

**General Courses**

See inside front cover for symbol code.

**(Credits)****GTEC110****(3–4)****Freshman Seminar**

College success and life enrichment skills. Included are an introduction to the resources of the university, principles of critical thinking, and Christian values clarification.

**GTEC115****(3–4)****College Seminar**

See description under GTEC110. Repeatable.

**GTEC298****(1–32)****Prior Learning Assessment**

Prior Learning Assessment (PLA) is a process which validates learning experiences occurring outside traditional college/university academic programs. A portfolio of evidence for demonstrating experience and competency justifies and determines the amount of credit granted. Repeatable with different topics.

**GTEC395****(1–4)****Cooperative Work Experience**

Supervised (by the dean or his appointee) on-the-job work experience with a cooperating industry. A minimum of 120 hours of work is required per credit. The student must submit a report of the cooperative work experience as specified by the instructor. Repeatable to 6 credits. Graded S/U. Prerequisites: an associate degree in technology or equivalent and permission of the dean. Students must apply and be accepted one semester in advance of their planned Cooperative Education experiences.

**GTEC498****(1–32)****Prior Learning Assessment**

See description under GTEC298. Total Prior Learning Assessment credits (GTEC298 and 498) may not exceed 32 credits.

**Individualized Programs of Study**

For students who have career goals or special interests in areas other than those provided in one of the established majors or minors, a special individualized program is available in the following degrees: Bachelor of Science, Bachelor of Technology, and Associate of Technology. An individualized concentration may be planned to meet the career goals of a student. Before the beginning of the junior year for baccalaureate-degree students or the beginning of the sophomore year for associate-degree students, the student, with the assistance of his or her advisor, prepares a proposed program of study. The program must be approved by a department faculty and the College of Technology Academic Policies and Curricula Committee.

**AERONAUTICS**

Seamount Building (Airpark)

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Academic Programs	Credits
BT: Aviation Technology Emphasis Areas Flight & Aviation Maintenance Flight & Business Flight Aviation Maintenance Aviation Maintenance & Business	60–88
AT: Aviation Technology Emphasis Areas Flight Aviation Maintenance	40–52
Minor in Aviation Technology Emphasis Areas Flight (20) Aviation Maintenance (32)	20 or 32
Certificates Private Pilot Commercial Pilot Instrument Rating Flight Instructor Multi-Engine Rating FAA-approved Part 147, Aviation Maintenance Airframe Powerplant Airframe and Powerplant	

**Programs**

For the aviation professional, the most competitive aviation program emphasizes both flight and maintenance. Therefore, the Department of Aeronautics strongly recommends completing a degree with both Flight and Aviation Maintenance emphases. Students who wish to enter a non-flying aviation career, may limit their specialization to Aviation Maintenance.

Two programs are available. A four-year Bachelor in Aviation Technology, and a two-year Associate in Aviation Technology.

Individualized majors are available as described in the previous section

The airpark is located about 1.2 miles from the central campus. Students are expected to provide their own transportation to and from the airpark.

## BT: Aviation Technology

Major*	60–88
General Education requirements	41–44
General electives	<u>23–0</u>
<b>Total credits for degree</b>	<b>124–132</b>

### General Education Requirements

See professional program requirements, p. 43, and note the following **specific** requirements:

- Religion:** professional degree requirements
- Language/Communication:** professional degree requirements
- History:** professional degree requirements
- Fine Arts/Humanities:** professional degree requirements
- Life/Physical Sciences:** professional degree requirements
- Mathematics:** professional degree requirements
- Computer Literacy:** INFS120 or DGME130 or pass a college-level competency exam of equivalent skills
- Service:** BHSC100 or BHSC300 "S" designated major course or service plan or 2 credits of fieldwork (0–2 cr)
- Social Sciences:** professional degree requirements
- Fitness Education:** professional degree requirements

### \* Emphasis Options

**Flight and Aviation Maintenance (88)**  
 Flight—36  
 Aviation Maintenance—52

**Flight and Business (75)**  
 Flight—36  
 Aviation Maintenance—6 (See required courses.)  
 Departmental electives—12  
 Business—21 min.

**Flight (60)**  
 Flight (AFLT)—36  
 Aviation Maintenance—6 (See required courses.)  
 Departmental electives—18

**Aviation Maintenance (60)**  
 Aviation Maintenance—52  
 Departmental electives—8

**Aviation Maintenance and Business (73)**  
 Aviation Maintenance—52  
 Business—21 min.

### Flight Area Courses

A Private Pilot Certificate, Instrument Rating, and a Commercial Certificate with Single and Multi-Engine Ratings are required for any BT or AT flight option. Flight lab fees, in addition to tuition, apply to all flight training courses (see College of Technology Charges, p. 67).

### Required Courses—42

AFLT115, 118, 215, 218, 305, 318, and 326  
 AVMT108 & 114 or 116

Aeronautics electives are to be chosen in consultation with an advisor. These electives are added to the required core classes that make up the total hours required by the major.

Credit by exam will only be approved for new students transferring in with previous FAA certificates subject to departmental approval.

### Aviation Maintenance Area Courses

An Aviation Maintenance Certificate with Airframe and Powerplant ratings is required for any BT or AT maintenance option. Lab fees apply to all maintenance courses. Students are required to have a Windows-compatible PC laptop for these courses. Due to the schedule and intensity of the Aviation Maintenance program, it is strongly recommended that students do not seek employment while taking the program full-time.

### Required Courses—52

AVMT 108, 114, 116, 120, 204, 206, 210, 220, 226, 237, 304, 306, 308, 310, 314, and 316

Credit by exam will only be approved for new students transferring in with previous FAA certificates subject to departmental approval.

## AT: Aviation Technology

Students may earn an Associate of Technology degree by taking courses beyond those required for the certificate in either the flight or maintenance area. The additional courses give students a broader General Education base, prepare them better to perform the activities acquired by the certificate program, and facilitate study for an advanced degree.

Major*	40–52
General Education requirements	20–25
General electives	<u>6–0</u>
<b>Total credits for degree</b>	<b>66–77</b>

### \* Emphasis Options

**Flight (40)**  
 Flight—36  
 Departmental electives—4

**Aviation Maintenance (52)**  
 Aviation Maintenance—52

### Minor in Aviation Technology

**Requirements:** A minimum of 20 credits in flight or 32 in maintenance, respectively.

Students earn a minor in Aviation Technology by completing one of the following:

**Flight (20):** AFLT115, 118, 215, 218. A Private Certificate with an instrument rating is required.

**Aviation Maintenance (32):** Complete either the Airframe or Powerplant License.

### FAA Certification

**FAA-Approved Instruction.** The Department of Aeronautics operates a Flight School as well as an Airframe and Powerplant Maintenance Technician School approved by the FAA under Title 14 CFR, Part 147.

**FAA Flight Certification Programs.** Students may take flight instruction to qualify for several levels of certification. Students wishing only to take the content courses necessary for the specific flying expertise can take just the flight area courses as outlined under the respective certification requirements.

**FAA Aviation Maintenance Certification Programs.** Students may earn the following FAA approved certificates from the department's Aviation Maintenance Technician School:

- Airframe
- Powerplant
- Airframe and Powerplant

## Courses (Credits)

See inside front cover for symbol code.

### Aeronautical Flight

#### AFLT104 (1-4)

##### **Introduction to Aviation**

Acquaints students with the history and opportunities in aviation, such as mission flying, flight instruction, aircraft maintenance, avionics, sales, safety, and aerodynamics of flight. *Fall, Spring*

#### AFLT115 (4)

##### **Private Pilot Ground School**

Ground training to prepare students for the FAA private pilot airplane knowledge test. Topics include aerodynamics, weight and balance, Federal Aviation Regulations, navigation, meteorology, aircraft systems and performance. *Fall, Spring, Summer*

#### AFLT118 \$ (6)

##### **Flight Training 1**

Sixty-five (65) hours of aircraft and simulator time leading to the airplane Private Pilot Certificate including 10 hours of cross-country flight. *Fall, Spring, Summer*

#### AFLT110 (3)

##### **Basic Aircraft Systems**

The study of small aircraft systems, including: reciprocating engines, propellers and prop governors; fuel, electrical, hydraulic, pressurization, pneumatic and de-icing systems, flight controls, aircraft structures, weight and balance, and aircraft instrument systems. Also included will be pilot maintenance and a brief introduction of the FAA requirements for maintenance, inspections and recordkeeping. *Fall*

#### AFLT215 (4)

##### **Instrument Pilot Ground School**

Ground training to prepare the student for the FAA instrument rating airplane knowledge test. Topics include Federal Aviation Regulations, meteorology, instrument flight charts, flight planning, instrument approaches, use of navigation equipment, and FAA publications relating to instrument flight. *Spring*

#### AFLT218 \$ (6)

##### **Flight Training II**

Sixty-five (65) hours of aircraft and simulator time leading to the airplane instrument pilot rating including 25 hours of cross-country flight needed to meet the 50-hour cross-country requirement. *Fall, Spring, Summer*

#### AFLT220 Alt (3)

##### **Meteorology**

Meteorology provides students with a comprehensive study of the principles of meteorology while simultaneously providing classroom and laboratory applications focused on current weather situations. It provides real experiences demonstrating the value of computers and electronic access to time sensitive data and information. *Fall*

#### AFLT230 Alt (3)

##### **Aerodynamics**

The study of aerodynamic principles used in aircraft. Designed for a better understanding of basic design and devices used to improve aircraft performance. *Fall*

#### AFLT305 (4)

##### **Commercial Pilot Ground School**

Ground training to prepare the student for the FAA commercial-pilot airplane knowledge test. Topics include advanced navigation, FAR Parts 61, 91, and 135 for air taxi, complex aircraft systems, weight and balance, and performance charts. *Fall*

#### AFLT310 Alt (3)

##### **Advanced Systems**

The study of transport category aircraft systems, including: turbine engines, APUs, fuel, electrical, hydraulic, pneumatic, environmental control, emergency oxygen, pressurization, de-icing systems, and advanced avionics systems. Particular emphasis will be placed on preparing for airline systems ground school. Prerequisite: AFLT305. *Spring*

#### AFLT318 \$ (6)

##### **Flight Training III**

Sixty-five (65) hours of single-engine flight, multi-engine flight and simulator time. The course includes preparation for the Private Pilot Multi-Engine Land rating. *Fall, Spring, Summer*

#### AFLT326 \$ (6)

##### **Flight Training IV**

Sixty-five (65) hours of aircraft and simulator time leading to the airplane Multi-Engine and Single-Engine Commercial ratings. *Fall, Spring, Summer*

#### AFLT330 Alt (3)

##### **Crew Resource Management**

Study of the effective use of resources available to the crew to achieve safe and efficient flight operations. Areas include human factors, communication, conflict resolution, leadership, teamwork, and situational awareness as applied to flight operations. *Spring*

#### AFLT455 (3)

##### **Flight Instructor Ground School**

Ground training to prepare the student for the FAA flight instructor airplane knowledge test. Topics include techniques of teaching, analysis of maneuvers, and lesson planning. *Fall, Spring, Summer*

#### AFLT456 \$ (2-4)

##### **Flight Instructor Flight Training**

Flight and ground training to prepare the student for the FAA flight instructor airplane practical test. Topics include the performance, teaching, and analysis of flight maneuvers required for the private and commercial airplane pilot (4 cr. for initial CFI; 2 cr. for CFI add-on). *Fall, Spring, Summer*

<p><b>AFLT464</b> (2)  <b>Basic and Advanced Ground Instructor</b>            Prepares the student for the FAA basic and advanced ground instructor knowledge test. Topics include techniques of teaching aerodynamics, aircraft performance, aircraft systems, weight and balance, meteorology, navigation, and regulations. <i>Fall, Spring, Summer</i></p>	<p><b>Aviation Maintenance</b></p>
<p><b>AFLT465</b> (3)  <b>Instrument Flight Instructor Ground School</b>            Prepares the student for the FAA instrument flight instructor knowledge test. Topics include techniques of teaching instrument flight, analysis of instrument maneuvers, instrument approaches, enroute operations, regulations, and lesson planning. <i>Fall, Spring, Summer</i></p>	<p><b>AVMT108</b> \$ (4)  <b>Applied Science for Aerospace Technicians</b>            Applies the sciences of mathematics and physics to the aerodynamics of flight, maintenance, weight and balance and various maintenance problems that the aircraft maintenance technician could encounter. Includes the study and use of drawings and basic ground operations. <i>Fall</i></p>
<p><b>AFLT466</b> \$ (3)  <b>Instrument Flight Instructor Flight Training</b>            Flight and ground training to prepare the student for the FAA instrument flight instructor airplane practical test. Topics include the performance, teaching, and analysis of attitude instruments, instrument approaches, and enroute operations. <i>Fall, Spring, Summer</i></p>	<p><b>AVMT114</b> \$ (2)  <b>Aircraft Basic Electricity</b>            A study of the fundamental basics of electricity and electronics; including electrical diagrams, calculations, sources of electrical power, direct and alternating current, aircraft storage batteries, capacitance and inductance, binary code and the basics of solid state logic. <i>Fall</i></p>
<p><b>AFLT467</b> \$ (2-4)  <b>Multi-Engine Flight Instructor</b>            Flight and ground training to prepare the student for the FAA multi-engine airplane flight instructor practical test. Topics include the performance, teaching, and analysis of maneuvers and procedures for the multi-engine airplane (4 cr. for initial CFI; 2 cr. for CFI add-on). <i>Fall, Spring, Summer</i></p>	<p><b>AVMT116</b> \$ (2)  <b>Federal Regulations, Publications, Forms and Records</b>            Study of the federal regulations and manufacturer publications as they apply to aircraft design, maintenance, inspections, forms and records, and the certification and privileges/limitations of the aviation maintenance technicians. <i>Fall</i></p>
<p><b>AFLT469</b> (2)  <b>Instrument Ground Instructor</b>            Prepares the student for the FAA instrument ground instructor knowledge test. Topics include the techniques of teaching advanced weather theory, weather reports and forecasts, instrument procedures and regulations, approaches, and enroute operations. <i>Fall, Spring, Summer</i></p>	<p><b>AVMT120</b> \$ (4)  <b>Materials and Processes for Aircraft Structures</b>            Includes hand and power tool usage, aircraft hardware and materials, precision measurements, corrosion control, non-destructive testing, and fluid lines and fittings. <i>Fall</i></p>
<p><b>AFLT474</b> \$ (3)  <b>Techniques of Mission Flying</b>            Develops special piloting skills required in remote undeveloped bush operations. Topics include pilotage, dead reckoning, GPS navigation, low-level operations, terrain flying, mountain passes and canyons, cargo drops, short fields, uphill and downhill operations on primitive airstrips, maximum performance techniques, and precision airplane control. <i>Fall, Spring, Summer</i></p>	<p><b>AVMT204</b> \$ Alt (2)  <b>Aircraft Electrical Systems</b>            Practical study of aircraft electrical systems, including installation practices, repair, troubleshooting, service, and inspections. <i>Spring</i></p>
<p><b>AFLT485</b> (3)  <b>Airline Transport Pilot Ground School</b>            Prepares the student for the FAA airline transport pilot knowledge test. Topics include air-carrier or air-taxi regulations, high altitude weather, advanced weight and balance, and the performance and special problems in large airplane operations. <i>Fall, Spring, Summer</i></p>	<p><b>AVMT206</b> \$ Alt (4)  <b>Powerplant Electrical Systems</b>            A study of engine ignition and engine electrical systems (starter, generators, alternators, auxiliary electrical power units and their control circuits, engine instruments, and engine fire protection-suppression systems). <i>Spring</i></p>
<p><b>AFLT486</b> \$ (3)  <b>Airline Transport Pilot Flight Training</b>            Flight and ground training to prepare the student for the FAA airline transport pilot airplane practical test. Topics include instrument procedures, in-flight maneuvers, take-offs, landings, advanced airplane systems, and emergency procedures. <i>Fall, Spring, Summer</i></p>	<p><b>AVMT210</b> \$ Alt (4)  <b>Aircraft Systems</b>            An in-depth study into the inspection, repair, checking, servicing and troubleshooting of the following aircraft systems; ice-and-rain detection, cabin atmosphere (pressurization, heating, cooling, and oxygen), position warning systems, navigation and communication systems, and aircraft instruments and their use in trouble-shooting of aircraft systems. <i>Spring</i></p>
	<p><b>AVMT220</b> \$ Alt (2)  <b>Aircraft Fuels and Fuel Systems</b>            A study of the various types and handling of fuels used in aircraft. Includes a study of aircraft fuel systems, fuel metering methods and the inspection, checking, servicing, troubleshooting, repair and overhaul of fuel systems and their components, and fire detection and protection. <i>Spring</i></p>
	<p><b>AVMT226</b> \$ Alt (2)  <b>Engine Fuel Metering Systems</b>            A study of the engine side of the fuel systems (firewall forward).</p>

Includes an in-depth study of fuel-metering devices used on aircraft engines (carburetors, pressure carburetors, direct and continuous fuel-injection systems). Service, maintenance, repair and trouble-shooting of each different system type is covered in detail. *Spring*

**AVMT228** \$ (1-3)

**Maintenance: General, Airframe, or Power Plant Review**

A review of all subjects from a selected curriculum. A minimum of five examinations per curriculum area is required. Prerequisites: All applicable curriculum subjects must have been completed. *Fall, Spring*

**AVMT237** \$ Alt (4)

**Aircraft Hydraulic, Pneumatic, and Landing Gear Systems**

Operation and maintenance of aircraft hydraulic systems, pneumatic systems, landing-gear systems, and the inspection, checking, servicing, trouble-shooting, and repair of these systems and system components. *Spring*

**AVMT304** \$ Alt (4)

**Aircraft Metal Structures**

A study and application of the processes used in the fabrication and repair of aircraft metal structures. Welding theory and practice with emphasis on weld-quality identification. Riveted, aircraft, aluminum, sheet-metal structures including the fabrication and repair of such structures. *Fall*

**AVMT306** \$ Alt (2)

**Aircraft Non-metal Structures**

A study of wood and fabric as used in the construction of aircraft and a study of the methods, tooling, inspection, processes, and repair of composite aircraft structures. Includes the application, identification, and functions of aircraft protective finishes. *Spring*

**AVMT308** \$ Alt (2)

**Aircraft Assembly, Rigging and Inspections**

Study of the nomenclature and design features of both fixed-wing and rotor-wing aircraft and the assembly, alignment of aircraft structures, and rigging and balancing of control system. A detailed inspection of the entire aircraft or rotorcraft is covered as it applies to the airframe 100-hour and other required inspection. *Spring*

**AVMT310** \$ Alt (4)

**Gas Turbine Engines**

Principles and theory of jet-engine propulsion, design, types of, and associated systems. Maintenance, overhaul, installation-removal, repair, trimming, and troubleshooting of turbine engines. *Fall*

**AVMT314** \$ Alt (3)

**Aircraft Propellers and Engine Inspections**

Theory and limited work on propellers, both wood and metal. Encompasses fixed, adjustable, controllable, feathering, reversible, and the control of the latter by mechanical, hydromatic, or electrical control systems. The inspection practice of performing the 100-hour inspection on aircraft engines and propellers. *Spring*

**AVMT316** \$ Alt (7)

**Reciprocating Engine Systems and Overhaul**

A study of reciprocating engine theory, overhaul methods, and practices and the installation of reciprocating engines. Also

includes a study of the following engine systems: exhaust, cooling, induction, and lubrication. *Spring*

**Technology**

**AVIA140** \$ (2)

**Welding Technology**

Oxyacetylene and electric welding processes including oxyacetylene welding, cutting, and brazing; basic shielded metal arc welding and basic gas metal arc welding. A limited amount of out-of-position welding will be stressed. *Fall*

**AVIA250** \$ (3)

**Machine Shop**

Basic set-up and operation of lathes, milling machines, grinders, drilling machines, and shapers; safety, machine maintenance, off-hand grinding, drill sharpening, layout, and inspection emphasized. *Spring*

**AVIA285/470** (1-4)

**Project Course**

Development of a skill in a given area of technology under the supervision of the instructor. Repeatable to 12 project credits. Prerequisite: Permission of instructor. *Fall, Spring*

**AVIA275/476** (1-4)

**Topics in \_\_\_\_\_**

Repeatable with different topics in aviation. *Arranged*

**AVIA294** (1-3)

**Cooperative Work Experience**

Work experience with an aviation organization or airline. A minimum of 120 hours of work required per credit. Graded S/U. Prerequisite: Permission of the department. *Arranged*

**AVIA296/495** (1-3)

**Independent Study**

Enables students to pursue topics in aviation not offered in other scheduled courses. Prerequisite: Permission of the department. Repeatable to 4 credits. *Arranged*

**AVIA390** (1-4)

**Internship**

On-the-job internship experience for those students seeking industrial experience which cannot be simulated in a classroom setting. A range of 120-150 clock hours of work are required for each credit. Selected in consultation with the student's advisor. May be repeated.

**AVIA395** (1-4)

**Practicum**

Lab or on-the-job experience to build skills in a specific area of technology. Prerequisite: Permission of department. Repeatable to 6 credits. *Arranged*

**AVIA460** \$ (0)

**Program Continuation**

The Aeronautics student may register for this title while clearing deferred grade (DG) and/or incomplete (I) classes, or working to complete practical tests in the flight and/or maintenance programs. Registration for this title indicates full-time status. Prerequisites: permission of advisor and department chair.