

AERONAUTICS

The Aeronautics Department curriculum offers students several ways to qualify for employment in the aviation industry. Students may pursue an Associate of Science degree or certificates in Airframe and Powerplant Technology. Students desiring specific ratings or licenses should consult with faculty in the Aeronautics Department and/or the Federal Aviation Administration (FAA). Students planning to transfer to a four-year institution and major in aeronautics should consult with a counselor regarding the transfer process and lower division requirements.

Airframe and Powerplant Technicians are employed by airlines and Aviation Maintenance providers. The Aviation Maintenance Technician program at San Bernardino Valley College is fully approved by the FAA to provide the training required to become Airframe and Powerplant Technicians.

Students interested in the Aviation Maintenance Technician Certificate are highly encouraged to take additional laboratory courses in conjunction with laboratory required courses to meet the mandatory 1900 hours of instruction to qualify for the Airframe and Powerplant written, oral and practical tests administered by (FAA). The courses listed below can be taken concurrently.

Code	Title	Units
AERO 050L & AERO 650L	General Laboratory/Calculations And Basic Electricity Airframe and Powerplant Technologies and General Laboratory/Calculations and Basic Electricity Airframe and Powerplant Technologies	2
AERO 051L & AERO 651L	General Laboratory/Materials and Servicing Airframe and Powerplant Technologies and General Laboratory/Materials and Servicing Airframe and Powerplant Technologies	2
AERO 052L & AERO 652L	Airframe Maintenance Laboratory - Structures and Airframe Maintenance Laboratory - Structures	5
AERO 053L & AERO 653L	Airframe Maintenance Laboratory - Systems and Components and Airframe Maintenance Laboratory System and Components	5
AERO 054L & AERO 654L	Powerplant Maintenance Laboratory - Reciprocating Engine Overhaul and Powerplant Maintenance Laboratory - Reciprocating Engine Overhaul	5
AERO 055L & AERO 655L	Powerplant Maintenance Laboratory - Accessory Overhaul and Powerplant Maintenance Laboratory - Accessory Overhaul	5

Students planning to obtain an FAA A&P certification with prior military or industry experience should consult with the Department Chair.

Contact Information

Division: Applied Technology, Transportation, and Culinary Arts

Division Phone Number: (909) 384-4451

Faculty Chair: Tarif (Terry) Halabi (thalabi@sbccd.edu), M.S.E.E.

Counselor Liaisons: Debbie Orozco (dorozco@sbccd.edu), M.A. and Patricia Jones (pjones@sbccd.edu), M.A.

- Airframe Maintenance Technician Certificate of Achievement (<http://catalog.valleycollege.edu/degree-certificate-program-index/aeronautics/airframe-maintenance-technician-certificate-achievement/>)
- Aviation Maintenance Technician Associate of Science Degree (<http://catalog.valleycollege.edu/degree-certificate-program-index/aeronautics/aviation-maintenance-technician-as-degree/>)
- Aviation Maintenance Technician Certificate of Achievement (<http://catalog.valleycollege.edu/degree-certificate-program-index/aeronautics/aviation-maintenance-technician-certificate-achievement/>)
- Flight Operations and Management Associate of Science Degree (<http://catalog.valleycollege.edu/degree-certificate-program-index/aeronautics/flight-operations-management-as-degree/>)
- Flight Operations Certificate of Achievement (<http://catalog.valleycollege.edu/degree-certificate-program-index/aeronautics/flight-operations-certificate-achievement/>)
- Flight Operations Certificate of Completion (<http://catalog.valleycollege.edu/degree-certificate-program-index/aeronautics/flight-operations-certificate-completion/>)
- Powerplant Maintenance Technician Certificate of Achievement (<http://catalog.valleycollege.edu/degree-certificate-program-index/aeronautics/powerplant-maintenance-technician-certificate-achievement/>)

AERO 015 2 Units

Nano Composite Technology

Lecture: 18 contact hours

Lab: 54 contact hours

This course is an introduction to Nano Composite Structures including the manufacturing, uniqueness, strength and repair methods in the aviation field and any related fields using composites technology.

Associate Degree Applicable

AERO 021 3 Units

Aviation Fundamentals

Lecture: 54 contact hours

This course is an introduction to the basic principles of aeronautics, aircraft structure and operations including space, rocketry and aeronautical occupations.

Associate Degree Applicable

AERO 022 6 Units

Private Pilot Ground School

Lecture: 108 contact hours

This course offers complete preparation for the Federal Aviation Administration (FAA) private pilot written examination including aerodynamics, weight and balance, airports and airspace, meteorology, using aviation services, flight information publications, federal air regulations, navigation, radio navigation aids, cross-country flight planning, physiology of flight, and airborne emergencies.

Associate Degree Applicable

AERO 024 3 Units**Aircraft Powerplants****Lecture:** 54 contact hours

This course is designed to familiarize the student with the operating principles and construction highlights of both reciprocating and jet aircraft engines including internal combustion engines, jet propulsion engines, aircraft fuels and fuel systems, electrical and ignition systems, lubricants and lubrication systems, propellers, engine instrument and control systems, engine inspection, operation and troubleshooting.

Associate Degree Applicable**AERO 025 2 Units****Flight Safety****Lecture:** 36 contact hours

This course is an in-depth study of flight safety including: organizations contributing to flight safety, Pilot and passenger responsibilities, emergency radio procedures, pilot resources, ground safety, mid-air collisions, weather and night flight hazards and precautions, emergency procedures, medical factors, human factors, and crash investigation and liability.

Associate Degree Applicable**AERO 026 3 Units****Airframe Structures****Lecture:** 54 contact hours

This course is designed to familiarize the aviator or prospective pilot with the fundamentals of aircraft design and construction including: aircraft structural components, fundamentals of aerodynamics and flight, materials and hardware, ice and rain protection, hydraulic and pneumatic systems, landing gear systems, fire protection systems, electrical systems, instrument systems, weight and balance control, and blue print reading.

Associate Degree Applicable**AERO 027 2 Units****Airport Certification and Operations****Lecture:** 36 contact hours

This course covers airport certification and operations including applicability, definitions, certificate requirements, and process, Airport Certification Manual (ACM), record keeping, personnel requirements, markings, signs, and lighting, airport emergency plan, wildlife hazard management, and unmanned aerospace vehicles (UAV)(drones) issues.

Associate Degree Applicable**AERO 034 3 Units****Civil Aviation Management and Laws****Lecture:** 54 contact hours

This course covers the history of civil aviation in the United States including: federal legislation on civil aviation, international treaties and agreements relevant to civil aviation, and regulations pertaining to the management of airports, air carriers, general aviation, international air transport, and the air cargo industry.

Associate Degree Applicable**AERO 040 4 Units****Instrument Ground School****Lecture:** 54 contact hours**Lab:** 54 contact hours

This course examines the fundamentals of instrument flight in the Air Traffic Control (ATC) system and factors that can affect the operation including aerodynamics, navigation, flight planning, and communication. The subject matter is reinforced by flying various procedures in flight simulators. This course can be used as a method to meet the Federal Aviation Administration (FAA) requirements for the ground instruction portion of a Biennial Flight Review (BFR) as specified in Federal Aviation Regulations (FAR) 61.56.

Associate Degree Applicable**AERO 046 3 Units****Aviation Weather****Lecture:** 54 contact hours

This course covers the aspects of weather as they relate to aircraft operation and safety. Includes: Basic and hazardous weather, atmospheric winds, pressure systems as associated with weather, cloud formation, air masses and fronts, thunderstorms, turbulence and icing, fog, haze and smoke, high altitude, arctic and tropical weather, interpretation of weather reports, forecast, charts and maps.

Associate Degree Applicable**AERO 050 5 Units****General/Calculations and Basic Electricity Airframe and Powerplant Technologies****Lecture:** 90 contact hours**Corequisite:** AERO 050L

This course provides training for the General requirements of the Aviation Maintenance Technician Certificate. Areas of study include familiarization of basic hand tools, applications of mathematics, basic physics, certain Federal Aviation Regulations (FARs), basic electricity including application of Ohm's Law, electrical terms, units of measure, types of electrical circuits, reading and interpreting electrical diagrams, and electrical components familiarization. (Formerly AERO 100)

Associate Degree Applicable**AERO 050L 2 Units****General Laboratory/Calculations And Basic Electricity Airframe and Powerplant Technologies****Lab:** 108 contact hours**Corequisite:** AERO 050

This course provides training for the General requirements of the Aviation Maintenance Technician Certificate. The content includes the use of basic hand tools, applications of mathematics, basic physics, certain Federal Aviation Regulations (FARs), basic electricity including application of Ohm's Law, use of a volt/ohm meter, interpret electrical circuit diagrams, service and inspection of batteries. (Formerly AERO 100L)

Associate Degree Applicable**AERO 051 5 Units****General/Materials and Servicing Airframe and Powerplant Technologies****Lecture:** 90 contact hours**Corequisite:** AERO 051L

This course provides training for the General requirements of the Aviation Maintenance Technician Certificate. Areas of instruction include aircraft weight and balance control, basic drafting, aircraft fluid lines and fittings, aircraft hardware, materials, non-destructive testing processes, corrosion control, aircraft cleaning and ground operations and handling. (Formerly AERO 101)

Associate Degree Applicable

AERO 051L 2 Units**General Laboratory/Materials and Servicing Airframe and Powerplant Technologies****Lab:** 108 contact hours**Corequisite:** AERO 051

This course provides training for the General requirements of the Aviation Maintenance Technician Certificate. Areas of instruction include aircraft weight and balance control, basic drafting, aircraft fluid lines, fittings, aircraft hardware, materials, non-destructive testing processes, corrosion control, aircraft cleaning, and ground operations and handling. (Formerly AERO 101L)

Associate Degree Applicable**AERO 052 6 Units****Airframe Maintenance - Structures****Lecture:** 108 contact hours**Corequisite:** AERO 052L

This course provides training for the Airframe requirements of the Airframe Maintenance Technician Certificate and the Aviation Maintenance Technician Certificate. Areas of instruction include airframe structures, aircraft covering, aircraft finishing, theory of flight, assembly and rigging, structural repair, aircraft inspection, and aircraft fuel systems. (Formerly AERO 102)

Associate Degree Applicable**AERO 052L 5 Units****Airframe Maintenance Laboratory - Structures****Lab:** 270 contact hours**Corequisite:** AERO 052

This course provides training for the Airframe requirements of the Airframe Maintenance Technician Certificate and the Aviation Maintenance Technician Certificate. Areas of instruction include airframe structures, aircraft covering, aircraft finishing, theory of flight, assembly and rigging, structural repair, aircraft inspection, and aircraft fuel systems. (Formerly AERO 102L)

Associate Degree Applicable**AERO 053 6 Units****Airframe Maintenance - Systems and Components****Lecture:** 108 contact hours**Corequisite:** AERO 053L

This course provides training for the Airframe requirements of the Airframe Maintenance Technician Certificate and the Aviation Maintenance Technician Certificate. Topics of study include aircraft welding, electrical circuits, and basic aircraft systems for power, landing, brakes warning instrumentation, autopilot, cabin atmosphere control, ice and rain control, fire protection and communications. (Formerly AERO 103)

Associate Degree Applicable**AERO 053L 5 Units****Airframe Maintenance Laboratory - Systems and Components****Lab:** 270 contact hours**Corequisite:** AERO 053

This course provides training for the Airframe requirements of the Airframe Maintenance Technician Certificate and the Aviation Maintenance Technician Certificate. Topics of instruction include aircraft welding, electrical circuits, and basic aircraft systems for power, landing, brakes warning instrumentation, auto pilot, cabin atmosphere control, ice and rain control, fire protection and communications. (Formerly AERO 103L)

Associate Degree Applicable**AERO 054 6 Units****Powerplant Maintenance - Reciprocating Engine Overhaul****Lecture:** 108 contact hours**Corequisite:** AERO 054L

This course provides training for the Powerplant requirements of the Powerplant Maintenance Technician Certificate and the Aviation Maintenance Technician Certificate. Topics of study include reciprocating engine theory, overhaul, inspections, lubricating systems, indicating systems, fire protection systems, and engine fuel systems. (Formerly AERO 104)

Associate Degree Applicable**AERO 054L 5 Units****Powerplant Maintenance Laboratory - Reciprocating Engine Overhaul****Lab:** 270 contact hours**Corequisite:** AERO 054

This course provides training for the Powerplant requirements of the Powerplant Maintenance Technician Certificate and the Aviation Maintenance Technician Certificate. Topics of study include reciprocating engine theory, overhaul, inspections, lubricating systems, indicating systems, fire protection systems, and engine fuel systems. (Formerly AERO 104L)

Associate Degree Applicable**AERO 055 6 Units****Powerplant Maintenance - Accessory Overhaul****Lecture:** 108 contact hours**Corequisite:** AERO 055L

This course provides training for the Powerplant requirements of the Powerplant Maintenance Technician Certificate and the Aviation Maintenance Technician Certificate. Topics of study include electricity, ignition, fuel, fuel metering, induction, cooling, exhaust, propellers, turbine engines and auxiliary power units. (Formerly AERO 105)

Associate Degree Applicable**AERO 055L 5 Units****Powerplant Maintenance Laboratory - Accessory Overhaul****Lab:** 270 contact hours**Corequisite:** AERO 055

This course provides training for the Powerplant requirements of the Powerplant Maintenance Technician Certificate and the Aviation Maintenance Technician Certificate. Areas of instruction include electrical power generation, ignition, fuel and fuel metering, induction, cooling, exhaust, propeller systems, turbine engines and auxiliary power units. (Formerly AERO 105L)

Associate Degree Applicable**AERO 098 1-4 Units****Aeronautics Work Experience****WRKEX:** 60 contact hours

This course involves supervised training, in the form of on the job employment that will enhance the student's knowledge in the selected field of study. The student's major and job must match. For paid work, 75 hours = 1 unit; for volunteer work, 60 hours = 1 unit. Students may earn a total of 16 units toward graduation in Work Experience 098 courses. See department for specific guidelines.

Associate Degree Applicable**AERO 600 Noncredit****Introduction to Aviation Technology****Lecture:** 16 contact hours**Lab:** 48 contact hours

This noncredit introductory course gives students hands-on experience with airframe and powerplant aviation technology. It will focus on aviation principles, maintenance practices, and careers.

AERO 621 Noncredit**Aviation Fundamentals****Lecture:** 54 contact hours

This noncredit course is an introduction to the basic principles of aeronautics, aircraft structure and operations including space, rocketry and aeronautical occupations.

AERO 622 Noncredit**Private Pilot Ground School****Lecture:** 108 contact hours

This noncredit course offers complete preparation for the Federal Aviation Administration (FAA) private pilot written examination including aerodynamics, weight and balance, airports and airspace, meteorology, using aviation services, flight information publications, federal air regulations, navigation, radio navigation aids, cross-country flight planning, physiology of flight, and airborne emergencies.

AERO 624 Noncredit**Aircraft Powerplants****Lecture:** 54 contact hours

This course is designed to familiarize the student with the operating principles and construction highlights of both reciprocating and jet aircraft engines including: internal combustion engines, jet propulsion engines, aircraft fuels and fuel systems, electrical and ignition systems, lubricants and lubrication systems, propellers, engine instrument and control systems, engine inspection, operation and troubleshooting.

AERO 625 Noncredit**Flight Safety****Lecture:** 36 contact hours

This noncredit course is an in-depth study of flight safety including: organizations contributing to flight safety, pilot and passenger responsibilities, emergency radio procedures, pilot resources, ground safety, mid-air collisions, weather and night flight hazards and precautions, emergency procedures, medical factors, human factors, and crash investigation and liability.

AERO 626 Noncredit**Airframe Structures****Lecture:** 54 contact hours

This noncredit course is designed to familiarize the aviator or prospective pilot with the fundamentals of aircraft design and construction including: aircraft structural components, fundamentals of aerodynamics and flight, materials and hardware, ice and rain protection, hydraulic and pneumatic systems, landing gear systems, fire protection systems, electrical systems, instrument systems, weight and balance control, and blueprint reading.

AERO 640 Noncredit**Instrumental Ground School****Lecture:** 54 contact hours**Lab:** 54 contact hours

This noncredit course examines the fundamentals of instrument flight in the Air Traffic Control (ATC) system and factors that can affect the operation including aerodynamics, navigation, flight planning, and communication. The subject matter is reinforced by flying various procedures in flight simulators. This course can be used as a method to meet the Federal Aviation Administration (FAA) requirements for the ground instruction portion of a Biennial Flight Review (BFR) as specified in Federal Aviation Regulations (FAR) 61.56.

AERO 646 Noncredit**Aviation Weather****Lecture:** 54 contact hours

This noncredit course covers the aspects of weather as they relate to aircraft operation and safety. It includes basic and hazardous weather, atmospheric winds, pressure systems as associated with weather, cloud formation, air masses and fronts, thunder storms, turbulence and icing, fog, haze and smoke, high altitude, arctic and tropical weather, interpretation of weather reports, forecast, charts and maps.

AERO 650L Noncredit**General Laboratory/Calculations and Basic Electricity Airframe and Powerplant Technologies****Lab:** 45 contact hours

This noncredit course provides additional training and lab hours for the Airframe Maintenance Technician Certificate as required by the FAA. The content includes the use of basic hand tools, applications of mathematics, basic physics, certain Federal Aviation Regulations (FARs), basic electricity including application of Ohm's Law, use of a volt/ohm meter, interpret electrical circuit diagrams, service and inspection of batteries.

AERO 651L Noncredit**General Laboratory/Materials and Servicing Airframe and Powerplant Technologies****Lab:** 45 contact hours

This noncredit course provides training for the General requirements of the Aviation Maintenance Technician Certificate. Areas of instruction include aircraft weight and balance control, basic drafting, aircraft fluid lines, fittings, aircraft hardware, materials, non-destructive testing processes, corrosion control, aircraft cleaning, and ground operations and handling.

AERO 652L Noncredit**Airframe Maintenance Laboratory - Structures****Lab:** 54 contact hours

This noncredit course provides training for the Airframe requirements of the Airframe Maintenance Technician Certificate and the Aviation Maintenance Technician Certificate. Areas of instruction include airframe structures, aircraft covering, aircraft finishing, theory of flight, assembly and rigging, structural repair, aircraft inspection, and aircraft fuel systems.

AERO 653L Noncredit**Airframe Maintenance Laboratory System and Components****Lab:** 54 contact hours

This noncredit course provides additional training and lab hours for the Airframe Maintenance Technician Certificate as required by the FAA. Topics of instruction include aircraft welding, electrical circuits, and basic aircraft systems for power, landing, brakes warning instrumentation, autopilot, cabin atmosphere control, ice and rain control, fire protection and communications.

AERO 654L Noncredit**Powerplant Maintenance Laboratory - Reciprocating Engine Overhaul****Lab:** 54 contact hours

This noncredit course provides training for the Powerplant requirements of the Powerplant Maintenance Technician Certificate and the Aviation Maintenance Technician Certificate. Topics of study include reciprocating engine theory, overhaul, inspections, lubricating systems, indicating systems, fire protection systems, and engine fuel systems.

AERO 655L Noncredit**Powerplant Maintenance Laboratory - Accessory Overhaul**

Lab: 54 contact hours

This noncredit course provides training for the Powerplant requirements of the Powerplant Maintenance Technician Certificate and the Aviation Maintenance Technician Certificate. Areas of instruction include electrical power generation, ignition, fuel and fuel metering, induction, cooling, exhaust, propeller systems, turbine engines and auxiliary power units.

AERO 900 1 Unit**Lab Studies in Aviation Maintenance Technology**

Lab: 54 contact hours

Prerequisite/Corequisite: AERO 050L and AERO 051L

This course provides additional laboratory instruction for students lacking mandated hours or projects to complete a training certificate.