AVIATION & APPLIED TECHNOLOGY

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Courses

Prefix	Course
AET	Aeronautics
AIT	Automated Industrial Technology
AMT	Aircraft Maintenance Technology
PPT	Power Plant Technology
UAS	Unmanned Aircraft Systems

Career Programs

Aircraft Maintenance Technology
Aircraft Maintenance Technology-Airframe
Aircraft Maintenance Technology-Powerplant
Airway Science Technology, Flight Emphasis
Certified Flight Instructor Instrument Airplane Rating
Unmanned Aircraft Systems

Associate in Applied Science (AAS)

- Aircraft Maintenance Technology - Airframe, Associate in Applied Science (https://catalog.cgc.edu/educational-programs/aviation-applied-technology/aircraft-maintenance-technology-airframe-aas/)
- Aircraft Maintenance Technology - Powerplant, Associate in Applied Science (https://catalog.cgc.edu/educational-programs/aviation-applied-technology/aircraft-maintenance-technology-powerplant-aas/)
- Aircraft Maintenance Technology, Associate in Applied Science (https://catalog.cgc.edu/educational-programs/aviation-applied-technology/aircraft-maintenance-technology-aas/)
- Airway Science Technology - Flight Emphasis, Associate in Applied Science (https://catalog.cgc.edu/educational-programs/aviation-applied-technology/airway-science-technology-flight-emphasis-aas/)
- Unmanned Aircraft Systems, Associate in Applied Science (https://catalog.cgc.edu/educational-programs/aviation-applied-technology/unmanned-aircraft-systems-aas/)

Certificate Of Completion (CCL)

- Aircraft Maintenance Technology - Airframe, Certificate of Completion (https://catalog.cgc.edu/educational-programs/aviation-applied-technology/aircraft-maintenance-technology-airframe-ccl/)
- Aircraft Maintenance Technology - Powerplant, Certificate of Completion (https://catalog.cgc.edu/educational-programs/aviation-applied-technology/aircraft-maintenance-technology-powerplant-ccl/)
- Aircraft Maintenance Technology, Certificate of Completion (https://catalog.cgc.edu/educational-programs/aviation-applied-technology/aircraft-maintenance-technology-ccl/)
- Certified Flight Instructor Instrument Airplane Rating, Certificate of Completion (https://catalog.cgc.edu/educational-programs/aviation-applied-technology/certified-flight-instructor-instrument-airplane-rating-ccl/)
- Unmanned Aircraft Systems, Certificate of Completion (https://catalog.cgc.edu/educational-programs/aviation-applied-technology/unmanned-aircraft-systems-ccl/)

Aircraft Maintenance Technology

Hutto, Clarence (Mike)

- A.A., Mesa Community College
- B.A., St. Leo College

Julian, William

- Kansas College of Technology
- A.A.S., Eastern New Mexico University

Khalil, Bashir M.
Occupational Program Director

- A.A., A.S., Cochise College
- B.S., M.S., Indiana State University

Snyder, Eric

- B.S., Southern Illinois University

Summerford, Roark David

- B.S. Arizona State University

Varela, Rachel Leigh

- B.S., Arizona State University

Zilch, John

- B.S., Midwestern State University
- M.S., Embry Riddle Aeronautical University

Unmanned Aircraft Systems

Vacant

Aeronautics (AET)

AET107 / Private Pilot Ground School
5 Credits / 5.0 Periods for Lecture
Ground school in preparation for the Federal Aviation Administration (FAA) Private Pilot Certificate written examination. Includes aerodynamics, airplane systems, airports, airspace, communications, Federal Air Regulations, navigation, airplane performance, flight planning, and flight physiology. Requires passing a written exam similar to the FAA Private Pilot written exam. Prerequisites: None. Corequisites: AET110 or AET112.
Division: Aviation and Applied Technology

AET110 / Private Pilot Flight
1 Credit / 5.0 Periods for Laboratory
Flight course in preparation for the Federal Aviation Administration (FAA) Private Pilot Certificate practical examination. Includes preflight preparation and planning, ground operations, airport operations, departures, navigation, basic instrument flight, night flight, slow flight, ground reference maneuvers, emergency operations, and arrivals. Approximately 50 hours airplane flight experience at student's expense required. Requires passing check ride similar to the FAA Private Pilot check ride. Prerequisites: None. Corequisites: AET107.
Division: Aviation and Applied Technology

AET112 / Private Pilot Flight-Test Course
1 Credit / 5.0 Periods for Laboratory
Flight course in preparation for transition into continued AET course work. Includes preflight preparation and planning, ground operations, airport operations, departures, navigation, basic instrument flight, slow flight, ground reference maneuvers, emergency operations, and arrivals. Requires passing check ride similar to the Federal Aviation Administration Private Pilot check ride. Prerequisites: FAA Private Pilot Airplane Single-Engine Land or advanced certification. Corequisites: AET107. Course Notes: Flight and ground briefing time at student`s expense required.
Division: Aviation and Applied Technology

AET115 / Aviation Meteorology
3 Credits / 3.0 Periods for Lecture
Meteorology for professional pilots. Includes atmosphere, air mass circulation, cloud type identification, weather hazards, and high altitude, Arctic, and tropical weather systems. Basic forecasting, use of Direct User Access Terminal (DUAT) systems and reading and interpreting weather charts. Prerequisites: None.
Division: Aviation and Applied Technology

AET203 / Basic Airplane Systems
3 Credits / 3.0 Periods for Lecture
Beginning commercial pilot ground course in preparation for the Federal Aviation Administration (FAA) Commercial Pilot Certificate and Commercial written examination. Discussions will include, but not be limited to reciprocating engines, engine systems, airplane systems, altitude systems, and commercial regulations. Prerequisites: A grade of C or better in (AET207, AET217, and AET210) or permission of Instructor. Corequisites: AET222.
Division: Aviation and Applied Technology

AET207 / Attitude Instruments and Navigation
3 Credits / 3.0 Periods for Lecture
Beginning instrument pilot ground course in preparation for the Federal Aviation Administration (FAA) Instrument Pilot Rating and Instrument Rating written examinations. Includes preflight preparation, flight instruments, basic attitude instrument flying, radio navigation systems, and technically advanced aircraft systems. Prerequisites: A grade of C or better in AET110 or permission of Instructor. Corequisites: AET210, AET217, and AET220.
Division: Aviation and Applied Technology

AET208 / Aviation Safety
3 Credits / 3.0 Periods for Lecture
Introduction to aviation safety, including aviation safety programs, risk management, pilot psychology, physiology, human factors, and accident review and investigation. Prerequisites: A grade of C or better in AET107, or permission of Instructor.
Division: Aviation and Applied Technology

AET210 / Commercial Flight Lab I
1 Credit / 5.0 Periods for Laboratory
Initial flight course in preparation for the Federal Aviation Administration (FAA) Commercial Pilot practical examination. Emphasis on instrument and technically advanced aircraft operations. Student must fly approximately 10 hours at own expense. Requires passing operational stage checks similar to the FAA check rides. Prerequisites: A grade of C or better in AET110 or permission of Instructor. Corequisites: AET207, AET217, and AET220.
Division: Aviation and Applied Technology

AET213 / Aerodynamics and Performance
3 Credits / 3.0 Periods for Lecture
Advanced commercial pilot ground course in preparation for the Federal Aviation Administration (FAA) Commercial Pilot Certificate and Commercial written examinations. Includes discussion of aerodynamic factors including lift, weight, drag, and thrust. Discussions will include, but are not limited to aerodynamics, performance, safe and efficient airplane operations, airplane stability and control, stalls, and spins. Prerequisites: A grade of C or better in AET207, AET217, and AET210. Corequisites: AET221.
Division: Aviation and Applied Technology

AET217 / Instrument Procedures
3 Credits / 3.0 Periods for Lecture
Advanced instrument pilot ground school course in preparation for the Federal Aviation Administration (FAA) Instrument pilot rating and Instrument rating written examinations. Includes Federal Aviation Regulations, instrument approach procedures, and instrument en route considerations. Requires passing written exam similar to the Instrument pilot rating and Instrument rating written exams. Prerequisites: A grade of C or better in AET110 or permission of Instructor. Corequisites: AET207, AET210, and AET220.
Division: Aviation and Applied Technology

AET220 / Instrument Flight Lab
1 Credit / 5.0 Periods for Laboratory
Flight course in preparation for the Federal Aviation Administration (FAA) Instrument rating practical examination. Emphasis on instrument operations. Student must fly approximately 40 hours at own expense. Requires passing of stage checks similar to the FAA check ride. Prerequisites: A grade of C or better in AET110 or permission of Instructor. Corequisites: AET207, AET210, and AET217.
Division: Aviation and Applied Technology

AET221 / Commercial Flight Lab II
1 Credit / 5.0 Periods for Laboratory
Intermediate flight course in preparation for the Federal Aviation Administration (FAA) Commercial Pilot practical examination. Emphasis on commercial and solo cross-country flight operations. Student must fly approximately 45 hours at their own expense. Maneuvers and procedures during dual instruction are designed to be performed with flight instructor guidance. Requires passing commercial pilot stage checks similar to the FAA check ride. Prerequisites: A grade of C or better in AET207 and AET210 or permission of Instructor. Corequisites: AET213.
Division: Aviation and Applied Technology

AET222 / Commercial Flight Lab III
1 Credit / 5.0 Periods for Laboratory
Advanced flight course in preparation for the Federal Aviation Administration (FAA) Commercial Pilot practical examination. Emphasis on commercial operations. Student must fly approximately 45 hours at their own expense. Maneuvers and procedures are designed to be performed with little flight instructor guidance. Requires commercial pilot stage checks similar to the FAA check ride. Prerequisites: A grade of C or better in AET221 and AET213. Corequisites: AET203.
Division: Aviation and Applied Technology

AET225 / Advanced Aircraft Systems
4 Credits / 4.0 Periods for Lecture
Survey of advanced aircraft systems to include electrical, automatic flight control, pressurization, cabin atmosphere, ice control, rain control, fire detection and extinguishing. Includes theory and analysis of turbine aircraft engines. Introduction to turbine engine systems to include lubrication, ignition, fuel control, cooling, exhaust, and propellers. Includes overview of maintenance publications, forms and records. Prerequisites: Private Pilot Certificate or permission of Instructor.
Division: Aviation and Applied Technology

AET227 / Certified Flight Instructor: Airplane, Single Engine Land Ground School
5 Credits / 5.0 Periods for Lecture
Ground school in preparation for the Federal Aviation Administration (FAA) Certified Flight Instructor and Fundamentals of Instruction written examinations. Includes fundamentals of instruction, aerodynamics, airplane performance, systems, operations, weight and balance, weather, federal regulations, navigation, maneuvers, pilot physiology, ethics, and aeronautical decision making. Requires passing written exams similar to the FAA Certified Flight Instructor: Airplane, and Fundamentals of Instruction written exams. Prerequisites: A grade of C or better in AET240 or FAA Commercial Pilot Certificate with instrument rating. Corequisites: AET230.
Division: Aviation and Applied Technology

AET229 / Crew Resource Management
3 Credits / 3.0 Periods for Lecture
Crew communications, teamwork, leadership, "followership," decision-making, and situational awareness; also the benefits of diversity, and the role diversity plays in the modern aerospace industry. Emphasis on utilization of all available resources in order to conduct a safe and efficient flight. Prerequisites: A grade of C or better in AET217, or permission of instructor.
Division: Aviation and Applied Technology

AET230 / Certified Flight Instructor: Airplane, Single Engine Land Flight Lab
1 Credit / 3.0 Periods for Laboratory
Flight course in preparation for the Federal Aviation Administration (FAA) Certified Flight Instructor: Airplane practical examination. Emphasis on demonstration and analysis of flight maneuvers. Includes preflight, ground operations, airport operations, takeoffs, climbs, flight fundamentals, stalls, spins, slow flight, basic instrument operations, performance maneuvers, ground reference maneuvers, emergency operations, approaches, landings, and postflight procedures. Requires approximately 25 hours of flight that includes high performance operations at student's expense. Also requires passing check ride similar to the FAA Certified Flight Instructor check ride. Prerequisites: A grade of C or better in AET240 or FAA Commercial Pilot Certificate with instrument rating. Corequisites: AET227.
Division: Aviation and Applied Technology

AET237 / Multiengine Airplane Pilot Ground School
2 Credits / 2.0 Periods for Lecture
Aeronautical knowledge necessary to meet requirements for a multi-engine airplane rating including orientation, aerodynamics, airplane systems, airplane performance, flight planning, and emergency procedures. Prerequisites: A grade of C or better in AET220 or FAA Commercial Pilot Certificate with instrument rating Corequisites: AET240.
Division: Aviation and Applied Technology

AET239 / Commercial Flight Lab IV
1 Credit / 5.0 Periods for Laboratory
Final flight course in preparation for the Federal Aviation Administration (FAA) Commercial Pilot practical examination. Emphasis on commercial operations. Student must fly approximately 20 hours at their own expense. Maneuvers and procedures are designed to be performed without flight instructor guidance. Requires passing commercial pilot stage check similar to the FAA check ride. Prerequisites: A grade of C or better in (AET203 and AET222), or permission of Instructor.
Division: Aviation and Applied Technology

AET240 / Multiengine Airplane Pilot Flight Lab
1 Credit / 1.5 Periods for Laboratory
Flight course in preparation for the Federal Aviation Administration (FAA) Multi-engine Airplane practical examination. Approximately 18 hours of flight experience at the student`s expense and passing check ride similar to the FAA Multi-engine check ride are required. Prerequisites: A grade of C or better in AET239 or FAA Commercial Pilot Certificate with Single Engine Land and Instrument rating. Corequisites: AET237.
Division: Aviation and Applied Technology

Automated Industrial Technology (AIT)

AIT124 / Composites
3 Credits / 4.0 Periods for Lecture & Lab
Basic composite materials, construction, and repair. Manufacturing methods and equipment. Assessment and repair of composite structures using vacuum bagging and other approved procedures. Corrosion control, electrical bonding, materials substitutions, machining of composite components, mold fabrication. Hot bond repair of composite components including complex shapes and varied materials. Prerequisites: None.
Division: Aviation and Applied Technology

AIT132 / Industrial Technology for the Semiconductor Industry
3 Credits / 4.0 Periods for Lecture & Lab
Introduction to semiconductor manufacturing concepts, processes, and hands-on application. Includes electrical theory, circuits, schematics, hand tools, safety, clean room protocols, model based problem solving, lean manufacturing, vacuum technology, and troubleshooting. Prerequisites: None.
Division: Aviation and Applied Technology

Aircraft Maintenance Technology (AMT)

AMT124 / Aircraft Forms and Regulations, Weight and Balance, Drawings, and Ground Operations
5 Credits / 9.0 Periods for Lecture & Lab
Federal Aviation maintenance publications, forms and records. Overview of technician's privileges and limitations. Perform aircraft weight and balance, aircraft ground operations and fuel servicing techniques. Drawings, symbols and schematic diagrams. Prerequisites: Admission to the Aircraft Maintenance Technology program.
Division: Aviation and Applied Technology

AMT126 / Fundamentals of Mathematics and Electricity
9 Credits / 12.0 Periods for Lecture & Lab
Mathematical computation of fundamental electrical circuit parameters. Basic definitions, laws, and concepts. Schematic, wiring, and parts placement diagrams. Test and troubleshoot electrical and electronic components and circuits. Prerequisites: Admission to the Aircraft Maintenance Technology program.
Division: Aviation and Applied Technology

AMT128 / Fundamentals of Aviation Physics, Corrosion Control, Materials and Processes, Fluid Lines and Fittin
5 Credits / 9.0 Periods for Lecture & Lab
Basic concepts of motion, fluid dynamics, heat and sound, aerodynamics, aircraft structure and theory of flight. Fluid lines and fittings, component identification, function, inspection, and installation. Cleaning and corrosion control, materials and processes, non-destructive testing, and precision measurement techniques. Prerequisites: Admission to the Aircraft Maintenance Technology program.
Division: Aviation and Applied Technology

AMT220 / Fundamentals Of Aircraft Wood Structures, Covering And Finishing, And Bonded Structures
3 Credits / 6.0 Periods for Lecture & Lab
Theories and techniques of aircraft wood structures. Inspection, test and repair of aircraft fabric and wood structures. Aircraft structural design and methods of working with selected materials. Characteristics of composites, inspections and repairs. Prerequisites: Admission to the program.
Division: Aviation and Applied Technology

AMT222 / Atmosphere Control, Fire Detection, Ice and Rain Protection Systems
4 Credits / 6.0 Periods for Lecture & Lab
Operation and maintenance of aircraft auxiliary systems. Inspection, servicing, troubleshooting and repair of environmental control, ice and rain control, fire protection and warning systems. Prerequisites: Admission to the program.
Division: Aviation and Applied Technology

AMT224 / Aircraft Sheet Metal
5 Credits / 11.0 Periods for Lecture & Lab
Inspection, fabrication, and repair techniques of aircraft structural and nonstructural components. Sheet metal heat-treating techniques. Prerequisites: Admission to the program.
Division: Aviation and Applied Technology

AMT226 / Aircraft Landing Gear, Hydraulic, Pneumatic, Fuel, Position And Warning Systems
7 Credits / 12.0 Periods for Lecture & Lab
Identification, inspection, repair, and troubleshooting techniques of aircraft landing gear, hydraulic, fuel, pneumatic, and position and warning system components. Prerequisites: Admission to the program.
Division: Aviation and Applied Technology

AMT228 / Aircraft Electrical Systems, Instruments, Fuel Indicating, Communication And Navigation Systems
7 Credits / 12.0 Periods for Lecture & Lab
Proper operation, inspection, servicing and troubleshooting of DC(Direct Current) and AC(Alternating Current) sources, systems, and components. Mechanical and electrical sensing and information display systems. Fuel indicator system inspections, repairs, and troubleshooting. Transmitter and receiver fundamentals. Avionics installation, inspection and testing. Prerequisites: Admission to the program.
Division: Aviation and Applied Technology

AMT230 / Airframe Assembly, Inspection And Welding
6 Credits / 11.0 Periods for Lecture & Lab
Aircraft assembly and rigging. Flight control balancing and rigging. Airframe inspection techniques, reporting procedures, and aircraft jacking. Welding techniques, theory, and materials identification. Prerequisites: Admission to the program.
Division: Aviation and Applied Technology

AMT263 / Aircraft Turbine Engines
5 Credits / 9.0 Periods for Lecture & Lab
Historical development and application of turbine engines. Theory of thrust and the design and environmental factors which influence thrust. Turbine engine troubleshooting, inspection, service, repair and overhaul. Operational characteristics and engine test techniques on the aircraft and in test cells. Prerequisites: Admission to the program.
Division: Aviation and Applied Technology

AMT264 / Aircraft Reciprocating Engines
7 Credits / 11.0 Periods for Lecture & Lab
Historical development and application of reciprocating engines, theory, design, and operations. Techniques used in troubleshooting, overhaul, inspection, and repair of opposed and radial engines. Prerequisites: Admission to the program.
Division: Aviation and Applied Technology

AMT266 / Engine Fuel Systems, Fuel Metering and Induction System
6 Credits / 9.0 Periods for Lecture & Lab
Inspection, servicing, troubleshooting, overhaul, and repair of aircraft fuel systems and components, fuel metering devices, injection systems, turbochargers, and superchargers. Induction system principles of operation and design. Prerequisites: Admission to the program.
Division: Aviation and Applied Technology

AMT268 / Engine Electrical, Ignition and Starter Systems
6 Credits / 12.0 Periods for Lecture & Lab
Inspect, service, troubleshoot, overhaul, and repair of engine electrical, ignition, starter systems, and components. Prerequisites: Admission to the program.
Division: Aviation and Applied Technology

AMT270 / Engine Instruments, Fire Protection And Lubrication, Cooling And Exhaust Systems
5 Credits / 8.0 Periods for Lecture & Lab
Operation, maintenance, servicing, inspection, repair, and troubleshooting of engine instruments, fire detection and extinguishing, engine lubrication, cooling, and exhaust systems. Prerequisites: Admission to the program.
Division: Aviation and Applied Technology

AMT272 / Propeller Systems and Engine Inspections
4 Credits / 8.0 Periods for Lecture & Lab
Historical development, operation, disassembly, inspection, repair, and maintenance of propellers. Reciprocating and turbine engine inspection and documentation. Prerequisites: Admission to the program.
Division: Aviation and Applied Technology

Power Plant Technology

PPT120 / Energy Industry Fundamentals
3 Credits / 3.0 Periods for Lecture
Various types of energy and their conversion to useable energy such as electrical power. How generated electrical power is transmitted and distributed to the point of use. Prerequisites: None.
Division: Aviation and Applied Technology

Unmanned Aircraft Systems (UAS)

UAS100 / sUAS Batteries and Electronics
5 Credits / 5.0 Periods for Lecture
Small Unmanned Aircraft Systems (sUAS) basic electronics and circuits, communications, information display systems, transmitter and receiver fundamentals, flight controller installation and tuning, lithium polymer battery basics, radio telemetry, basic electrical troubleshooting and repair techniques. Prerequisites: Appropriate placement test score in Reading, Writing and Math, or [eligibility in ENG101, (RDG100 or RDG100LL), MAT120, MAT121, and MAT122].
Division: Aviation and Applied Technology

UAS101 / Introduction to Unmanned Aircraft Systems Operation
3 Credits / 3.0 Periods for Lecture
Introduction to Unmanned Aircraft Systems (UAS) history, flight, avionics, sensors, communication systems, and an introduction to data analysis and applications, such as first responders, Geographic Information Systems, and Precision Agriculture. Prerequisites: None.
Division: Aviation and Applied Technology

UAS107 / Unmanned Aircraft Systems Operator Certification
3 Credits / 3.0 Periods for Lecture
Develop knowledge and skills needed to manage and operate small Unmanned Aircraft Systems (sUAS). Includes Federal Aviation Regulations, radio communications, weather, airspace and airport authorization criteria, loading and performance, aeronautical decision making, sUAS flight operations, and maintenance. Operational skills acquired through both classroom and hands-on flight activities. Prerequisites: None. Course Notes: Students must complete the appropriate flight lessons to satisfactorily complete the course.
Division: Aviation and Applied Technology

UAS205 / sUAS Instruments and Autopilot Programming and Uses
3 Credits / 3.0 Periods for Lecture
Small unmanned aircraft systems (sUAS) proper operation of ground control stations with remote aircraft, troubleshooting radio link issues, changing parameters, setting up waypoints, flying on autopilot only. Prerequisites: A grade of C or better in UAS101 and UAS107. Corequisites: UAS206.
Division: Aviation and Applied Technology

UAS206 / sUAS Instrument and Autopilot Flight Lab
2 Credits / 2.0 Periods for Laboratory
Students will use their advanced skills to manipulate a ground control station in the practical operation of Small Unmanned Aircraft Systems (sUAS) in a controlled, but realistic environment. Prerequisites: A grade of C or better in UAS101 and UAS107. Corequisites: UAS205.
Division: Aviation and Applied Technology

UAS207 / sUAS Dynamics and Design
5 Credits / 5.0 Periods for Lecture
Design, configuration, and concepts of Small Unmanned Aircraft Systems (sUAS). Platform types including multi-rotors, single rotor, and fixed wing aircraft. Prerequisites: A grade of C or better in UAS205 and UAS206. Corequisites: UAS208.
Division: Aviation and Applied Technology