

AERONAUTICS (AERO) COURSES

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 022L 1 Unit

Private Pilot Flight Lab

Lab: 54 contact hours

Prerequisite/Corequisite: AERO 022

This course provides students with the opportunity to accumulate flight hours essential for obtaining certification and licensing as a commercial instrument pilot. It focuses on training in specific areas to develop proficiency in essential pilot operations required for various certificates and ratings. All instruction follows the guidelines set forth by the Federal Aviation Regulations (FAR) Part 61 and Part 141. Flight training labs adhere to an approved FAR Part 141 curriculum.

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 041L 1 Unit**Instrument Pilot Flight Lab****Lab:** 54 contact hours**Prerequisite/Corequisite:** AERO 040**Limitation on Enrollment:** Students must receive approval to enroll in this course from an Aeronautics faculty member.

Students taking this course will receive training in the maneuvers and procedures necessary to meet the standards contained in the FAA Instrument Rating Practical Test Standards. Additionally, students will receive training in safety awareness, crew resource management, and aeronautical decision-making. At the successful completion of this course, students will have gained the aeronautical experience necessary to attain the addition of an Instrument Rating for the Private Pilot Certificate. This course is offered as pass/no-pass basis only.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

Associate Degree Applicable**AERO 070 3 Units****Introduction to Air Traffic Control (ATC)****Lecture:** 54 contact hours

This course is an introductory course in air traffic control and is a requirement for all students in the Flight Operations - ATC Pathway (degree) sequence. The course material covers a broad range of topics specific to the air traffic control system and its application to the aviation profession. Topics included are the history of air traffic control (ATC), National Airspace System (NAS), navigation systems, ATC systems and airspace, ATC communications, ATC procedures and organization, tower, TRACON and en route operations, NextGen and the future of the national airspace system.

Associate Degree Applicable**AERO 071 2 Units****Civil Aircraft Recognition and Performance****Lecture:** 36 contact hours

This course is designed for students who want to become air traffic controllers for the Federal Aviation Administration (FAA). Students will learn to recognize the distinctive features of aircraft, identify types of aircraft, classify aircraft as to FAA category and class, and analyze aircraft for performance characteristics required for air traffic control separation.

Associate Degree Applicable**AERO 098 1-4 Units****Aeronautics Work Experience****WRKEX:** 300 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 611 Noncredit**General Maintenance Test Preparation****Lecture:** 8 contact hours**Lab:** 6 contact hours

This noncredit course prepares students for the FAA Aviation Mechanic Certification - General oral and practical test. Students will be given extra instruction in practice in the FAA test subjects.

AERO 612 Noncredit**Airframe Maintenance Test Preparation****Lecture:** 8 contact hours**Lab:** 8 contact hours

This noncredit course prepares the students for the FAA Aviation Mechanic Certification. Airframe written, oral and practical test. Students will review subjects as determined by latest FAA performance statistics.

AERO 613 Noncredit**Powerplant Maintenance Test Preparation****Lecture:** 8 contact hours**Lab:** 6 contact hours

This noncredit course prepares students for the FAA Aviation Mechanic Certification - Powerplant oral and practical test. Students will be given extra instruction in practice in the FAA test subjects.

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.