projects-Airframe Enhancement
OCED 090 Occupational Work Experience
OCED 091 General Work Experience

Aeronautics courses numbered 200 and above are intended as refresher courses and may be used to prepare for FAA licensing. They are not applicable toward the certificate or A.S. Degree in Airframe Maintenance or Powerplant Maintenance and are not covered under Part 147 FAR's or the school FAA certification.

To obtain the combination Airframe & Powerplant Maintenance Technician certificate or degree, also complete the three courses listed below:

Units	
AERO 102 Airframe Maintenance I.....	10
AERO 105 Airframe Maintenance II	10
AERO 118 FAA Airframe Test Review	
& Qualification	1
Total Units	21

Students with prior experience or schooling must have Solano instructor verification for substitution or waiving. "Proof of Proficiency Exam" may be required prior to enrollment in any class other than 055.

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AERO 055 10 Units
Aviation Maintenance Technician
Course Advisory: SCC Minimum English and Math standards. Presents the fundamentals necessary for the advanced study in Aeronautics. It will define the history of aviation and powerplant operation, and the study of flight: aircraft weight and balance, ground operation and servicing, mathematics, maintenance forms and records, basic physics, maintenance publication, and mechanic privileges and limitation. Safety is stressed throughout the course. In addition, this course is a study of the methods and processes used in the production of an aircraft, including shop safety. Use of hand tools and power equipment, aircraft drawings, cleaning, corrosion control; and the processes used by the manufacturers for aircraft construction. *Five hours lecture, fifteen hours lab.*

AERO 060 5 Units
Basic Aeronautical Science
Course Advisory: SCC minimum English and Math standards. Presents the fundamentals necessary for the advanced study in Aeronautics. Along with an exposure to the history of aviation and powerplant operation, the student will learn ground operation and servicing, mechanic privileges and limitations, maintenance forms, records, and publications, technical mathematics and physics, and how to calculate the weight and balance of an aircraft. Safety is stressed throughout the course. Not available for credit to students who have completed AERO 055 with a C or better. *Two and one-half hours lecture, seven and one-half hours lab.*

AERO 062 5 Units
Aircraft Production Processes
Course Advisory: SCC minimum English and Math standards. Continues the study of the fundamentals of Aeronautics. The student will learn about the materials used in aircraft construction and maintenance, proper cleaning and corrosion control, and understand aircraft drawings. Safety is stressed throughout the course. Not available for credit to students who have completed AERO 055 with a C or better. *Two and one-half hours lecture, seven and one-half hours lab.*

AERO 064 5 Units
Basic Aircraft Hydraulic & Pneumatic Systems
Course Advisory: SCC minimum English and Math standards. Presents the study of the fundamentals of Aeronautics. The student will gain an understanding of fluid power systems and the components used to generate and transfer fluid power in aircraft. Safety is stressed throughout the course. Not available for credit to students who have completed AERO 103 with a C or better. *Two and one-half hours lecture, seven and one-half hours lab.*

AERO 066 5 Units
Basic Aircraft Electrical Systems
Course Advisory: SCC minimum English and Math standards. Presents the study of the fundamentals of Aeronautics. The student will gain an understanding of electricity, electronics, and the electrical systems used in aircraft. Though primarily oriented toward direct current systems, alternating current and modern electronic circuitry are also included. Safety is stressed throughout the course. Not available for credit to students who have completed AERO 103 with a C or better. *Two and one-half hours lecture, seven and one-half hours lab.*

AERO 102 10 Units
Airframe Maintenance II
Course Advisory: SCC minimum English standard; AERO 055. Presents the application of fundamental methods, techniques and practices used in aircraft inspection, maintenance and repair. Includes shop safety, wood structures, fabric covering, finishes, composite structures, plastics, sheet metal structures, welding, assembly and rigging, and airframe inspection. *Five hours lecture, fifteen hours lab.*

AERO 103 10 Units
Aviation Maintenance Technician General II
Course Advisory: SCC minimum English standard; AERO 055. A study of fluid control systems and components with emphasis on design, maintainability, testing and repair. Includes hydraulic fluids, lines and fittings, inspection, checking, servicing and testing of pneumatic and hydraulic systems. Presents theory and application of direct and alternating current as related to air electrical components and systems. *Five hours lecture, fifteen hours lab.*

AERO 105 10 Units
Airframe Maintenance II
Course Advisory: SCC minimum English standard. A detailed study of aircraft systems, their fabrication, maintenance, and repair. Includes landing gear, hydraulic, pneumatic, atmosphere control, instruments, communication, navigation, fuel, position, warning, rain and fire protection systems. *Five hours lecture, fifteen hours lab.*

AERO 106 10 Units
Powerplant Maintenance I
Course Advisory: SCC minimum English standard; AERO 055. Presents a study of the theory, operation, maintenance and repair of reciprocating engines and accessories. *Five hours lecture, fifteen hours lab.*

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- AERO 107** **10 Units**
Powerplant Maintenance II
Course Advisory: SCC minimum English standard; AERO 055. Presents a study of the theory, operation, maintenance and repair of the turbine engine and accessories. *Five hours lecture, fifteen hours lab.*
- AERO 118** **0.50 to 1.50 Units**
FAA Airframe Test Review & Qualification
Course Advisory: SCC minimum English and Math standards; AERO 055. To be taken during the final semester of a student's enrollment in the Aviation Program. Consists of a comprehensive oral, practical, and written examination of all material covered in the Airframe Program for the purpose of verifying the student's readiness to pass the Federal Aviation Administration Airframe Examinations. This is an open entry / open exit course. *Six to eighteen hours lab (4 week course).*
- AERO 119** **0.50 to 1.50 Units**
FAA Powerplant Test Review & Qualification
Course Advisory: SCC minimum English and Math standards; AERO 055. To be taken during the final semester of a student's enrollment in the Aviation Program. Consists of a comprehensive oral, practical, and written examination of all material covered in the Powerplant Program for the purpose of verifying the student's readiness to pass the Federal Aviation Administration Powerplant Examinations. This is an open entry / open exit course. *Six to eighteen hours lab (4 week course).*
- AERO 150** **0.50 to 1.50 Units**
FAA Special Projects-Airframe Enhancement
Course Advisory: SCC minimum English and Math Standard; Any Solano College Aeronautics course (AERO 055-119); or previous training/experience in aeronautics. This course is designed to give Aeronautics students a chance to make up time lost for FAA certificate and/or to work on special projects required by FAA to bring students in line with new FAA FAR Part 66 requirements. This is an open entry / open exit course. *One and one-half to four and one-half hours lab.*

- AERO 151** **0.50 to 1.50 Units**
FAA Special Projects - Powerplant Enhancement
Course Advisory: SCC minimum English and Math standards; Any Solano College Aeronautics course (AERO 055-119); or previous training/experience in aeronautics. This course is designed to give Aeronautics students a chance to make up time lost for FAA certificate and/or to work on special projects required by FAA to bring students in line with new FAA FAR Part 66 requirements. Also allows mechanics to take recurrent training. This is an open entry / exit course. *One and one-half to four and one-half hours lab.*
- AERO 175** **2 Units**
Working with Composite Materials
Course Advisory: SCC minimum English and Math standards. Introduces the student to the manufacturing and maintenance of composite materials in aeronautical and aerodynamic structures. Emphasis is placed on the safe handling of tools and chemicals used in composites. Does not qualify toward FAA licensing for airframe or powerplant mechanics. *One hour lecture, three hours activity.*
- AERO 176** **1 Unit**
Composite Materials Workshop
Prerequisite: AERO 175 with a grade of C or better.
Course Advisory: SCC minimum English and Math standards. Continues the study of the manufacturing and maintenance of composite materials in aeronautical and aerodynamic structures. Through laboratory practice the student is able to improve their skills to aeronautical quality. Emphasis is placed on the safe handling of tools and chemicals used in composites. Does not qualify toward FAA licensing for airframe or powerplant mechanics. *Three hours activity.*