

AVIATION FLIGHT TECHNOLOGY

Objectives

After matriculation at Lewis University (regardless of major), students are required to do all their flight training at Lewis unless otherwise approved by the Director of Aviation Flight Technology. Flight training received outside the university (while a Lewis University student) will not be transferred as flight lab credit into the flight program and the student will be ineligible to receive any academic credit for that flight lab. To graduate as a flight major/associate/minor, a minimum of five flight lab credits and six credits in ground schools must be earned at Lewis University.

In order to be admitted into the Aviation Flight Technology program, applicants must have achieved a minimum high school GPA of 3.0 (on a 4.0 scale). Transfer students must have earned an overall 3.0 GPA in the transferable courses. Lewis University students who request admission into the program must have completed a minimum of 12 credit hours at Lewis University and must have earned no less than a 3.0 GPA overall.

The by-pass exam is the method the Aviation Department uses to validate the FAA training that an incoming student has previously completed prior to matriculation into our program. Upon successful completion of the by-pass exam, the student will receive the academic credits for the appropriate Ground School and labs for the previously completed FAA Certificates. For instance, most commonly a student will enroll as a first year student and already have a FAA Pilot Certificate "in-hand." That student will take a two hour oral exam with an Assistant Chief Pilot (when deemed ready by their Lewis flight instructor) and upon successful completion, have the Private Pilot Ground Schools (AVTR 13000 Private Pilot Ground 1 & AVTR 13100 Private Pilot Ground 2) along with the Private Pilot labs (AVTR 13200 Private Pilot Flight Lab 1 & AVTR 13300 Private Pilot Flight Lab 2) added onto their transcript under notations. This requires completion of the Review and Award of Academic Credit Form by the Chief of Pilot Training and the approval of the Department Chair. Credit hours for the by-pass are added to the student's transcript during the second semester of the student's attendance at Lewis University.

The by-pass exam includes the additional material appropriate to the additional ratings held.

By-pass credit hours (which are PLA or Prior Learning Assessment credits) awarded for a FAA license earned before matriculation do not replace the obligation of the student who pursues either the major or minor or associate degree in Aviation Flight Technology to complete at Lewis the required upper-division courses (AVTR 40000's in the major curriculum; AVTR 33100 Commercial Pilot Ground School/[AVTR 33200 Commercial Pilot Flight Lab 1 & AVTR 33300 Commercial Pilot Flight Lab 2], AVTR 46000 Multi-Engine (MEL) Ground School/AVTR 46100 Multi-Engine (MEL) Flight Lab, or AVTR 40900 Flight Instructor Airplane (CFI-A) Flight Lab/AVTR 41000 Certified Flight Instructor Ground in the associate curriculum; and AVTR 33100 Commercial Pilot Ground School/[AVTR 33200 Commercial Pilot Flight Lab 1 & AVTR 33300 Commercial Pilot Flight Lab 2] in the minor curriculum). Completing these major/associate/minor requirements includes a series of flight lessons in these aforementioned upper-division courses at Lewis with a Lewis flight instructor, on-going flight performance evaluation by the instructor,

demonstrated piloting ability, an oral or written examination, and a successful FAA flight check.

Flight Lab Completion

Flight labs must be completed in one semester, and students will receive standard letter grades for the flight labs. In order to receive a passing grade for each flight lab, students will be required to meet defined benchmarks. These are:

Code	Title	Hours
AVTR 13200	Private Pilot Flight Lab 1 (Private Pilot Stage 1 Check)	1
AVTR 13300	Private Pilot Flight Lab 2 (Private Pilot Stage 2 Check)	1
AVTR 23200	Instrument Pilot Flight Lab 1 (Instrument Rating Stage 1 Check)	1
AVTR 23300	Instrument Pilot Flight Lab 2 (Instrument Rating Stage 2 Check)	1
AVTR 33200	Commercial Pilot Flight Lab 1 (Commercial Pilot Stage 1 Check)	1
AVTR 33300	Commercial Pilot Flight Lab 2 (Commercial Pilot Stage 2 Check)	1
AVTR 40900	Flight Instructor Airplane (CFI-A) Flight Lab (Certified Flight Instructor Airplane Rating)	1
AVTR 46100	Multi-Engine (MEL) Flight Lab (Commercial Pilot Multi-Engine Rating)	1

Students will only receive incomplete grades for flight labs due to unforeseen and extenuating personal circumstances, weather, and/or acts of God. Students who fail a flight lab will be required to retake the lab in the following term.

Programs Bachelor

- Aviation Flight Technology / Bachelor of Science (<https://catalog.lewisu.edu/undergraduate/aviation-science-technology/aviation-flight-technology/aviation-flight-technology-bachelor-science/>)

Associate

- Aviation Flight Technology/ Associate of Applied Science (<https://catalog.lewisu.edu/undergraduate/aviation-science-technology/aviation-flight-technology/aviation-flight-technology-associate-degree/>)

Minor

- Aircraft Dispatch / Minor (<https://catalog.lewisu.edu/undergraduate/aviation-science-technology/aviation-flight-technology/aircraft-dispatch-minor/>)
- Aviation Flight Technology / Minor (<https://catalog.lewisu.edu/undergraduate/aviation-science-technology/aviation-flight-technology/aviation-flight-technology-minor/>)

Courses

AVTR 10100 - Fundamentals of Flight (2)

Flight students will learn the fundamental principles of flight and the operation of aircraft, while implementing Lewis University Aviation procedures and operating parameters along with Aeronautical Decision Making (ADM). Students will complete Computer-Based-Training (CBT) flight modules utilizing flight simulation software.

AVTR 10200 - Introduction to Aviation and Transportation (1)

This general course is designed to acquaint students with the many aspects of and career opportunities in aviation and transportation industries.

AVTR 12000 - Unmanned Systems Electricity (4)

This course teaches students the fundamentals of electricity as it relates to Unmanned System applications. Topics include generators, motors, batteries, electrical circuit components, wiring diagrams, soldering, and multi-meter operation.

Prerequisite: PHYS 13000

AVTR 13000 - Private Pilot Ground 1 (3)

This course introduces students to the basic principles of flight, aircraft systems and performance, basic meteorology and weather data interpretation, basic radio navigation, physiology, flight planning and decision making. This course helps students prepare for the FAA knowledge, oral, and practical examinations. Meets requirements of 14 CFR 141.

Prerequisite: AVTR 10100 (may be taken concurrently)

AVTR 13100 - Private Pilot Ground 2 (3)

This course helps students prepare for the Private Pilot written examination through advanced study of the principles of flight, aircraft systems and performance, meteorology and weather data interpretation, radio navigation, physiology, flight planning and decision making. This course helps students prepare for the FAA knowledge, oral, and practical examinations. Meets requirements of 14 CFR 141.

Prerequisite: AVTR 13000

AVTR 13200 - Private Pilot Flight Lab 1 (1)

Students obtain the aeronautical skill and experience necessary to meet the requirements for a private pilot certificate with an airplane category rating and single-engine class rating. The lab consists of dual flight instruction, solo flight training and appropriate ground instruction. The credit hours will post to the student's transcript upon completion of the FAA Private Pilot Practical Exam.

Prerequisite: AVTR 10100

AVTR 13300 - Private Pilot Flight Lab 2 (1)

Students obtain the aeronautical skill and experience necessary to meet the requirements for a private pilot certificate with an airplane category rating and single-engine class rating. The lab consists of dual flight instruction, solo flight training and appropriate ground instruction. This is the second part of the two-part private pilot course sequence.

Prerequisite: AVTR 13200

AVTR 13500 - Introduction to Flight (3)

This course introduces students to the basic principles of flight, aircraft systems and performance, basic meteorology, weather data interpretation, basic radio navigation and physiology.

AVTR 20100 - Human Factors (3)

Human factors encompass all of those considerations that affect people at work. This course provides a comprehensive discussion of the human factors involved in surface, maritime, and air transportation. It deals not only with an examination of human physiology, but also with an exploration of the interactions between people and their work environment, as well as between fellow workers and crew members. The process of human decision making is extensively explored.

AVTR 20300 - Visual Aircraft Recognition 1 (1)

This course focuses on visual identification of both heavier-than-air and lighter-than-air aircraft, including private, corporate airline and military aircraft, as well as gliders and helicopters. The course also gives students appreciation of different classes of aircraft and their levels of performance.

AVTR 20400 - Aviation Regulations (3)

This course provides a practical approach to the complex subject of aviation regulations. The focus is on the mission, functions and relationship of the various groups involved in the regulatory process.

AVTR 20500 - Visual Aircraft Recognition 2 (1)

This course further expounds on visual identification of aircraft which are heavier-than-air and lighter-than-air, along with private corporate airline, and military aircraft, including gliders and helicopters.

AVTR 21300 - Aviation History 1: Barnstorming to "A" Bombs (3)

From the beginnings of human flight through 1945, this course is a historical account of the people and their flying machines. The course also includes events and important dates that are likely to shape the future of aviation.

AVTR 21400 - Aviation History 2: The Jet Age (3)

Subsequent to the conclusion of World War II in 1945, aviation technology accelerated the development and improvement of the jet engine, exploited the capabilities and performance of larger propeller aircraft and ushered in the realization of manned space flight. This course chronicles the achievements of the pioneers in flight, design and manufacturing who were instrumental in the aeronautical advances across commercial, military and general aviation.

AVTR 22500 - Introduction to Unmanned Systems (3)

This course provides an overview of Unmanned Aircraft Systems. Topics include the history of UAS, regulations, industry and societal implications, career outlooks, ethical considerations, and the basic components required to operate a UAS. The course will also introduce hands-on UAS flight and operation principles through simulation and other means.

AVTR 23100 - Instrument Pilot Ground School (4)

This course deals with the theoretical aspects of instrument flight. Ground school instruction includes basic principles of instrument flying, aviation meteorology, radio navigation and federal aviation regulations and a general understanding of the terminal en route instrument flying procedures. This course helps students prepare for the FAA knowledge, oral, and practical examinations. Meets requirements of 14 CFR 141. Students who do not possess a Private Pilot SEL certification may be removed from the course.

Prerequisite: AVTR 13000 and AVTR 13100 and AVTR 13300

AVTR 23200 - Instrument Pilot Flight Lab 1 (1)

Students obtain the aeronautical skill and experience necessary to meet the requirements for an instrument rating (airplane). Flight and simulator training in basic attitude instrument flying; VOR, NDB and GPS navigation; ILS approach procedures, holding pattern entry and procedures; and IFR cross country procedures are covered. The credit hours will post to the student's transcript upon completion of the FAA Instrument Rating Practical Exam.

Prerequisite: AVTR 13300

AVTR 23300 - Instrument Pilot Flight Lab 2 (1)

Students obtain the aeronautical skill and experience necessary to meet the requirements for an instrument rating (airplane). Flight and simulator training in basic attitude instrument flying; VOR, NDB and GPS navigation; ILS approach procedures, holding pattern entry and procedures; and IFR cross country procedures are covered. This is the second part of the two-part Instrument pilot course sequence.

Prerequisite: AVTR 23200

AVTR 25000 - Aviation Meteorology 1 (3)

This course covers basic meteorological fundamentals, including temperature, turbulence, icing, thunderstorms and clouds. The Aviation Weather Service Program includes various weather reports, forecasts and low altitude charts. 60 Contact Hours (45 lecture/15 lab) Meteorological phenomena affecting surface and maritime transportation are also considered.

Attributes: Experiential Learning Gen Ed, Science General Education

AVTR 25100 - Unmanned Systems (3)

This course focuses on the payload systems capable of being installed on air (UAV), ground (UGV), and water-based platforms (UMV). Students will learn and apply these systems to working platforms and learn how to utilize them in the field.

Prerequisite: AVTR 34300 and AVTR 22500

AVTR 25200 - Aviation Meteorology 2 (3)

During this continuation study of atmospheric phenomena and their relation to aircraft operation, students learn the proper way to obtain a weather briefing, interpret high altitude charts and other information for flight planning purposes.

Prerequisite: AVTR 25000

Attributes: Science General Education

AVTR 25500 - Aviation Weather (3)

This course covers basic meteorological fundamentals including temperature and heat transfer, clouds, air masses, frontal systems, precipitation; instability; icing and storms (thunderstorms and hurricanes). Basic understanding of various weather reports, forecasts, and charts. The course also covers meteorological phenomena affecting surface and maritime transportation.

AVTR 26300 - Aircraft Maintenance for Pilots (3)

Students learn about routine and preventative aircraft maintenance that may be performed by owners and pilots, including, but not limited to, repair of landing gear tires, service of landing gear shock struts, service of landing gear wheel bearings, replenishment of hydraulic fluid, troubleshooting and repair of landing light circuits, replacements of bulbs or lenses and replacement or cleaning of spark plugs.

AVTR 30000 - Professional Development for Aviators (1)

This course teaches students the fundamental concepts of internship acquisition, resume building, networking, interview preparation, and professionalism in the aviation industry.

AVTR 30500 - Crew Resource Management (3)

This course examines the common concepts of crew resource management as developed by major air carriers. Topics include supervision of crew members, counseling, accountability, coordination and relationship of authority.

AVTR 31100 - Introduction to Air Traffic Control (3)

A comprehensive examination of the U.S. national air traffic control system and how it affects aviation in general, and pilots and safety in particular, this course covers the air traffic control system (enroute, terminal and Flight Service Stations), air traffic control personnel, training, duties and facilities.

AVTR 31300 - Air Traffic Control Systems (3)

A comprehensive examination of the U.S. national air traffic control system and how it affects aviation in general, and pilots and safety in particular, this course covers the air traffic control system (enroute, terminal and Flight Service Stations), air traffic control personnel, training, duties and facilities.

Prerequisite: (AVTR 13000 or AVMT 10600)

AVTR 32000 - Advanced Aircraft Systems (3)

This study of aircraft systems includes hydraulics, air-conditioning, cabin pressurization, anti-icing systems, fuel systems, electrical systems, landing systems, flight control systems, fire-detection systems and pneumatic systems. Completion of the course gives students operational understanding of the system of high performance aircraft, including turboprop and other turbine engines.

AVTR 32100 - Transportation Legislation (3)

A comprehensive study of transportation law, this course covers regulatory statutes and federal regulations. Students are also introduced to civil and criminal law as applied to transportation, including such aspects as operation, contracts, insurance, liability, litigation and case law.

AVTR 33100 - Commercial Pilot Ground School (3)

This course assists students in preparing for the Commercial Pilot written exam. Classroom instruction includes advanced maneuvers, Federal Aviation Regulations, aerodynamics, weather and safe operation of aircraft. This course helps students prepare for the FAA knowledge, oral, and practical examinations. Meets requirements of 14 CFR 141. Students who do not possess a Private Pilot SEL certification with an Instrument Rating may be removed from the course.

Prerequisite: AVTR 23100 and AVTR 23300

AVTR 33200 - Commercial Pilot Flight Lab 1 (1)

Students obtain the aeronautical skill and experience necessary to meet the requirements for a commercial pilot certificate with an airplane category rating and single-engine class rating. Students are introduced to commercial maneuvers and complex/high performance operations. The credit hours will post to the student's transcript upon completion of the FAA Commercial Pilot Practical Exam.

Prerequisite: AVTR 23300

AVTR 33300 - Commercial Pilot Flight Lab 2 (1)

Students obtain the aeronautical skill and experience necessary to meet the requirements for a commercial pilot certificate with an airplane category rating and single-engine class rating. Students are introduced to commercial maneuvers and complex/high performance operations. This is the second part of the two-part Commercial pilot course sequence.

Prerequisite: AVTR 33200

AVTR 34100 - Unmanned Systems Field Operations (3)

Students will obtain relevant industry experience by taking part in actual unmanned operations in the field. Students will apply fundamental mission creation parameters and successfully achieve objectives.

Prerequisite: AVTR 34300 and AVTR 44300

AVTR 34200 - Aerodynamics (3)

This course is designed to provide the student with the foundational and fundamental knowledge sets pertaining to aerodynamics. This course will improve student understanding of aerodynamic laws and principles.

AVTR 34300 - UAS Operations 1 (3)

This course focuses on the specific components of the Unmanned Aircraft System. Piloting and payload and sensor operations are covered along with datalinks and autonomous systems. Students will continue developing their operations skillsets as they determine which UAS role is appropriate for different scenarios. This course also introduces UAS Crew Resource Management (CRM) concepts, mission planning, and pertinent UAS regulations.

Prerequisite: AVTR 13500 and AVTR 13000

AVTR 35000 - Advanced Air Mobility (3)

This course provides an in-depth exploration of Advanced Air Mobility (AAM), an emerging aviation ecosystem that integrates innovative aircraft, automated flight systems, and next-generation airspace management to enable safe, efficient, and sustainable air transportation. Students will examine the technological, regulatory, economic, and operational foundations driving AAM, including electric vertical takeoff and landing (eVTOL) aircraft, uncrewed aircraft systems (UAS) integration, autonomy, airspace modernization, and infrastructure planning. Through case studies, system-level analysis, and scenario-based learning, the course investigates key challenges such as airworthiness certification, detect-and-avoid (DAA) architectures, vertiport design, cybersecurity, environmental impacts, community acceptance, and integration with traditional National Airspace System (NAS) operations. Emphasis is placed on understanding FAA and international regulatory frameworks, emerging industry standards, and the evolving roles of stakeholders in government, industry, and academia. Students will engage in project-based work to design conceptual AAM operational models, evaluate enabling technologies, and assess scalability for urban, suburban, and rural applications. By the end of the course, students will be prepared to critically analyze the feasibility and implications of AAM systems and contribute to the advancement of this rapidly developing aviation sector.

Prerequisite: AVTR 34300

AVTR 35100 - Vertiport Planning and Development (3)

This course examines the planning and design of vertiports supporting Advanced Air Mobility (AAM) and eVTOL operations. Students study site selection, airspace integration, safety standards, energy systems, regulatory frameworks, and environmental considerations. Through case studies and design projects, they evaluate feasibility and develop conceptual vertiport plans, preparing them to support infrastructure planning within the emerging AAM ecosystem.

Prerequisite: AVTR 35000 (may be taken concurrently)

AVTR 35300 - Air Transportation (3)

This survey of the historical developments of air transportation systems covers facilities; impact of regulations; problems encountered in commercial transportation; airline economics, management and organization; role of governments in air transportation; and economic, social, political, and future implications of air transportation. Human dependency on air transportation is ever increasing because of globalization of economies and the need to make great use of scarce time. It is therefore of prime importance for students in aviation, particularly those in flight, to study the development of the industry and how it affects society and the economy.

AVTR 37300 - Transportation Safety Management Systems (3)

The objective of this course is to introduce students to safety management systems applied to transportation safety programs through a study of proactive, preventative risk management processes that include hazard identification and mitigation.

Prerequisite: ENGL 11200 (may be taken concurrently)

Attributes: Advanced Writing, Experiential Learning Gen Ed

AVTR 39000 - Workshop in Aviation and Transportation (1-3)

Workshops in Aviation and Transportation are designed to provide information on current issues in these fields of study. The workshops are taught by professionals who have expertise in a given area. Students are encouraged to select workshops based on their individual needs and interests and on potential application upon graduation.

Attributes: Workshop/Seminar

AVTR 39700 - ST: Aviation and Transportation (3)

This is a special topics course. Students are given the opportunity to study concepts, structures, theories, laws, operations, systems, resources, and other contemporary topics pertinent to aviation and transportation industries. Subject matter will vary, please refer to the course syllabus for more detailed course description.

AVTR 40200 - Fiscal Aspects of Transportation (3)

This course provides an introduction to financial management problems encountered in transportation management. Topics covered include basic accounting, financial management principles, cash flow analysis, budgeting and financial statement analysis.

AVTR 40800 - Flight Instructor Airplane (CFI-A) Ground School (2)

The course is designed to cover the principles of teaching, as well as the principles of flight instruction, including maneuvers. This course helps students prepare for the FAA knowledge, oral, and practical examinations. Meets requirements of 14 CFR 141.

AVTR 40900 - Flight Instructor Airplane (CFI-A) Flight Lab (1)

Students obtain the aeronautical skill and experience necessary to meet the requirements for a Certified Flight Instructor certificate with an airplane category rating and single-engine class rating. Students also obtain the instructional knowledge required to teach, including the ability to recognize, analyze, and correct of common student errors. The credit hours will post to the student's transcript upon completion of the FAA Certified Flight Instructor Airplane practical exam.

Prerequisite: AVTR 33300

AVTR 41000 - Certified Flight Instructor Ground (3)

This course is designed to cover the principles of instruction and teaching, including the learning process, human behavior, effective communication, teaching methods, principles of flight, maneuvers, and critique and evaluation. This course helps students prepare for the CFI FAA knowledge, oral, and practical tests. Students who do not possess a Commercial Pilot SEL certification with an Instrument Rating may be removed from the course.

Prerequisite: AVTR 33100 and AVTR 33300

AVTR 42000 - Flight Instructor Instrument (CFI-I) Ground (2)

This course is designed to prepare the student to teach instrument flying. This course helps students prepare for the FAA knowledge, oral, and practical examinations. Meets requirements of 14 CFR 141. Students who do not possess a Commercial Pilot SEL certification with an Instrument Rating may be removed from the course.

Prerequisite: AVTR 33100 and AVTR 33300

AVTR 42100 - Flight Instructor Instrument (CFI-I) Flight Lab (1)

Student obtain the aeronautical skill and experience necessary to teach the principles of attitude instrument flying, ATC procedures and IFR navigation. Students also obtain the instructional knowledge required to teach, including the ability to recognize, analyze, and correct common student errors. The credit hour will post to the student's transcript upon completion of the FAA Certified Flight Instructor/Instrument Practical Exam.

Prerequisite: AVTR 40900

AVTR 43000 - Labor Relations in Transportation (3)

This course provides study of unions, labor legislation, collective bargaining, contracts administration and conflict resolution in the transportation industry.

AVTR 44300 - UAS Operations 2 (3)

This course teaches students how to troubleshoot UAS anomalies. Students will also work in teams to develop and program a UAS to accomplish a certain set of parameters. Operations skillsets will be mastered as students are tasked with increasingly difficult scenarios."

Prerequisite: AVTR 34300 (may be taken concurrently)

AVTR 44400 - Electric and Advanced Propulsion in Aviation (3)

This course explores emerging aviation propulsion technologies, including electric, hybrid-electric, hydrogen, distributed systems, and sustainable fuels. Students examine core engineering principles, energy storage, fuel cells, system integration, certification, and environmental impacts. Through case studies and applied analysis, they evaluate design tradeoffs, technology readiness, and real-world industry developments, preparing them to assess and advance next-generation sustainable aircraft systems.

Corequisite: AVTR 35000

AVTR 45000 - Issues and Trends in Transportation (3)

This course presents an analysis of selected contemporary issues, problems and trends facing various segments of the transportation industry (manufacturers, government, and other stakeholders in surface, maritime, and air transportation). Students apply previously learned principles to practical problems in the transportation industry.

Prerequisite: (AVTR 35300 (may be taken concurrently) or AVTR 50000 (may be taken concurrently)) and BSAD 20000 (may be taken concurrently)

AVTR 45100 - Airport Operations Workshop (1)

An introduction to airport operations, this course covers the analysis of the role of the department manager in the daily operation of an airport, inspections, emergencies, planning, maintenance and safety.

AVTR 45200 - Airport Management (3)

A comprehensive study of airport operations and management, this course covers analysis of the role of the airport manager in the daily operation of an airport, finance and administration, public relations, social, political and environmental considerations; operations, safety; and facility maintenance.

AVTR 45300 - Airline Management and Economics (3)

Few industries are as important to the economic and social well-being of a nation as transportation. Aviation is an integral part of the infrastructure of a global economy. Yet, since the beginnings of the industry in the 1920's, as a whole, airlines have struggled to earn a sustainable profit. This industry has long faced significant structural impediments toward achievement of that basic objective. This course explores these challenges, but also studies the innovative methods utilized by airlines to overcome and be successful in aspects of this global industry.

AVTR 46000 - Multi-Engine (MEL) Ground School (2)

This course provides the necessary instruction to thoroughly familiarize students with the theory of safe and practical multi-engine operation. This course helps students prepare for the FAA knowledge, oral, and practical examinations. Meets requirements of 14 CFR 141. Students who do not possess a Commercial Pilot SEL certification with an Instrument Rating may be removed from the course.

Prerequisite: AVTR 33100 and AVTR 33300

AVTR 46100 - Multi-Engine (MEL) Flight Lab (1)

Students obtain the aeronautical skill and experience necessary to meet the requirements for the addition of an airplane multi-engine land class rating to an existing pilot certificate. Students are introduced to multi-engine aerodynamics, operating procedures, systems, performance considerations and emergency procedures. The credit hour will post to the student's transcript upon completion of the FAA Commercial Pilot Multi-Engine Land Practical Exam.

Prerequisite: AVTR 33300

AVTR 46300 - Aircraft Accident Investigation (3)

This course provides a study of the general principles and procedures involved in an aircraft accident investigation. Students explore both FAA and National Transportation Safety Board (NTSB) aircraft accident investigative techniques and how the NTSB determines probable cause.

Prerequisite: AVTR 13000 or AVMT 10600

Attributes: Experiential Learning Gen Ed

AVTR 47000 - Flight Instructor-Multi-Engine (CFI MEL) Ground (2)

This course provides the necessary instruction to prepare students to give multi-engine flight training. It also assists students in preparing for the FAA Flight Instructor-Multi-engine Flight Check. Meets requirements of 14 CFR 141.

AVTR 47100 - Flight Instructor-Multi-Engine Flight Lab MEL (1)

Students obtain the aeronautical skill and experience necessary to teach multi-engine aerodynamics, normal and emergency operating procedures, aircraft systems and performance considerations. The credit hour will post to the student's transcript upon completion of the FAA Flight Instructor Multi-Engine Practical Exam.

AVTR 47300 - Airline Transport Pilot (3)

This course covers air transport topics assessed in the FAA ATP and Aircraft Dispatcher Knowledge examinations. This course does not, however, fulfill all the specific training requirements of 14 CFR 156 for a student to be eligible to take the FAA knowledge exam. The overall goal of this course is to introduce aviation students to the larger environment of global airline transport pilot operations. Students learn about Federal Aviation Regulations aircraft systems, the theory of flight, aerodynamics, meteorology with respect to engine operations, and weight and balance computations.

Prerequisite: AVTR 33100 (may be taken concurrently)

AVTR 47500 - Large Jet Familiarization (3)

This course is designed to familiarize the aviation student with the systems on a particular aircraft. The aircraft type may vary from semester to semester. Substituting this course for AVTR 40900 and AVTR 42100 requires permission from the chief of pilot training.

Prerequisite: AVTR 32000 or (UNIV 20400 and UNIV 20600)

AVTR 47700 - UAS Senior Capstone (3)

Students will demonstrate mastery of the entire UAS Program. Students are tasked with designing, building, testing, and further developing a UAS to complete a set of goals set forth by the student and professor of the course. Students also develop a project portfolio to showcase their skillsets to potential employers.

Prerequisite: AVMT 34000 and AVTR 44300

AVTR 48000 - Practical Dispatching (3)

This is a capstone course for dispatcher certification. It includes a detailed review and practical applications of the skills required for Aircraft Dispatch certification. Meets requirements of 14 CFR 65.

Prerequisite: AVTR 47300 (may be taken concurrently) and AVTR 20400 and AVTR 25200 and AVTR 31300 (may be taken concurrently)

AVTR 48200 - ATC Responsibilities and Procedures (3)

Individual controller positions will be explored in depth including the enroute (ARTCC), terminal (TRACON), tower (ATCT) and Flight Service Station specialist's responsibilities with respect to aircraft separation, inter-facility coordination and the expeditious, safe movement of aircraft. Additionally, an in-depth study of letters of agreement, position briefings and the use of departure, arrival and enroute progress strips will be included.

Prerequisite: AVTR 20400 and AVTR 23100 and AVTR 31300

AVTR 48400 - Radar Fundamentals and Separation Minima (3)

Equipment capabilities and limitations of radar will be addressed in sufficient depth to prepare future controllers for successful careers. Separation minima for radar and non-radar operations will be emphasized and reviewed as an integral part of the controller's core responsibilities. VFR IFR operations will be differentiated and defined for a full understanding of their differences.

Prerequisite: AVTR 23100 and AVTR 31300

Corequisite: AVTR 48401

AVTR 48401 - Advanced Radar Fundamentals Separation Minima Lab (1)

This course involves the introduction of the principles set forth in FAA Order 7110.65. Separation minima for radar and non-radar operations will be discussed, learned, and applied as part of the controller's responsibilities along with radar identification, beacon systems, radar approaches and departures, and aircraft separation. Students will begin to separate aircraft in the approach and departure control environment utilizing Air Traffic Control radar simulation.

Corequisite: AVTR 48400

AVTR 48500 - Flight Deck Automation (3)

State of the art cockpits employ high technology "glass" avionics to enhance the flight crew's situational awareness, reduce workload and greatly increase and maximize efficiency in terms of fuel savings and equipment longevity. This course addresses the challenges and benefits of various new-age cockpits in the air carrier inventory with particular emphasis upon the CRJ-200 flight management system. Coursework in this class will strengthen students' knowledge and competency in an aviation environment dominated by these highly advanced flight guidance concepts.

Prerequisite: AVTR 23100

AVTR 48600 - Aircraft Capabilities and Characteristics (3)

Employing previous course work and acquired knowledge, an in-depth investigation of IFR flight operations and Air Traffic Control facilities services afforded VFR aircraft will be emphasized. Additionally, aircraft capabilities characteristics and performance will be addressed in order to provide each future air traffic professional with a keen understanding and anticipation of an aircraft crew responses to controller clearances and requests.

Prerequisite: AVTR 23100 and AVTR 31300

AVTR 48700 - ATC Tower Ground Control (3)

Students will learn correct procedures for moving aircraft and vehicles within the movement areas of an airport with an operational air traffic control tower. They will learn correct phraseology, rules, and procedures from the FAAO 7110.65. The class will consist of lecture and laboratory simulation of real-time air traffic movement.

Prerequisite: AVTR 31300 and AVTR 48200

Corequisite: AVTR 48701

AVTR 48701 - ATC Tower Ground Control Lab (1)

Students will discuss, learn, and begin applying correct procedures for the separation of aircraft on the taxiways, runways, and within the Class D surface area of an airport with an operational control tower. The students will apply correct phraseology, rules, and procedures from FAAO 7110.65. They will interpret and apply radar data using the ADSE display. Students will begin to control aircraft using laboratory simulation of real-time air traffic movement.

Corequisite: AVTR 48700

AVTR 48800 - Advanced Radar Fundamentals (3)

This course involves the careful examination of Advanced Radar Fundamentals and minimums set forth in FAA Order 7110.65. Equipment capabilities and limitations of radar (both ground-based and satellite-based) will be addressed in-depth to prepare future controller for successful careers. Separation minima for radar and non-radar operations will be emphasized and reviewed as an integral part of the controller's responsibilities along with radar identification, beacon systems, radar approaches and departures, and aircraft separation.

Prerequisite: AVTR 48400

AVTR 48801 - Adv Radar Fund Lab (1)

This course involves the application of the principles set forth in FAA Order 7110.65. Separation minima for radar and non-radar operations will be applied as part of the controller's responsibilities along with radar identification, beacon systems, radar approaches and departures, and aircraft separation. Students will separate aircraft in the approach and departure control environment utilizing Air Traffic Control radar simulation.

Corequisite: AVTR 48800

AVTR 49100 - ATC Tower Local Control (3)

Students will learn correct procedures for the separation of aircraft on the runways and within the Class D surface area of an airport with an operational control tower. The students will apply correct phraseology, rules, and procedures from FAAO 7110.65. They will learn how to interpret radar data using the ADSE display. The class will consist of lecture and laboratory simulation of real-time air traffic movement.

Prerequisite: AVTR 48700

AVTR 49101 - ATC Tower Local Control Lab (1)

Students will learn correct procedures for the separation of aircraft on the runways and within the Class D surface area of an airport with an operational control tower. The students will apply correct phraseology, rules, and procedures from FAAO 7110.65. They will interpret and apply radar data using the ADSE display. The class will use laboratory simulation of real-time air traffic movement.

Corequisite: AVTR 49100

AVTR 49500 - Internship in Transportation Administration (3)

This internship is designed to provide on-the-job experience in an appropriate transportation agency. Students are supervised by the agency, and their progress is monitored by the department. Students must submit a report on the internship experience.

AVTR 49600 - Air Traffic Control Internship (3)

This internship is designed to provide students with on-the-job experience and skill sets in an appropriate aviation agency. Students are supervised by the agency, and their progress is monitored by the department.

Three credit hours are earned at the satisfactory completion of all the requirements of the internship. The student must submit a report on the internship experience.

AVTR 49800 - Internship or Field Placement (0-3)

This internship is designed to provide students with on-the-job experience in an aviation/aerospace industry or a government agency. Students are supervised by the organization with which they are doing the internship and their progress is also monitored by the department. Students may earn a maximum of three hours of credit upon completion of the internship and submission of an intern paper or report.

Class Restrictions: Must be enrolled in one of the following Classes:
Junior or Senior.

AVTR 49900 - Independent Study (1-3)

This course is designed to meet the needs of majors in Department of Aviation and Transportation programs who want to study an advanced topic not found in regular courses.

Class Restrictions: Must be enrolled in one of the following Classes:
Junior or Senior.