COLLEGE OF TECHNOLOGY

M. Wesley Shultz, *Dean*
Gerald W. Coy, *Associate Dean*
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BACCALAUREATE DEGREE CORE REQUIREMENTS

The BSET and BT core requirements are as follows:

BSET—21

ENGR120, ELCT141, 142, MECT121, MECT235, INDT450, AGRI395 or ENGT396 or GTEC395 or INDT315

BT—8

ENGR370, GTEC395, INDT310

General Courses

See inside front cover for symbol code. **(Credits)**

GTEC110 **(2)**
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 **(2)**
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 **(1-6)**
Cooperative Work Experience
Supervised (by the dean or his appointee) on-the-job work experience with a cooperating industry. A minimum of 150 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 concentration is available in the following degrees: Bachelor of Science, Bachelor of Science in Engineering Technology, 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 adviser, 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.

AERONAUTICAL TECHNOLOGY

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Faculty
Allen Bernet, *Chair*
Richard L. Kaping
Harry Lloyd
Gary A. Marsh
John Norton
Glen Windler

Academic Programs	Credits
BSET: Aircraft Engineering Technology	155
BT: Aviation Technology	124-128
Avionics/Maintenance (Airframe)	
Flight	
Flight/Business	
Flight/Maintenance	
Maintenance	
Maintenance/ Business	
AT: Aviation Technology	62-74
Flight	
Maintenance (52)	
Minor in Aviation Technology	20
Flight	
Maintenance (32)	
FAA-approved Part 141–Flight Training	
Commercial Pilot	
Flight Instructor	
Instrument Rating	
Multi-Engine Rating	
Private Pilot	
FAA-approved Part 147–Maintenance Technician	
Aircraft Airframe	
Aircraft Powerplant	

Students may choose program emphases (or a combination of them) in such areas as flight, maintenance, business, avionics, and engineering technology.

Programs

If any of the degree programs do not meet the needs of the student, an individualized major is available as described on this page.

BSET: Aircraft Engineering Technology

The BSET degree combines the aviation maintenance program with selected engineering courses and thus prepares the individual for activities between the pure engineer and a skilled craftsman (licensed A & P Technician).

Maintenance area courses (see below)	52
Technical core	20
MECT285, 326, 355, 370, 375	
Degree core	24

General Education requirements	59
Total credits for degree	**155**

BT: Aviation Technology

Students taking the Bachelor of Technology degree may choose to combine two of the specialization options—flight, maintenance, business, and avionics—or they may combine areas (see below) to meet specific career goals or limit their specialization to a single area—flight or maintenance.

Major*	60-78
Degree core	8
General Education requirements	39-42
General electives	17-01
Total credits for degree	**124-128**

***Major Options**

Avionics and Maintenance
- Avionics (Electronics)—34 credits
- Maintenance (Airframe)—32 credits

Flight
- Flight—24-26 credits
- Flight electives—19-21 credits
- Aviation electives—15 credits

Flight and Business
- Flight—24-26 credits
- Aviation electives—12-10 credits
- Business (Pre-MBA)—24 credits (*to meet pre-MBA requirements*)

Flight and Maintenance
- Flight—24-26 credits
- Maintenance—52 credits
- Aviation Electives—20 credits

Maintenance
- Maintenance—52 credits
- Flight electives—8 credits

Maintenance and Business
- Maintenance—52 credits
- Business (Pre-MBA)—24 credits

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	16-22
General electives	6-0
Total credits for degree	**62-74**

***Majors**

Flight
- Flight—25-27 credits
- Aviation electives—15-13 credits

Maintenance
- Maintenance—52 credits

Minor in Aviation Technology

Requirements: A minimum of 20 or 32 credits in flight or maintenance, respectively. Additional aviation electives must be approved by the department chair.

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

Flight (20 credits): AFLT111, 112, 202, 203, 301, 302, including Aeronautical electives of 3 credits. A Commercial Pilot certificate and instrument rating are required.

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

FAA Certification

FAA-Approved Instruction. The Department of Aeronautical Technology operates a Flight School as well as an Airframe and Powerplant Maintenance Technician School approved by the FAA under Title 14 CFR, Part 141 and Part 147, respectively.

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.

FLIGHT AREA COURSES

Private Pilot Certificate, Commercial Pilot Certificate, Instrument Rating, and either Flight Instructor's Certificate or Multi-Engine Rating are required for any degree.

Required Courses–60

AFLT111, 112, 202, 203, 301, 302 and 307 or 455, 456.

A student may take any of the above courses under FAA Part 61 with the permission of the Chief Pilot.

Aeronautical Technology electives are to be chosen in consultation with an adviser.

No more than 50% of the flight credits to be counted toward a major or minor in Aeronautical Technology may be taken as credit by examination.

MAINTENANCE AREA COURSES

FAA Maintenance Certificates. Students may earn the following FAA-approved certificates from the department's Aviation Maintenance Technician School:
- Aircraft Airframe
- Aircraft Powerplant

Maintenance students must obtain either the FAA Airframe or Powerplant license for any degree or certificate.

Required Courses— 52

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

Courses

(Credits)

See inside front cover for symbol code.

AVIATION FLIGHT

AFLT104 **(1-3)**
(was AVIA104)
Introduction to Aviation
Acquaints students with opportunities in aviation, such as mission flying, flight instruction, aircraft maintenance, avionics, sales, safety, and aerodynamics of flight. Some dual instruction is included. *Fall, Spring*

AFLT108 **(1-4)**
(was AVIA108)
Student Pilot Flight Training
Flight and ground instruction introducing the student to piloting an airplane and to the environment in which it operates. Topics include aircraft systems and performance, meteorology, and Federal Aviation Regulations. *Fall, Spring, Summer*

AFLT111 **(3)**
(was AVIA105)
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*

AFLT112 **(1-3)**
(was AVIA106)
Private Pilot Flight Training
Flight and ground training to prepare students for the FAA private-pilot airplane practical test. Prerequisite or corequisite: AFLT111. *Fall, Spring, Summer*

AFLT202 **(2)**
(was AVIA205)
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. Prerequisite: AFLT111 or the Private Pilot Certificate. *Fall, Spring, Summer*

AFLT203 **(2)**
(was AVIA206)
Commercial Pilot Flight Training
Flight training and solo-flight practice to prepare the student for the FAA commercial-pilot airplane practical test. Prerequisite: Private Pilot Certificate, AFLT202(or corequisite). Repeatable to 4 credits. *Fall, Spring, Summer*

AFLT301 **(3)**
(was AVIA305)
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. Prerequisite: Private Pilot Certificate or permission of the instructor. *Fall, Spring, Summer*

AFLT302 **(3)**
(was AVIA306)
Instrument Pilot Flight Training
Instrument flight training to prepare the student for the FAA instrument-rating airplane practical test. Prerequisite: Private Pilot Certificate, AFLT301(or corequisite). Repeatable to 6 credits. *Fall, Spring, Summer*

AFLT307 **(2)**
(was AVIA307)
Multi-Engine Flight Training
Flight and ground training to prepare the student for the multi-engine airplane practical test. Prerequisite: Commercial Pilot Certificate or equivalent experience. *Fall, Spring, Summer*

AFLT315 **(3)**
(merges parts of AVIA143, 237, 253)
Aircraft Systems for Pilots
The study of aircraft engines, propellers, and

governors; the fuel, electrical, hydraulic, pneumatic, and deicing systems, flight controls, weight and balance, and aircraft-instrument systems. *Fall*

AFLT330 (1-3)
(was AVIA330)
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. Prerequisite: Private Pilot Certificate or permission of the instructor. *Spring*

AFLT455 (2)
(was AVIA455)
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. Prerequisite: Commercial Pilot Certificate with the Instrument Rating or permission of the instructor. *Fall, Spring, Summer*

AFLT456 (2)
(was AVIA456)
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. Prerequisite: Commercial Pilot Certificate with the Instrument Rating. *Fall, Spring, Summer*

AFLT464 (2)
(merges AVIA459, 464)
Basic and Advanced Ground Instructor
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. Prerequisite: AFLT455 or pass the FAA Fundamentals of Instruction Test. *Fall, Spring, Summer*

AFLT465 (2)
(was AVIA465)
Instrument Flight Instructor Ground School
Prepares the student for the FAA instrument flight-instructor knowledge test. Topics include techniques of teaching instrument flight, analysis of instrument maneuvers, instrument approaches, en route operations, regulations, and lesson planning. Prerequisite: Commercial Pilot Certificate with the Instrument Rating or permission of the instructor. *Fall, Spring, Summer*

AFLT466 (2)
(was AVIA466)
Instrument Flight Instructor Flight Training
Flight and ground training to prepare the student for the FAA instrument flight-instructor airplane practical test. Topics includes the performance, teaching, and analysis of attitude instruments, instrument approaches, and en route operations. Prerequisite or corequisite: AFLT465. *Fall, Spring, Summer*

AFLT467 (2)
(was AVIA467)
Multi-Engine Flight Instructor
Flight and ground training to prepare the student for the FAA multi-engine airplane flight-instructor practical test. Topics includes the performance, teaching, and analysis of maneuvers and procedures for the multi-engine airplane. Prerequisite: AFLT307 or Multi-Engine Rating. *Fall, Spring, Summer*

AFLT469 (2)
(was AVIA469)
Instrument Ground Instructor
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 en- route operations. Prerequisite: AFLT465 or pass the FAA Fundamentals of Instruction Test. *Fall, Spring, Summer*

AFLT474 (3)
(was AVIA474)
Techniques of Mission Flying
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. Prerequisite: Commercial Pilot Certificate with the Instrument Rating. *Arranged*

AFLT485 (3)
(was AVIA485)
Airline Transport Pilot Ground School
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. Prerequisite: Instrument Rating and flight time requirements for the Airline Transport Pilot certificate or permission of the instructor. *Fall, Spring, Summer*

AFLT486 (3)
(was AVIA486)
Airline Transport Pilot Flight Training
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. Prerequisite: Flight time requirements for the Airline Transport Pilot and AFLT485 (corequisite). *Fall, Spring, Summer*

AERONAUTICAL TECHNOLOGY

AVIA275 (1-2)
Topics in _____
Repeatable with different topics in aviation. *Arranged*

AVIA295 (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 department chair. *Arranged*

AVIA395 (1-2)
Practicum
Lab or on-the-job experience to build skills in a specific area of aviation technology. Prerequisite: Permission of department. Repeatable to 4 credits. *Arranged*

AVIA476 (1-2)
Topics in _____
Repeatable with different topics in aviation technology. Prerequisites depend on the subject. *Arranged*

AVIA490 (1-2)
Special Problems in Aviation
Investigation of problems in ground and/or flight training not covered by formal courses. Permits qualified student to pursue individual study under the direction of a faculty member. Prerequisites: permission of the student's adviser and the department chair. Repeatable to 4 credits. *Arranged*

AVIA495 (1-2)
Independent Study
Enables students to pursue topics in aviation not offered in other scheduled courses. Prerequisite: Permission of the department chair and instructor. Repeatable to 4 credits. *Arranged*

AVIATION MAINTENANCE

AVMT108 (4)
(was AVIA110, parts of AVIA113, 345)
Applied Science for Aerospace Technicians
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. *Fall*

AVMT114 (2)
(was AVIA143)
Aircraft Basic Electricity
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. *Fall*

AVMT116 (2)
(was AVIA116)
Federal Regulation, Publications, Forms and Records
Study of the federal regulations and manufacturer publication as they apply to aircraft design, maintenance, inspections, forms and records, and the certification and privileges/limitations of the aviation maintenance technicians. *Fall*

AVMT120 (4)
(was AVIA120)
Materials and Processes for Aircraft Structures
Includes hand-and-power tool usage, aircraft hardware and materials, precision measurements, corrosion control, non-destructive testing, and fluid lines and fittings. *Fall*

AVMT204 Alt (2)
(was AVIA342)
Aircraft Electrical Systems
Practical study of aircraft electrical systems, including installation practices, repair, troubleshooting, service, inspections, and navigation and communication systems.

Prerequisite or corequisite: AVMT114 or permission of the instructor. *Spring*

AVMT206 Alt (4)
(was AVIA252, parts of AVIA152, 253)
Powerplant Electrical Systems
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). *Spring*

AVMT210 Alt (4)
(was AVIA145, parts of AVIA233, 342)
Aircraft Systems
A 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, fire detection and protection, and aircraft instruments and their use in troubleshooting of aircraft systems. *Spring*

AVMT220 Alt (2)
(was AVIA233, parts of AVIA113)
Aircraft Fuels and Fuel Systems
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. *Spring*

AVMT226 Alt (2)
(was AVIA251)
Engine Fuel Metering Systems
A study of the engine side of the fuel systems (firewall forward). Includes a study of fuel-metering devices used on aircraft engines (carburetors, pressure carburetors, direct and continuous fuel-injection systems). Service, maintenance, repair and troubleshooting of each different system type is covered in detail. *Spring*

AVMT228 (1-3)
(was AVIA254)
Maintenance: General, Airframe, or Powerplant Review
A review of all subjects from a selected curriculum. A minimum of 5 examinations per curriculum area is required. Prerequisites: All applicable curriculum subjects must have been completed. *Fall, Spring*

AVMT237 Alt (4)
(was AVIA237)
Aircraft Hydraulic, Pneumatic, and Landing Gear Systems
Operation and maintenance of aircraft hydraulic systems, pneumatic systems, landing-gear systems, and the inspection, checking, servicing, troubleshooting, and repair of these systems and system components. *Spring*

AVMT304 Alt (4)
(merges AVIA144, 343)
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. Prerequisite or corequisite: AVMT120 or
permission of the instructor. *Fall*

AVMT306 Alt (2)
(merges AVIA142, 240)
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)
(was AVIA345)
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 rotor craft is covered as it applies to the airframe 100-hour and other required inspection. *Spring*

AVMT310 Alt (4)
(was AVIA152)
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)
(was AVIA351, part of AVIA353)
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. Including the concept of the unducted fan, and the inspection practice of performing the 100-hour inspection on aircraft engines and propellers. *Spring*

AVMT316 Alt (7)
(was AVIA352, parts of AVIA253, 353)
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*

AGRICULTURE

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Faculty
Thomas N. Chittick, *Chair*
Stanley Beikmann
Katherine Koudele-Joslin
Ralph Wood

Academic Programs	Credits
BS: Agriculture	40
BS: Animal Science	40
Pre-Veterinary Medicine Management	
BS: Horticulture	40
Landscape Design	
Landscape/Turf Management	
BT: Agriculture	60
BT: Horticulture	60
Landscape Design	
Landscape/Turf Management	
AT: Agriculture	36
AT: Horticulture	35
Landscape Design	
Landscape/Turf Management	
Minors in Agriculture, Animal Science or Horticulture	20
Pre-Professional Program in Veterinary Medicine	

Programs

Bachelor of Science. The BS degree prepares individuals to pursue advanced degrees for careers in teaching or research. Students may major in agriculture, animal science or horticulture with a minor to complement their intended purpose.

Bachelor of Technology. The BT degree is a career specialist's degree. Graduates are prepared for supervisory and management positions in production agriculture, horticulture, or the ornamental horticulture industry.

Associate of Technology. The two-year AT degree programs provide students with adequate skills and working knowledge to apply for entry-level positions in their area of specialization.

BS: Agriculture

Major requirements—40
AGRI100, 118, 206, 300, 304, 308, 405, ANSI114, HORT105, plus 13 major elective credits chosen in consultation with adviser.
Cognate requirements—18
BIOL165,166; CHEM131, 132

BS: Animal Science

Major requirements—40
AGRI100, 405; ANSI14, 305, 425, plus 24-25 credits in a special area of emphasis and 4-5 major electives chosen in consultation with an adviser.