

Aviation (Avit)

John D. Odegard School of Aerospace Sciences

B.S. in Aeronautics with a Major in Air Traffic Management (<https://catalog.und.edu/undergraduateacademicinformation/departmentalcoursesprograms/aviation/avit-bsaero-atc/>)

B.S. in Aeronautics with a Major in Aviation Studies (<https://catalog.und.edu/undergraduateacademicinformation/departmentalcoursesprograms/aviation/avit-bsaero-atm/>)

B.S. in Aeronautics with a Major in Commercial Aviation (<https://catalog.und.edu/undergraduateacademicinformation/departmentalcoursesprograms/aviation/avit-bsaero-CA/>)

B.S. in Aeronautics with a Major in Unmanned Aircraft Systems Operations (<https://catalog.und.edu/undergraduateacademicinformation/departmentalcoursesprograms/aviation/avit-bsaero-uas/>)

B.S. in Aviation Safety and Operations (<https://catalog.und.edu/undergraduateacademicinformation/departmentalcoursesprograms/aviation/avit-bsaero-aso/>)

Nistler College of Business and Public Administration

B.B.A. with a Major in Airport Management (<https://catalog.und.edu/undergraduateacademicinformation/departmentalcoursesprograms/management/mgmt-bba-am/>)

B.B.A. with a Major in Aviation Management (<https://catalog.und.edu/undergraduateacademicinformation/departmentalcoursesprograms/management/mgmt-bba-avm/>)

Minor in Aviation Management (<https://catalog.und.edu/undergraduateacademicinformation/departmentalcoursesprograms/aviation/avit-minor-am/>)

Minor in Professional Flight (<https://catalog.und.edu/undergraduateacademicinformation/departmentalcoursesprograms/aviation/avit-minor-pf/>)

Minor in Unmanned Aircraft Systems (<https://catalog.und.edu/undergraduateacademicinformation/departmentalcoursesprograms/aviation/avit-minor-uas/>)

Optional Specializations

Student coursework toward the Bachelor of Business Administration or Bachelor of Science described above may be augmented with one or more of the following specializations. Each specialization completed will be noted on the student's academic transcript

Specialization in Business Aviation (<https://catalog.und.edu/undergraduateacademicinformation/departmentalcoursesprograms/aviation/avit-spec-ba/>)

Specialization in Safety (<https://catalog.und.edu/undergraduateacademicinformation/departmentalcoursesprograms/aviation/avit-spec-saf/>)

Professional Pilot Certificate (<https://catalog.und.edu/undergraduateacademicinformation/departmentalcoursesprograms/aviation/profpilot-cert/>)

Four Year Plan - B.B.A. - with Major in Airport Management (p. 1)

Four Year Plan - B.B.A. with Major in Aviation Management (p. 2)

Four Year Plan - B.B.A. with Major in Airport Management

Freshman Year		Credits
Fall		
ENGL 110	College Composition I	3
MATH 103 or MATH 146 or MATH 165	College Algebra or Applied Calculus I or Calculus I	3-4
AVIT 100	Aviation Orientation	1
Essential Studies: Fine Arts or Humanities		3
Essential Studies: Diversity of Human Experience		3
Essential Studies: Social Science (e.g. LEAD 101)		3

Credits 16-17

Spring		
AVIT 102	Introduction to Aviation	5
AVIT 103	Introduction to Air Traffic Management	2
ENGL 130	Composition II: Writing for Public Audiences	3
Essential Studies: Lab Science: Atsc. 110/110L Meteorology		4
Free Elective		1

Credits 15

Sophomore Year		
Fall		
ACCT 200	Elements of Accounting I	3
ECON 201	Principles of Microeconomics	3
AVIT 208	Aviation Safety	3
Essential Studies: Oral Communication		3
AVIT 250	Human Factors	2

Free Elective 1

Credits 15

Spring		
ACCT 201	Elements of Accounting II	3
ECON 202	Principles of Macroeconomics	3
ECON 210	Introduction to Business and Economic Statistics	3
GEOL 103	Introduction to Environmental Issues	3
ISBA 217	Fundamentals of Computer Information Systems	3

Credits 15

Junior Year		
Fall		
MRKT 305	Marketing Foundations	3
MGMT 300	Principles of Management	3
AVIT 311	Safety Management System (SMS)	3
Essential Studies: Analyzing Worldviews		3
ISBA 305	End-User Applications	3

Credits 15

Spring		
MGMT 301	Operations Management	3
MGMT 302	Human Resource Management	3
FIN 310	Principles of Financial Management	3
AVIT 405 or AVIT 407	Airline Operations and Management or General Aviation Operations and Management	3
GEOG 474	Introduction to Geographic Information Systems (GIS)	2
GEOG 474L	GIS Laboratory	1

Credits 15

Senior Year		
Fall		
AVIT 402	Airport Planning and Administration	3
AVIT 403	Aerospace Law	3

MGMT 310	Organizational Behavior	3
MGMT 475	Strategic Management	3
Essential Studies: Humanities		3
Credits		15
Spring		
ACCT 315	Business Law I	3
AVIT 442	Airport Operations and Administration	3
AVIT 485	Aviation Senior Capstone (advanced communication)	3
Free Elective		2
Essential Studies: Fine Arts		3
Credits		14
Total Credits		120-121

Students must complete enough electives to bring total credit hours up to the 120. Every student must fulfill all University, Departmental, and Essential Studies requirements. (<https://und.edu/academics/essential-studies/>)

Four Year Plan - B.B.A. with Major in Aviation Management

First Year

First Semester		Credits
ENGL 110	College Composition I	3
MATH 103 or MATH 146 or MATH 165	College Algebra or Applied Calculus I or Calculus I	3
AVIT 102	Introduction to Aviation	5
AVIT 100	Aviation Orientation	1
ATSC 110 & 110L	Meteorology I and Meteorology I Laboratory	4
Credits		16

Second Semester

ENGL 130	Composition II: Writing for Public Audiences	3
ECON 201	Principles of Microeconomics	3
AVIT 103	Introduction to Air Traffic Management	2
AVIT 208	Aviation Safety	3
AVIT 221	Basic Attitude Instrument Flying	3
Essential Studies: Social Science		3
Credits		17

Second Year

First Semester

ECON 202	Principles of Macroeconomics	3
ACCT 200	Elements of Accounting I	3
AVIT 222	IFR Regulations and Procedures	3
Essential Studies: Oral Communication		3
Essential Studies: Fine Arts		3
Credits		15

Second Semester

ACCT 201	Elements of Accounting II	3
ISBA 217	Fundamentals of Computer Information Systems	3
ECON 210	Introduction to Business and Economic Statistics	3
AVIT 250	Human Factors	2
AVIT 323	Aerodynamics - Airplanes	3
AVIT 324	Aircraft Systems	3
Credits		17

Third Year

First Semester

MGMT 300	Principles of Management	3
AVIT 325	Multi-Engine Systems and Procedures	2
Essential Studies: Humanities		3
Essential Studies: Analyzing Worldviews		3

FIN 310	Principles of Financial Management	3
Credits		14

Second Semester

ATSC 231	Aviation Meteorology	4
MRKT 305	Marketing Foundations	3
ACCT 315	Business Law I	3
MGMT 301	Operations Management	3
Essential Studies: Humanities or Fine Arts		3
Credits		16

Fourth Year

First Semester

AVIT 402 or AVIT 405 or AVIT 407	Airport Planning and Administration or Airline Operations and Management or General Aviation Operations and Management	3
AVIT 403	Aerospace Law	3
MGMT 310	Organizational Behavior	3
Essential Studies: Diversity of Human Experience		3
Credits		12

Second Semester

MGMT 302	Human Resource Management	3
AVIT 485	Aviation Senior Capstone (advanced communication)	3
Elective(s)		4
MGMT 475	Strategic Management	3
Credits		13
Total Credits		120

All students must complete University, Program, and Essential Studies requirements ([undergraduateacademicinformation/essentialstudies/](https://und.edu/academics/essential-studies/))

AVIT 100. Aviation Orientation. 1 Credit.

This course is required for all aviation majors. Its purpose is to prepare new students for their university and professional careers by discussing students' responsibilities and options concerning the aviation industry. Aviation career options will be explored. Academic and airport requirements and procedures will be covered. F,S.

AVIT 102. Introduction to Aviation. 5 Credits.

The course will develop the student's knowledge and skills that are needed to safely exercise the privileges and responsibilities of a Private Pilot. Course content includes instruction in aerodynamics, aircraft systems, FAA regulations, U.S. Airspace System, weight and balance, aircraft performance, aviation weather, flight publications, radio navigation, cross-country planning and navigation, basic flight physiology, and flight safety. The student must complete the appropriate flight lessons to satisfactorily complete the course. Corequisite: ATSC 110 and a minimum GPA of 2.6. F,S,SS.

AVIT 103. Introduction to Air Traffic Management. 2 Credits.

This introductory course allows all aviation majors the opportunity to explore the Air Traffic Operations through the simulated role of an Air Traffic Controller in a Terminal RADAR Approach Control (TRACON) and Control Tower environment. Students will have hands-on experience working departures and arrivals in a simulated RADAR, and Tower, facility. Students will be introduced to the Air Traffic Management and National Airspace Systems, Navigational Aids, Separation requirements between Aircraft, and a general orientation to the world of Air Traffic Operations and its relationship to the aviation community. This course follows the applicable required Federal Aviation Administration's learning objectives set forth in their Air Traffic Basics Course. An Air Traffic lab is required. F,S,SS.

AVIT 105. Essentials of Flight. 3 Credits.

This course will provide the student with a survey of knowledge in both Visual Flight Rules and Instrument Flight Rules in aviation. Prerequisite: Open to Air Traffic Management and Aviation Studies majors, or consent of the instructor. F.

AVIT 126. Introduction to UAS Operations. 2 Credits.

This course of instruction introduces the student to the history of Remotely Piloted Aircraft and their current and future development for use in a burgeoning civil industry. Specific blocks deal with aircraft, ground, communications, launch and recovery systems while emphasizing the human integration into the overall system. Lab portion is required. F,S.

AVIT 142. Introduction to Aviation-Helicopter. 5 Credits.

This course develops the knowledge needed to safely exercise the privileges and responsibilities of a Private Pilot. Course content includes instruction in helicopter aerodynamics, helicopter systems, FAA regulations, U.S. airspace system, weight and balance, helicopter performance, aviation weather, flight publications, radio navigation, cross-country planning and navigation, basic flight physiology, and flight safety. Prerequisite: A minimum GPA of 2.6. Corequisite: AVIT 143. Prerequisite or Corequisite: ATSC 110 and ATSC 110L. F.

AVIT 143. Private Pilot-Helicopter Certification Lab. 1 Credit.

This lab course provides the training required to obtain a Private Pilot Certificate with Rotorcraft-Helicopter category and class ratings. The student will learn the fundamentals of helicopter flying, including aerodynamics, aeronautical decision making, emergency procedures and glass cockpit operations. Prerequisite: A minimum GPA of 2.6. Prerequisite or Corequisite: AVIT 142. F,S,SS.

AVIT 176. Aviation Safety Standards for Construction Activities. 3 Credits.

This course covers the United States Federal Government standards, policies, and procedures to be followed during aviation construction activities. This includes construction of: runways, taxiways, aircraft hangers, airport terminals, and airport parking ramps. Topics include airport infrastructure construction principles with a special emphasis on high-risk airport construction activities. This course includes a federal OSHA 30-hour card for qualifying participants. Prerequisite: Minimum GPA of 2.6; open to Aerospace majors, or consent of the instructor. On demand.

AVIT 208. Aviation Safety. 3 Credits.

This course provides the student with a detailed introduction into aspects of aviation safety, aviation safety programs, risk management, and the associated components of pilot psychology, physiology, human factors, and accident review and investigation. Prerequisite: A minimum GPA of 2.6. Prerequisite or Corequisite: AVIT 102 or AVIT 105 or AVIT 142. F,S,SS.

AVIT 221. Basic Attitude Instrument Flying. 3 Credits.

This course begins with a discussion of Aeronautical Decision Making (ADM), Airworthiness Requirements for flight, Human Factors and night flight. The course proceeds to an in-depth study of pitot/static and gyro instruments and Basic Attitude Instrument Flying. In addition, there will be a discussion of the operation, interpretation, and practical use of VOR, ADF, DME, GPS, RMI, and HSI, as well as an introduction to Electronic Instrument Flight Displays (Glass Flight Decks). The student must complete the appropriate flight lessons to satisfactorily complete the course. Prerequisite: AVIT 102 and a minimum GPA of 2.6. Prerequisite or Corequisite: AVIT 100. F,S,SS.

AVIT 222. IFR Regulations and Procedures. 3 Credits.

This course will provide the student with a detailed study of the regulations, procedures, and publications necessary for operating IFR in the national airspace system. Terminal and enroute procedures will be studied in detail. The student must complete the appropriate flight lessons to satisfactorily complete the course. Prerequisite: AVIT 221 and a minimum GPA of 2.6. Prerequisite or Corequisite: AVIT 208. F,S,SS.

AVIT 238. UAS Operator Certification. 3 Credits.

This course will develop the student's knowledge and skill needed to manage and operate small remotely piloted aircraft. Course content includes Federal Aviation Regulations, airspace authorization criteria, and operational approval requirements. Mission employment skills will be acquired through both classroom and hands-on flight activities. Flight activities will include launch and recovery operations, emergency procedures, plus mission planning and execution. Students must complete the appropriate UAS flight lessons to satisfactorily complete the course. Prerequisite: AVIT 126 and a minimum GPA of 2.6. F,S,SS.

AVIT 239. Autonomous Fundamentals. 2 Credits.

This course provides an overview of the current state of remotely piloted and autonomous systems and current commercially available systems. Moving beyond the constraints of aerial applications, the course will review common characteristics and features employed by autonomous systems across all domains (air, ground, and sea) while exploring the challenges of blending man and machine responses in dynamic operational environments. Prerequisite: AVIT 126 and a minimum GPA of 2.6. F.

AVIT 240. UAS Enabling Concepts. 3 Credits.

This course provides an in-depth survey of the enabling concepts critical to successful remotely piloted aircraft and autonomous system operations and provide the learner with an appreciation of the complexities of fully-realized autonomous system operations. Prerequisite: AVIT 239 and a minimum GPA of 2.6. S.

AVIT 241. Commercial Helicopter. 4 Credits.

This course provides a study of commercial helicopter systems, including turbine engines, drive trains, fuel, hydraulic, electrical, and basic flight instruments. Navigation aids, commercial regulations, and adverse helicopter aerodynamics will also be studied. Basic Attitude Instrument flying will be introduced and will include the interpretation and practical use of instrument navigation systems. Prerequisite: AVIT 142 and a minimum GPA of 2.6. Prerequisite or Corequisite: AVIT 100. S.

AVIT 242. Introduction to Commercial Flying-Helicopter Lab. 1 Credit.

This lab course is the beginning of a student's commercial helicopter flight training and is structured to improve and refine aeronautical decision making skills and aircraft control technique. The night flying experience requirements for a FAA Commercial Pilot certificate with Rotorcraft-Helicopter category and class ratings will also be obtained. Prerequisite: AVIT 142 and AVIT 143; minimum GPA of 2.6. F,S,SS.

AVIT 247. R44 Helicopter Transition Lab. 1 Credit.

This lab course provides the training necessary to operate a Robinson R44 helicopter as pilot-in-command, including flight experience in the R44 helicopter. Prerequisite: Minimum GPA of 2.6. Prerequisite or Corequisite: AVIT 241. On demand.

AVIT 250. Human Factors. 2 Credits.

This course introduces the student to issues influencing human performance in the complex operational aviation environments. Theory and practical applications of cognitive processing, decision-making, interpersonal interaction and communication will be presented. This course also provides an introduction to design elements intended to optimize man-machine interaction. Prerequisite: Minimum GPA of 2.6. F,S,SS.

AVIT 260. Control Tower Operations I. 4 Credits.

This course provides students with basic Control Tower (Tower) instruction and knowledge of separation requirements and the procedures of Tower Operations. Tower interaction with other Air Traffic and non-Air Traffic agencies is also part of this course. Student evaluations are based on demonstrated application of acquired controller skills utilizing Air Traffic Simulation. To complete this course students must demonstrate their knowledge of Tower Operations through written examinations and performance scenarios in a 3D Tower simulator. This course follows the applicable required Federal Aviation Administration's learning objectives set forth in their Air Traffic Basics Course. An Air Traffic lab is required. Prerequisite: AVIT 103 and a minimum GPA of 2.6; open to Air Traffic Management majors only, or instructor consent. Prerequisite or Corequisite: AVIT 100. F,S.

AVIT 261. RADAR Operations I. 4 Credits.

This course provides students with basic Radar instruction and knowledge of separation requirements and the procedures of Air Traffic Terminal Radar Operations. Radar interaction with other Air Traffic and non-Air Traffic agencies is also part of this course. Student evaluations are based on demonstrated application of acquired controller skills utilizing Air Traffic simulation. Scenarios progress in difficulty. To complete this course students must demonstrate their knowledge of Terminal Radar Operations through written examinations and performance scenarios in a Radar simulator. This course follows the applicable required Federal Aviation Administration's learning objectives set forth in their Air Traffic Basics Course. An Air Traffic lab is required. Prerequisite: AVIT 103 and a minimum GPA of 2.6; open to Air Traffic Management majors only, or instructor consent. F,S.

AVIT 276. OSHA Safety Standards for Industry. 3 Credits.

This course covers OSHA Standards, policies, and procedures in general industry. Topics include scope and application of the OSHA General Industry Standards, general industry principles and special emphasis on those areas in general industry, which are most hazardous. Prerequisite: Minimum GPA of 2.6; open to Aerospace majors, or consent of the instructor. On demand.

AVIT 309. Flight Physiology. 3 Credits.

In this course, human physiological responses to the stresses of flight environment will be examined in-depth. Topics include decompression, hypoxia, spatial disorientation, altered pressure environments, acceleration and fatigue. The students will experience altered pressure environments during laboratory flights in the UND Aerospace altitude chamber. Prerequisite: AVIT 250; open to Aviation majors and minors only; minimum GPA of 2.6. F,S,SS.

AVIT 310. Public Safety Aviation. 3 Credits.

This course develops the student's knowledge related to the organization, operations, tactics and techniques related to air support operations within law enforcement, fire protection and resource protection agencies. Specific topics include: Airborne law enforcement patrol, surveillance and special operations (SWAT); fire operations including fire chemistry and behavior, fire department organization and tactics, airborne firefighting equipment, fire extinguishment tactics and air ambulance operations; and, resource protection air operations including wildlife surveys, hunting and fishing enforcement patrols, search and rescue and operations from unimproved landing sites and seaplane operations. Prerequisite: AVIT 102 or AVIT 142 or consent of instructor; minimum GPA of 2.6. S.

AVIT 311. Safety Management System (SMS). 3 Credits.

This course provides instruction and practical application of Safety Management Systems (SMS) and how SMS relates to Accident Prevention Program Management. Students receive the necessary instruction required to design, develop, implement, manage, and foster an effective organizational level SMS and accident prevention program. Course topics include theory and application of SMS program elements. Prerequisite: AVIT 208 and a minimum GPA of 2.6. S.

AVIT 312. Aircraft Accident Investigation. 3 Credits.

This course is a detailed evaluation of the methods and procedures involved in aircraft accident investigation including the organization, duties, and procedures of the Aircraft Accident Board. Prerequisite: AVIT 208, AVIT 250, and a minimum GPA of 2.6. S.

AVIT 313. Aviation Insurance. 3 Credits.

This course is an introduction to the basic principles of insurance and risk applicable to general aviation aircraft owners, fixed base operators, and airport management personnel. It includes an in-depth review of the aviation insurance industry in the United States, including market analysis and types of aviation insurers. Prerequisite: Minimum GPA of 2.6. F.

AVIT 314. Advanced Aircraft Accident Investigation. 3 Credits.

This course is an advanced evaluation of methods and procedures involved in aircraft accident investigation. The organization, duties and procedures of the Aircraft Accident Board are analyzed. The student explores procedures for determining accident causes through analysis of such elements as the function and techniques employed by the trained accident investigator and the role of the specialized laboratory. Analysis is also made of reporting procedures and the all-important follow-up work designed to avoid like or related aircraft accidents. Prerequisite: AVIT 312 and a minimum GPA of 2.60. On demand.

AVIT 320. Airline Career Planning. 2 Credits.

This course introduces the student to operations and quality of life issues related to working in a large flight department or air carrier environment. The material is not limited to one specific area of a professional pilot's career, but will seek to cover far reaching issues and provide the student with a wide perspective of what to expect as an airline pilot. Specific topics include: airline style interviews, training formats, working agreements, collective bargaining, bidding, scheduling, seniority, travel benefits, personal finance and other similar quality of life issues that will be encountered as a professional pilot. This course introduces the student to specific regulations pertaining to airline pilots, such as duty, rest and flight time restrictions. Prerequisite: AVIT 222 and a minimum GPA of 2.6. On demand.

AVIT 323. Aerodynamics - Airplanes. 3 Credits.

This course will provide the student a study of the physical principles of airplane aerodynamics, thereby fostering an appreciation of the factors affecting aircraft performance, stability and control, and special flight conditions often experienced by commercial pilots of fixed-wing aircraft. The student must complete the appropriate flight lessons to satisfactorily complete the course. Prerequisite: AVIT 222; open to Aviation majors and minors only; minimum GPA of 2.6. F,S,SS.

AVIT 324. Aircraft Systems. 3 Credits.

This course provides an in-depth study of reciprocating engine, propeller, electrical, environmental, hydraulic, pneumatic, fuel, ignition, lubrication, and pressurization systems. The learner must complete the appropriate flight lessons to satisfactorily complete the course. Prerequisite: AVIT 222; open to Aviation majors and minors only; minimum GPA of 2.6. F,S,SS.

AVIT 325. Multi-Engine Systems and Procedures. 2 Credits.

This course is designed to develop the knowledge and skills necessary to safely and proficiently exercise the privileges and responsibilities of a Commercial Pilot with a Multi-engine rating. Included are discussions concerning Aeronautical Decision Making of multi-engine aircraft systems, aerodynamics, Single-Pilot Resource Management, weight and balance, aircraft performance, and abnormal/emergency procedures. The course also includes a scenario based introduction to U.S. Title 14 Code of Federal Regulations (CFR) governing common carriage commercial operations. The student must complete the appropriate flight lessons to satisfactorily complete the course. Prerequisite: AVIT 323 and AVIT 324; open to Aviation majors and minors only; minimum GPA of 2.6. F,S,SS.

AVIT 327. Gas Turbine Engines. 2 Credits.

This course will provide an in-depth introduction to the turbine engine through the study of its development, theory of operation and the function of turbine engine components. Prerequisite: AVIT 142 or AVIT 324; open to Aviation majors and minors only; minimum GPA of 2.6. F,S,SS.

AVIT 328. Fundamentals of Aircraft Systems Operations. 3 Credits.

This course provides a foundational understanding of systems found on contemporary aircraft, with an emphasis on high performance and/or transport category. The course will build understanding of the relationship of aircraft systems to the operating environment. Prerequisite: Minimum GPA of 2.60. On demand.

AVIT 331. UAS Flight Systems. 4 Credits.

This course introduces the student to the aircraft and ground operations and support systems common to remotely piloted or autonomous aircraft with focus on those that differ significantly from their conventional counterparts. Specific emphasis is placed upon mission requirements and their impacts on required systems. Powerplants, potential energy systems, aircraft configurations, autopilot and flight stabilization systems, airborne and ground communications systems, launch and recovery systems, and ground control systems. Hands-on experiential learning is required. Prerequisite: AVIT 240 and a minimum GPA of 2.6. F,S.

AVIT 333. UAS Remote Sensing. 4 Credits.

This course presents the theory and operations of common sensors used by the operators of remotely piloted and autonomous aircraft systems. Theory is combined with operational scenarios in order to provide the student with the ability to match specific sensors with anticipated missions. Lab portion is included with special emphasis on photogrammetry and processing data into mission deliverables. Prerequisite: AVIT 238 and a minimum GPA of 2.6. F,S.

AVIT 337. Survey of Unmanned Aircraft Systems. 2 Credits.

Course content includes aircraft operating software, launch and recovery operations, payload operations, normal and emergency procedures, and mission planning and execution. It also includes a flight simulation component to provide exposure to the duties and responsibilities of UAS flight crew members but does not provide certification on a specific UAS platform. Prerequisite: AVIT 221 or AVIT 241, AVIT 238, and a Minimum GPA of 2.6. F,S.

AVIT 342. IFR Regulations and Procedures-Helicopter. 3 Credits.

This helicopter course provides a detailed study of the regulations, procedures, and publications necessary to operate a helicopter IFR in the national airspace system. Terminal and enroute procedures will be studied in detail. Prerequisite: AVIT 241 and a minimum GPA of 2.6. Prerequisite or Corequisite: AVIT 242. F,S.

AVIT 343. Instrument Rating-Helicopter Certification Lab. 1 Credit.

This lab course provides the training required to obtain an Instrument-Helicopter rating and to safely operate a helicopter as pilot-in-command under IFR in the national airspace system. It includes basic instrument flying, radio navigation, and glass cockpit procedures. Prerequisite: AVIT 242 and a minimum GPA of 2.6. Prerequisite or Corequisite: AVIT 342. F,S,SS.

AVIT 350. Human Error. 3 Credits.

The objective of this course is to develop an understanding of human error and its impact upon operations in a variety of fields. Emphasis will be placed on errors within complex systems, data use, and automation. Prerequisite: AVIT 250 and a minimum GPA of 2.6. On demand.

AVIT 362. Advanced Tower Operations II. 4 Credits.

Students will build on the knowledge gained in AVIT 260 Control Tower Operations I. Utilizing the 3D Tower simulator, the students are taught basic, advanced, and fundamental Tower operations, which include: structure, procedures, and theories of airspace/traffic management. Scenarios progress in difficulty. To complete this course, students will be required to demonstrate their basic knowledge of Tower operations through written examinations and performance scenarios in a 3D tower simulator. This course follows the applicable required Federal Aviation Administration's learning objectives set forth in their Air Traffic Basics Course. An Air Traffic lab. Prerequisite: AVIT 260 and a minimum GPA of 2.6. F,S.

AVIT 363. RADAR Operations II. 4 Credits.

Students will build on the knowledge gained in AVIT 261 RADAR Operations I. This course provides students with advanced Radar instruction and knowledge of separation requirements and procedures of Air Traffic Terminal Radar operations, using advanced Air Traffic techniques. Student evaluations are based on demonstrated application of acquired controller skills utilizing Radar simulation. Scenarios progress in difficulty. To complete this course students must demonstrate their knowledge of Terminal Radar Operations through written examinations and performance scenarios in a Radar simulator. This course follows the applicable required Federal Aviation Administration's learning objectives set forth in their Air Traffic Basics Course. An Air Traffic lab is required. Prerequisite: AVIT 261; minimum GPA of 2.6. F,S.

AVIT 372. Global Perspectives in Aviation History. 3 Credits.

This course investigates aviation's effects on global culture, commerce, and politics throughout its history by examining original historical sources and evidence from significant events in aviation. After taking this class, students will be more aware of their own and other cultural frameworks and biases and be able to use that perspective effectively as aviation professionals in a global industry. Prerequisite: Minimum GPA of 2.6. On demand.

AVIT 376. Hazardous Materials Management. 3 Credits.

This course is designed to provide students with the knowledge of the regulatory requirement and safety work practices for the use, handling, and storage of hazardous materials in the workplace. This class will familiarize students with the hazards of various toxic, flammable, corrosive, reactive, and other materials used in the workplace. Students will learn to apply safe work practices when using, handling, and storing hazardous materials. The class will cover various operations involving hazardous materials such as spray finishing, dip coating, and chemical processing as well as emergency response operations. Prerequisite: Minimum GPA of 2.6. On demand.

AVIT 386. Conventional Aircraft Operations. 1 Credit.

Provides the necessary ground school and dual flight instruction for an endorsement for operation of tailwheel-type airplanes. Allows the student to acquire the knowledge and skills necessary for operation of the tailwheel aircraft on the ground and in flight. Prerequisite: AVIT 102; open to Aviation majors and minors only; minimum GPA of 2.6. F,SS.

AVIT 389. Introduction to Aerobatic Flight. 1 Credit.

To introduce, analyze and fly some of the more advanced flight maneuvers defined as aerobatics. Basic aerobatic maneuvers will be flown during the course including loops, spins, rolls, and inverted flight, with advanced variations and combinations of maneuvers demonstrated in flight. Prerequisite: AVIT 102; open to Aviation majors and minors only; minimum GPA of 2.6. F,S,SS.

AVIT 397. Cooperative Education. 1-2 Credits.

A practical work experience with an employer closely associated with the student's academic area. Arranged by mutual agreement between student, aviation department, and employer. A maximum of four cooperative education credits may be applied toward the total credits needed to complete degree requirements. Co-op credits may not be substituted for any required course within the student's major. Prerequisite: Acceptance into a co-op position with cooperating industry and approval of the aviation department; open to aviation majors and minors only. Repeatable to 8.00 credits. S/U grading. F,S,SS.

AVIT 399. Special Aerospace Topics. 1-12 Credits.

Special Aerospace Topics. Prerequisite: AVIT 102; open to Aviation majors and minors only; minimum GPA of 2.6. Repeatable to 12.00 credits. S/U grading. F,S,SS.

AVIT 402. Airport Planning and Administration. 3 Credits.

This is the first of a two course curriculum in airport administration. This initial course provides an introduction to the complex elements of airport planning and its importance in achieving a successful airport operation. Course content includes a study of the duties and responsibilities of the airport manager with a special emphasis on the Federal Air Regulations governing the operation and administration of commercial service airports within the United States. Prerequisite: Junior or Senior status, open to Aviation majors and minors only, and a minimum GPA of 2.6. F,S.

AVIT 403. Aerospace Law. 3 Credits.

This course is designed to introduce the student to the United States legal system and the development of air law. The course will cover a broad range of topics related to aviation operations including constitutional law, administrative law, Federal Aviation Administration enforcement actions, aircraft ownership issues, products liability law, criminal law, contract law, and international law. Course activities include case reading, argument, and legal research. Prerequisite: Junior or Senior status, open to Aviation majors and minors only, and a minimum GPA of 2.6. F,S,SS.

AVIT 405. Airline Operations and Management. 3 Credits.

This course examines the four major areas of air carrier operations, including ground, technical, flight and system operations, as well as airline economics, utilizing a management simulation tool. There is an intensive examination of regional, point-to-point and network carrier operations. Student management teams make weekly decisions in seven categories: Overall Strategy; Marketing; Operations Management; Human Resource Development; Finance; Asset Management; and Behavioral Elements. A portion of each class time is devoted to simulation activities, and the reading assignments focus on management decisions pertinent to the topic assigned, relying in part on current industry events, with an emphasis on ethical decision making. Prerequisite: Junior or Senior status, open to Aviation majors and minors only, and a minimum GPA of 2.6. F,S,SS.

AVIT 407. General Aviation Operations and Management. 3 Credits.

Aspects of the operation and management of corporate flight departments, fixed-base operations, air cargo operations, and fractional ownership programs will be discussed. Pertinent regulations including FAR parts 91 and 135 will be studied. Aircraft and equipment evaluations will be conducted. Prerequisite: Junior or Senior status, open to Aviation majors and minors only, and a minimum GPA of 2.6. F,S,SS.

AVIT 408. Fleet Planning and Aircraft Acquisition. 4 Credits.

This course will analyze the needs and missions of various business flight departments, provide insight into aircraft selection, and explore the details of aircraft acquisition. A broad range of issues will be discussed, including finance options, insurance coverage, and fleet management. Prerequisite: AVIT 102 or AVIT 142, AVIT 407, and a minimum GPA of 2.6. F.

AVIT 411. International and Long Range Navigation. 3 Credits.

This course provides an understanding of global charting systems, great circle routes and waypoint plotting. Problems and methods of international flight and modern systems of long range navigation are studied as well as methods and systems of computing, communicating and displaying navigation information. This course also gives the student a familiarization with the international airspace structure including Required Navigation Performance (RNP) standards, Minimum Navigation Performance Specification (MNPS) operations and Reduced Vertical Separation Standards (RVSM). Prerequisite: AVIT 241 or AVIT 325; open to aviation majors and minors only; minimum GPA of 2.6. F,S.

AVIT 412. Aviation Safety Analysis. 3 Credits.

This course will examine the various techniques and processes used to assess and predict organizational risk as it pertains to aviation operations. The role of quality assurance within a Safety Management System (SMS) will be also explored. An introduction to specific aviation safety assurance programs will be conducted and will include safety surveys and formalized observations. Prerequisite: AVIT 311 and a minimum GPA of 2.6. S.

AVIT 414. Certified Flight Instructor Certification. 5 Credits.

Provides the student with a detailed study of the responsibilities and teaching concerns of a flight instructor. The course is divided into two major sections: fundamentals of teaching and learning, including effective teaching methods, learning process, consideration of flight training syllabi, effective evaluations, and flight instructor responsibilities; the second section is concerned with the analysis of the flight maneuvers involved with Private Pilot, Commercial Pilot and Flight Instructor Certificates. The course will also provide practical teaching experiences. The student must complete the associated flight lessons in the CFI Flight Course to satisfactorily complete the course. Prerequisite: AVIT 325 and Junior or Senior status; open to Aviation majors and minors only; minimum GPA of 2.6. F,S,SS.

AVIT 415. Instrument Flight Instructor. 4 Credits.

Provides the student with an in-depth study of the responsibilities and techniques to be used as an Instrument Flight Instructor. This course will also include additional study of instrument flight, charts, publications and regulations pertaining to the IFR environment, further develop the student's knowledge of Technically Advanced Aircraft and provide practical teaching experience. The student must complete the associated flight lessons in the Instrument Flight Instructor course to satisfactorily complete the course. Prerequisite: AVIT 414 and Junior or Senior status; open to Aviation majors and minors only; minimum GPA of 2.6. F,S,SS.

AVIT 416. Multi-Engine Flight Instructor. 2 Credits.

This course provides an understanding of the fundamentals of teaching in a multi-engine airplane. The course will include multi-engine aerodynamics and performance, analysis of multiengine operations, single-engine operations and procedures, flight instructor responsibilities, flight safety concerns and instrument flight maneuvers in multi-engine airplanes. The student must complete the associated flight lessons in the Multi-engine Airplane CFI course to satisfactorily complete the course. Prerequisite: AVIT 415 and Junior or Senior status; open to Aviation majors and minors only; minimum GPA of 2.6. F,S,SS.

AVIT 419. sUAS Commercial Operations. 4 Credits.

This course will develop the student's knowledge and skill needed to manage and operate small remotely piloted aircraft systems in a commercial operation. Course content includes airspace authorization criteria, operational approval requirements, mission planning, data acquisition, and post processing of data. Mission deployment skills will be acquired through both classroom and hands-on flight activities. Flight activities will include scenario-based mission planning and execution. Students must complete the appropriate UAS flight lessons to satisfactorily complete the course. Prerequisite: AVIT 222 or AVIT 343, AVIT 331, AVIT 333, AVIT 337 and a minimum GPA of 2.6. F,S.

AVIT 421. Advanced Aerodynamics. 3 Credits.

Beginning with a brief review of low speed aerodynamics, the course provides a study of the terminology and aerodynamics fundamentals associated with transonic and supersonic flight. Prerequisite: AVIT 325 and Junior or Senior status or consent of the instructor; open to aviation majors and minors only; minimum GPA of 2.6. F,S,SS.

AVIT 428. Transport Category Aircraft Systems. 4 Credits.

This course provides an in-depth study of the integrated, complex systems of today's air transport jet aircraft with an emphasis on common multi-engine turbine powered aircraft types used in Part 121 air carriers. It provides a review of all primary systems, to include both normal and abnormal operations. The course also provides the necessary background for future simulator training to be presented in a later course. Systems courseware is provided to each student as a part of enrollment. Prerequisite: AVIT 325 and Junior or Senior status; open to Aviation majors and minors only; minimum GPA of 2.6. F,S,SS.

AVIT 429. Turboprop Operations. 4 Credits.

This course will provide an introduction to turboprop aircraft systems and procedures. Emphasis will be placed on the systems and operational procedures for a specific model of turboprop aircraft utilized by regional airlines. Course content and presentation will be similar to air carrier initial training. The course will provide a synopsis of the turboprop industry including any recent developments. Prerequisite: AVIT 325 and Junior or Senior status; open to Aviation majors and minors only; minimum GPA of 2.6. On demand.

AVIT 430. Crew Resource Management. 3 Credits.

This course will provide an in-depth study of Crew Resource Management which involves having a thorough understanding of crew communications, teamwork, leadership, "followership," decision-making, and situational awareness. In addition, the student will learn how to properly utilize all available resources in order to conduct a safe and efficient flight. This course will also examine the benefits of diversity, and the role diversity plays in the modern aerospace industry. Prerequisite: AVIT 250 and either AVIT 342 or AVIT 325; Junior or Senior status; open to Aviation majors and minors only; minimum GPA of 2.6. F,S.

AVIT 438. UAS Operations. 4 Credits.

This course of instruction will develop the student's knowledge and skills that are needed to safely employ remotely piloted and autonomous type aircraft systems. Course content includes aircraft operating software, launch and recovery operations, payload operations, normal and emergency procedures, and mission planning and execution. Specific emphasis will be placed upon aircraft and payload selection based upon proposed mission analysis. Students must complete the appropriate flight lessons to satisfactorily complete the course. Prerequisite: AVIT 126, AVIT 238, AVIT 323 or AVIT 445, AVIT 331, AVIT 337, and a minimum GPA of 2.6. F,S.

AVIT 440. Helicopter Instructor Certification. 1 Credit.

This course provides the student with a detailed study of the responsibilities and teaching concerns of a flight instructor. The course is divided into two major sections: fundamentals of teaching and learning, including effective teaching methods, learning process, consideration of flight training syllabus, effective evaluations, and flight instructor responsibilities; the second section is concerned with the analysis of the flight maneuvers involved with Private Pilot, Commercial Pilot and Flight Instructor Certificates. The course will also provide practical teaching experiences. Prerequisite: AVIT 445 and a minimum GPA of 2.60. F,S,SS.

AVIT 442. Airport Operations and Administration. 3 Credits.

This course is the second of a two course curriculum in airport administration. It is an advanced course emphasizing the further development of the skills and understanding of the operation and management of commercial service airports of all sizes. The content focuses upon the practical application of airport manager skills and includes educational tours of operating airports. The program stresses the airport manager's role in relations with tenants, public officials, and patrons through the honing of individual writing and public speaking skills. Prerequisite: AVIT 402 and Junior or Senior status; open to Aviation majors and minors only; minimum GPA of 2.6. S.

AVIT 443. Airport Safety and Emergency Management. 3 Credits.

This courses focuses on the airport as an organization and its adherence to safety and emergency management principles regulated by Federal (FAA and FEMA) agencies. The concept of airport safety will be explored in regard to the FAA's basic airport safety regulations and safety management systems (SMS), with special attention to the similarities and differences with the two specializations. The second area of discussion will be the mandate for airports to adhere to the emergency management concepts of the Federal Emergency Management Administration and the Stafford Act and the act of being compliant with both mandates. A final area of focus will be on how an airport can develop a high degree of resiliency when an emergency occurs. Prerequisite: AVIT 402 and a minimum GPA of 2.6. On demand.

AVIT 444. Helicopter Advanced Operations. 4 Credits.

This course provides advanced study of helicopter aerodynamics and performance as applied to commercial helicopter operations in varying extreme environmental field conditions, including mountain, off-shore (salt water), desert, arctic and tropical operations. Specific helicopter missions are studied, including agriculture, long-line, off-shore and night vision goggle operations. Prerequisite: AVIT 241 and AVIT 242; minimum GPA of 2.6. F.

AVIT 445. Commercial Pilot-Helicopter Certification Lab. 1 Credit.

This lab course is a continuation of commercial helicopter flight training and is completed after the student has obtained the Instrument-Helicopter rating. This course further refines the aeronautical decision making and flight proficiency skills necessary to obtain the Commercial Pilot Rotorcraft-Helicopter rating. Prerequisite: AVIT 343 and a minimum GPA of 2.6. F,S,SS.

AVIT 450. Counter UAS Applications. 3 Credits.

Counter UAS application is designed to educate and explore the emerging threat of remotely piloted and autonomous type aircraft systems to the nation's airspace and infrastructure. This course will be divided into four sections (overview, detect, identify and defeat), to cover all current and future lines of effort in a unified approach to counter UAS. Prerequisite: AVIT 240 and a minimum GPA of 2.6. F,S.

AVIT 464. Control Tower/Radar Operations III. 4 Credits.

This is the capstone course for Terminal ATC Operations of the Air Traffic Management (ATM) program. This course teaches advanced Tower and Radar operations and procedures combined, using advanced Air Traffic techniques. To complete this course students must demonstrate their knowledge of Tower and Radar Operations through written examinations and performance scenarios in a Tower/Radar simulator. This course follows the applicable required Federal Aviation Administration's learning objectives set forth in their Air Traffic Basics Course. An Air Traffic lab is required. Prerequisite: AVIT 362, AVIT 363, and Junior or Senior status; minimum GPA of 2.6. F,S.

AVIT 468. Non-RADAR Environment. 4 Credits.

This course stresses the comprehensive knowledge of Non-Radar Air Traffic procedures, to include: airspace utilization, flight plans, general control procedures, data display management, initial departure separation, IFR clearances to departing aircraft, communication requirements, and separation standards, in a Non-Radar environment. Class scenarios will emphasize the Non-Radar Enroute structure. To complete this course students must demonstrate their knowledge of Non-Radar Operations through written examinations and performance scenarios in a Non-Radar simulator. This course follows the applicable required Federal Aviation Administration's learning objectives set forth in their Air Traffic Basics Course. An Air Traffic lab is required. Prerequisite: AVIT 260 and MATH 93 or MATH 98; minimum GPA of 2.6. F,S,SS.

AVIT 469. Air Traffic Control Computer Equipment and Message Entry. 2 Credits.

This course instruction details the requirements of the automated process to coordinate and separate air traffic. This will include airspace utilization, flight plans, general control procedures, IFR clearances, and Enroute separation standards. Class scenarios will emphasize the Enroute structure. To complete this course, the student shall be required to demonstrate and apply the skills and knowledge required to successfully complete all performance exercises. This course follows the applicable required Federal Aviation Administration's learning objectives set forth in their Air Traffic Basics Course. Prerequisite: AVIT 260 and minimum GPA of 2.6. S.

AVIT 470. Enroute RADAR Operations. 4 Credits.

This is the capstone course for Enroute Operations of the Air Traffic Management (ATM) program. This course is designed for basic instruction in the enroute air traffic control operations. It provides position related knowledge and skill-oriented instruction in both the Radar Controller position (R Side), and the Radar Associate position (RA Side). The course provides students with instruction on the Enroute ATM system, publications, Federal Aviation Regulations, separation standards, airspace utility, aircraft types and characteristics, fundamentals of navigation, pilot's environment, flight assistance and emergencies, special operations, weather, communications, and teamwork. Instruction is delivered through classroom lecture, group discussions and scenarios with hands-on practice. To complete this course, students must successfully complete the FAA AT Basics Exam and the required performance scenarios in a Radar simulator. This course follows the applicable required Federal Aviation Administration's learning objectives set forth in their Air Traffic Basics Course. An Air Traffic lab is required. Prerequisite: AVIT 468 and AVIT 469 and Senior status; minimum GPA of 2.6. F,S.

AVIT 476. Risk Management. 3 Credits.

To provide an overview of methods used in aviation risk analysis. This course of provides the students will the knowledge and skills to apply various aspects of risk management issues faced in the aviation industry. Information will be provided and students will engage in scenarios and discussions to gain an understanding of the risk management systems in the aviation industry. Students will be introduced to different perspectives of risk management using guest lectures/speakers from various industries. Prerequisite: Minimum GPA of 2.6. On demand.

AVIT 480. Advanced Aircraft Operations. 3 Credits.

This course serves as the technical capstone for the commercial aviation major and will prepare learners for the transition to 14 CFR 121 operations. Topics include 14 CFR 121 operational considerations, advanced automation, high-speed and high-altitude aerodynamics, 14 CFR 25 takeoff and landing performance, and crew resource management. Learners will apply knowledge and skills within an AQP-style curriculum using a transport category jet ATD, representative of either "Airbus-style" (A-Jet) fly-by-wire or "Boeing-style" (B-Jet) conventional systems philosophies. The learner must complete the associated flight lessons to satisfactorily complete the course. No concurrent enrollment allowed with other aviation flight courses. Prerequisite: AVIT 415, AVIT 421, AVIT 428, and Junior or Senior status; open to aviation majors and minors only; minimum GPA of 2.6. F,S,SS.

AVIT 485. Aviation Senior Capstone. 3 Credits.

This course will explore contemporary and ethical issues in the aviation industry. Students will work in multi-disciplinary teams to examine and solve issues related to global aviation, environmental concerns, technology advances, aviation safety and security practices, labor issues and aviation economics. Students will be required to demonstrate an understanding of information literacy and advanced communications through coursework. Prerequisite: AVIT 403, senior status, and a minimum GPA of 2.6. F,S.

AVIT 490. Methods and Materials in Teaching Aviation I. 2 Credits.

This course will acquaint the student with resources and software used in classroom teaching specific to aviation. Topics covered include teaching with technology, utilizing instructional aides, motivating students, marketing a program and a career exploration in aviation education. Students will also gain the experience of managing the Aerospace Learning Center. Prerequisite: AVIT 414 or consent of instructor; open to Aviation majors and minors only; minimum GPA of 2.6. Repeatable to 6.00 credits. On demand.

AVIT 491. Methods and Materials in Teaching Aviation II. 2 Credits.

This course will be a continuation of the work started in Aviation 490 by providing the student with additional opportunities in the use of resources and software used in classroom teaching specific to aviation. Additional emphasis will be placed on the development of course syllabi and lesson plans, delivering classroom lessons, and the critique, evaluation, and assessment of student and instructor performance. Students will also gain the experience of managing the Aerospace Learning Center. Prerequisite: AVIT 414 and Junior or Senior status or consent of instructor; open to Aviation majors and minors only; minimum GPA of 2.6. On demand.

AVIT 497. Aviation Internship. 1-4 Credits.

Aviation internship will provide a student with the actual, on-the-job exposure of a particular area of interest the student has within the aviation industry. Internships will be available in airport management, general aviation management, on both the manufacturer and fixed-base operator level and within the weather modification industry. The weather modification internship will be available only with the necessary federal funding or contractor support. A maximum of 4 credits will be allowed toward graduation. Prerequisites will vary depending on the area of the internship. Prerequisite: Junior or senior standing with a minimum GPA of 2.6 required; open to Aviation majors and minors only; prerequisites will vary depending on the area of the internship. Repeatable to 6.00 credits. F,S,SS.

AVIT 498. Advanced UAS Operations. 1-3 Credits.

This course is designed to develop advanced knowledge and skill in a specific area of expertise in UAS operations such as Original Equipment Manufacturer (OEM) certification, industry certifications, or special training on Autonomous platforms, payloads, and support equipment. Prerequisite: AVIT 438 or AVIT 419; a minimum GPA of 2.6. Repeatable to 6.00 credits. On demand.

AVIT 499. Readings in Aviation. 1-3 Credits.

Individual student projects designed to develop advanced knowledge in a specific area of expertise. A written report is required. Prerequisite: Senior standing; open to aviation majors and minors only; minimum GPA of 2.6. Repeatable to 8.00 credits. F,S,SS.