BACCALAUREATE DEGREE CORE REQUIREMENTS
The BSET and BT core requirements are as follows:
**BSET—24**
ENGR120, ELCT141, 142, MECT121, MECT235, INDT450, ENGT310, or ENGT396 or GTEC395 or INDT315

**BT—8**
ENGR370, INDT310, AGRI395 or GTEC395 or INDT315

**General Courses**

See inside front cover for symbol code.

**GTEC110**
*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**
*College Seminar*
See description under GTEC110. Repeatable.

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

**AERONAUTICAL TECHNOLOGY**

Seamount Building (Airpark)
(616) 471-3548
FAX: (616) 471-6004
airinfo@andrews.edu
http://www.andrews.edu/academic/cot/aerotech

**Faculty**
Gary A. Marsh, *Acting Chair*
Richard L. Kaping
Ruth Ann Plue
Daniel Thompson

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<td>BT: Aviation Technology</td>
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<tr>
<td>Aircraft Airframe</td>
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<tr>
<td>Aircraft Powerplant</td>
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</table>
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 the previous 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 requirement 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)—37 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

**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** (21 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.

**AVIONICS AREA COURSES**

**Required Courses**—37
AVIA395; ELCT141, 142, 235, 335, 360, 365, 380; ENGT310.

**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 advisor.
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

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

AVIATION FLIGHT

AFLT104
Introduction to Aviation
(1-4)
Acquaints students with opportunities in aviation, such as mission flying, flight instruction, aircraft maintenance, avionics, sales, safety, and aerodynamics of flight. Non-majors receive one free hour dual instruction per credit hour enrolled. Fall, Spring

AFLT111
Private Pilot Ground School
(4)
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

AFLT112
Private Pilot Flight Training
(1-4)
Flight and ground training to prepare students for the FAA private-pilot airplane practical test. Repeatable to 8 credits. Fall, Spring, Summer

AFLT202
Commercial Pilot Ground School
(2)
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, Spring, Summer

AFLT203
Commercial Pilot Flight Training
(2)
Flight training and solo-flight practice to prepare the student for the FAA commercial-pilot airplane practical test. Repeatable to 4 credits. Fall, Spring, Summer

AFLT301
Instrument Pilot Ground School
(3)
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. Fall, Spring, Summer

AFLT302
Instrument Pilot Flight Training
(3)
Instrument flight training to prepare the student for the FAA instrument-rating airplane practical test. Repeatable to 6 credits. Fall, Spring, Summer

AFLT307
Multi-Engine Flight Training
(2)
Flight and ground training to prepare the student for the multi-engine airplane practical test. Fall, Spring, Summer

AFLT315
Aircraft Systems for Pilots
(3)
The study of aircraft engines, propellers, and governors; the fuel, electrical, hydraulic, pneumatic, and de-icing systems, flight controls, weight and balance, and aircraft-instrument systems. Fall

AFLT330
Crew Resource Management
(1-3)
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
Flight Instructor Ground School
(2)
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
Flight Instructor Flight Training
(2)
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. Fall, Spring, Summer

AFLT464
Basic and Advanced Ground Instructor
(2)
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. Fall, Spring, Summer

AFLT465
Instrument Flight Instructor Ground School
(2)
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. Fall, Spring, Summer

AFLT466
Instrument Flight Instructor Flight Training
(2)
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 enroute operations. Fall, Spring, Summer

AFLT467
Multi-Engine Flight Instructor
(2)
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. Fall, Spring, Summer

AFLT469

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 operations and regulations, approaches, and enroute operations. Fall, Spring, Summer

AFLT474

Techniques of Mission Flying
Develops special piloting skills required in remote undeveloped bush operations. Topics include piloting, 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. Arranged

AFLT485

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. Fall, Spring, Summer

AFLT486

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. Fall, Spring, Summer

AERONAUTICAL TECHNOLOGY

AVIA275/476

Topics in ______
Repeatable with different topics in aviation. Arranged

AVIA295

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. Arranged

AVIA296/495

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

AVIA395

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

AVIATION MAINTENANCE

AVMT108

Applied Science for Aerospace Technicians
Applies the sciences of mathematics and physics to the aerody-namics 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

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

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

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

Aircraft Electrical Systems
Practical study of aircraft electrical systems, including installation practices, repair, trouble shooting, service, inspections, and navigation and communication systems. Spring

AVMT206

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

Aircraft Systems
A study into the inspection, repair, checking, servicing and trouble-shooting 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

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

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

Maintenance: General, Airframe, or Powerplant 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. 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)
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

Smith Hall, Room 109
(616) 471-6006
FAX: (616)471-3009
agri@andrews.edu
http://www.andrews.edu/COT/AG

Faculty
Thomas N. Chittick, Chair
Stanley Beikmann
Dale Birney
Katherine Koudele-Joslin
Ralph C. Wood

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 advisor.

Cognate requirements—18
BIOL165,166; CHEM131, 132