

Hampton University
School of Engineering & Technology
Aviation Department Course Offerings

AVN 151-152 Aviation Seminar I & II Lec 1./Credit 1. This is a two semester course required for all Aviation majors. Its purpose is to prepare new students for the university experience and success in the Aviation program by discussing students' responsibilities, career opportunity, writing for Aviation industry, and the use productivity technology.

AVN 153 Aviation Foundations I Lec. 3./Credit 3. Provides an overview of aviation, and introduces students to the many opportunities and challenges of the profession. The course covers the fundamentals of flight aerodynamics and technology, and an introduction to aircraft systems and operations. Also, safety of flight, human factors, aeronautical chart interpretation, basic navigation, an introduction airspace, and aviation weather factors are covered.

AVN 154 Aviation History Lec. 3/Credit 3. Provides the history of aviation through an in-depth study of flight and focus on the development of civil, commercial, and military aviation. The course covers noteworthy events and people throughout aviation history from the first flight through present day developments.

AVN 162 Private Pilot Skill Enhancement Lec. 3./Credit 3. Preparation for the successful completion of the Federal Aviation Administration's Private Pilot written and practical examinations. Includes flight maneuvers, practical test standards, flight environment procedures, general aviation aircraft systems, practical navigation and weather, air traffic control communications, and Federal Aviation Regulations. Students are required to pass the Federal Aviation Administration Private Pilot knowledge test. Co requisite: AVN 163.

AVN 163 Private Pilot Laboratory I Lab 8. /Credit 1. First of a two-semester flight laboratory, which includes dual flight instruction in basic private pilot maneuvers, solo flight, introduction to cross-country navigation, pre-flight procedures, pilot decision making, and safety. Students must acquire a minimum of 25 flight hours and complete a solo flight. Co requisite: AVN 112. Flight fees: approximately \$3500.

AVN 164 Private Pilot Laboratory II Lab 8. /Credit 1. Second of a two-semester flight laboratory, which includes dual flight instruction in advanced private pilot maneuvers, cross country navigation, competency in communicating with air traffic control, flight planning. Students must pass the Federal Aviation Administration's Private Pilot flight examination and receive appropriate certification. Flight fees: approximately \$3500.

AVN 165 Instrument Skill Enhancement Lec. 3./Credit 3. Preparation for the FAA Instrument written examination. Includes concepts and procedures of instrument and weather flying, IFR procedures and FAA regulations, radio navigation, and instrument approaches.

AVN 167 Instrument Rating Laboratory I Lab 8./Credit 2. Flight instruction in preparation for completion of requirements for the FAA Instrument Rating. Includes attitude instrument flying, basic instrument flight patterns, partial panel, VOR procedures, DME arcs, GPS and ADF procedures, localizer tracking and holding. Co-requisite: AVN 165. Flight fees: approximately \$4000.

AVN 168 Instrument Rating Laboratory II Lab 8./Credit 2. Flight instruction in preparation for completion of requirements for the FAA Instrument Rating. Includes: VOR/VOR-DME approaches, GPS and ADF approaches, localizer and ILS instrument approaches, cross-country procedures and emergencies, maneuvers review and FAA Practical Test. To successfully complete this laboratory, the FAA Instrument Rating must be earned. Prerequisite: AVN 315. Flight fees: approximately \$4000.

AVN 170 ATC Foundation w/lab Lec 3./Credit 3. This course is a progressive foundational introduction to air traffic control. It focuses on the interpretation of the FAA orders and regulations that govern the air traffic control system, roles and responsibilities of control positions, concepts of spacing, sequencing, and separation, visual and radar traffic patterns, communication, terminology, and principles of ATC procedures. This course includes phraseology and communication lab. Lab fee \$250.

AVN 181 Introduction to Airport Systems Lec. 3./Credit 3. A foundational study of airport operations and systems and includes analysis of the role of the airport manager in planning, finance and administration, public relations, social, political, and environmental considerations, operational requirements and facility maintenance.

AVN 201 Flight Safety Lec. 3./Credit 3. Factors and procedures relating to aviation safety, techniques for accident prevention, procedures used in accident investigations, the human factors (physiological and psychological), the effect of weather.

AVN 254 Crew Resource Management Lec. 3./Credit 3. Techniques for enhancing teamwork, interpersonal communications and relationships, leadership, and coping strategies in the professional aviation environment. Included are the recognition of human behavior that affects the safety of aviation operations, such as anger, stress, and fatigue, and the strategies to handle those behaviors.

AVN 253 Aviation Foundations II Lec. 3./Credit 3. Provides a continuation overview of aviation, and expands student's overview to the many opportunities and challenges of the profession. The course includes a review of modern and current aviation, fundamentals of flight aerodynamics and technology, and an introduction to aircraft systems and operations. Also, safety of flight, human factors, aeronautical chart interpretation, basic navigation, an introduction to air traffic control and airspace, and aviation weather factors are covered.

AVN 251-252 Aviation Seminar III & IV Lec 1./Credit 1. This is a two semester course required for all Aviation majors. Its purpose is to prepare students to technical writing for research in Aviation. This course will introduce students to research methodology and design, proposal preparation, data gathering and source documentation.

AVN 261 Commercial Pilot Skill Enhancement Lec. 3./Credit 3. Preparation for the FAA Commercial Pilot written exam and Commercial Pilot Certification. Includes advanced aerodynamics, aircraft performance, precision maneuvers, extended cross-country and night flight, FAA regulations, introduction to advanced systems, and transition to more sophisticated aircraft.

AVN 263 Commercial Pilot Laboratory I Lab 8./Credit 2. Flight instruction in preparation for FAA Commercial Pilot Certification. Includes: maneuvers and landings review, introduction to complex airplanes, commercial performance flight maneuvers, cross-country navigation review, day and night solo cross country navigation, and instrument review. A total of 60 flight hours should be flown to complete this laboratory.

AVN 264 Commercial Pilot Laboratory II Lab 8./Credit 2. Flight instruction in preparation for FAA Commercial Pilot Certification. Includes advanced aerodynamics, aircraft performance, precision maneuvers, extended cross-country and night flight in complex airplanes, FAA regulations, introduction to advanced systems, and complex maneuvers review in preparation for the FAA practical (flight) check. To successfully complete this laboratory, the FAA Commercial Pilot Certificate must be earned.

AVN 265 Commercial Pilot Laboratory III Lab 8./Credit 1. This flight laboratory is for students who are entering a military flight-training program after graduation. The lab includes: maneuvers and landings review, and FAA qualification in complex airplanes. A complex aircraft log book endorsement by an authorized instructor and a minimum of 10 flight hours in complex aircraft must be flown to complete this laboratory.

AVN 271 Terminal Operations I w/lab Lec. 3./Lab 2./Credit 5. Fundamental terminal operations utilizing radar procedures and equipment. Includes control and separation of aircraft in the terminal area with emphasis on the safe, expeditious flow of arriving and departing traffic transitioning between enroute centers and the control tower environment. Also the significance and use of Low and High Altitude Enroute Charts and Approach Procedures and the hemispheric cruising altitude rules. Utilizes radar air traffic control simulators by which students will apply their knowledge, skill, and understanding of terminal procedures. Lab fee \$250.

AVN 272 Tower Operations I w/lab Lec. 3./Lab 2./Credit 5. This course thoroughly covers air traffic control tower procedures, phraseology, aircraft separation on same and intersecting runways, airport traffic patterns, aircraft recognition, and control tower positions, responsibilities, and equipment. Laboratory simulations utilizing an airport layout and control tower cab mockup to support fundamental tower operations comprising taxi, takeoff and landing of aircraft. Includes phraseology, procedures, and separation of aircraft flying under visual conditions. Lab fee \$250.

AVN 281 Airport Operations I Lec. 3./Credit 3. This course is a comprehensive study of airport landside operations. Topics covered are airport operating categories, understand the role of terminal and passenger area security, FAA regulations and inspection programs including PART 139, Airport Certification Manual, and TSA. This course includes a focus on airport communication and business operations.

AVN 282 Airport Operations II Lec. 3./Credit 3. This course is a comprehensive study of airport airside operations. Topics covered are airfield inspection programs, snow removal, airfield security, environmental factor affecting airports, wildlife control, and pavement maintenance in accordance with appropriate regulations. This course includes practical application of airfield functions.

AVN 290 Introduction to Unmanned Aircraft Systems Lec 3./Credit 3. An introduction to the fundamentals of unmanned aircraft systems (UAS), including their developing role in the modern aviation industry. Topics include an introduction to structural elements, avionics, flight control and guidance systems, navigation, remote sensing, human factors and integration into commercial and military airspace. Emphasis is on future employment in the field with a focus on commercial airspace.

AVN 351-352 Aviation Seminar V-VI Lec 1./Credit 1. This is a two semester course required for all Aviation majors. This course includes active engagement aviation research and an in-depth involvement in research methodology and design, data gathering techniques, data analysis, and technical writing.

AVN 353 Aviation Management Lec. 3./Credit 3. A holistic view of management requirements and techniques applicable to the aviation industry; problems, current issues and future trends related to aviation operations. Includes management and organizational styles as applied to the industry, changes in the National Airspace System, managerial problems unique to the industry, and proposed acquisition of equipment under the Capital Investment Plan.

AVN 354 Aviation Legislation Lec. 3./Credit 3. This course is survey of legal concepts concerning aviation as related to operation, contracts, insurance and liability, regulating statutes, and case law. Topics include tort law, FAA regulation, and commercial/business law relative to the aviation industry.

AVN 356 Air Transportation Lec. 3./Credit 3. Survey of historical developments of and current issues within the air transportation system covering facilities, impact of regulations, problems encountered in commercial air transportation, future requirements, airline operations, economics, and social implications.

AVN 361 Certified Flight Instructor Lec. 3./Credit 3. This course is preparation for the FAA Flight Instructor Certificate. Topics include flight instruction methodology, instructor responsibilities, and flight maneuvers necessary for instructing private and commercial students.

AVN 363-364 Certified Flight Instructor Laboratory I & II Lab 8./Credit 1. This is a two semester flight lab course to prepare students FAA Flight Instructor Certificate examination. Topics include flight instruction methodology, instructor responsibilities, lesson plan development and presentation, and flight maneuvers necessary for instructing private students.

AVN 371 Terminal Operations II w/lab Lec. 3./Lab 2./Credit 5. This course prepares students for advanced terminal operations utilizing radar and non-radar procedures and separation. It includes emergency radar procedures, operations within Class B and C airspace, simultaneous parallel runway operations, and the utilization of the more complex airspace around larger airports and satellite airports. Students will complete advanced laboratory simulations in support to apply knowledge and understanding of complex radar procedures, and the ability to safely control traffic in a terminal environment. Lab fee \$250.

AVN 372 Non-Radar I w/lab Lec./Lab 3./Credit 3. This course prepares students for the application of basic non-radar procedures. Topics include transitioning from a radar to a non-radar environment, non-radar air traffic control rules, regulations and procedures, non-radar separation criteria and procedures. Students will apply non-radar procedures to simulated traffic situations in the laboratory. Lab fee \$250.

AVN 381 Airport Finance Lec. 3/Credit 3. This is designed to improve students' understanding of the air transportation system, and analyze current financial industry trends and how they impact an airport. Students will examine the importance of implementing strong management control systems and learn how to successfully forecast your business and evaluate the benefits of efficient customer service and how it relates to a successful pricing strategy. Topics include, assessing financial performance and forecast demand, managing shareholder relations, privatization and re-structuring options, the needs of customers, and the industry's financial trends and their impact on strategy and operations.

AVN 382 Airport Planning Lec. 3/Credit 3. A managerial level course focused on the principles of airport planning with emphasis on federal, state, and municipal interactions. This course covers essential elements of current airport planning trends, including airport master planning and layout plans, financial sustainability, and environmental planning, such as hazardous wildlife issues, airport noise, and compatible land use. Students will be introduced to the organizational, political, and financial administration of public and private civil use airports.

AVN 394 Homeland Security Lec 3./Credit 3. This course focuses on the consolidation of responsibilities and functions across agencies, at various jurisdictional levels, that have the charge of mitigating hostilities, threats, hazards, and consequences. This course is designed to develop analytical skills that will prepare students to identify, evaluate and resolve complex policy issues and initiate practical actions in the aviation industry.

AVN 450 Crew Resource Management II Lec. 2./Lab 2./Credit 3. This course is a survey of advanced strategies for the use of controller resources and communications abilities in an air traffic control environment. Students will demonstrate their abilities to fully use the human and hardware resources available to them. The course presumes technical proficiency and focuses on the interactive skills necessary to be a successful controller. Includes identification of available crew resources, effective resource management strategies, teamwork, leadership and managerial skills. Emphasis is placed on coping with specific controller-controller, supervisor-controller, and controller-pilot scenarios and transferability of these skills to the work place. Prerequisite: permission of the instructor and physical ability.

AVN 451 Cooperative Work Study Credit 3-12. This a work study program under the agreement with an organization within the aviation industry. Students must meet eligibility requirements and be recommended by the Department Chair.

AVN 452 Airline Operations Lec. 3./Credit 3. A managerial-level course centering on expertise required for airline operations, including flight dispatching, high altitude weather, crew teamwork, high altitude operations, crew and passenger safety, and high density airport operations. The course is designed for students intending to seek flight or ground career opportunities within the airline industry.

AVN 453 Special Topics in Aviation Lec. 3./Credit 3. A treatment of advanced topics of interest in aviation not routinely covered by existing courses. May be repeated when topics vary. Prerequisite: Permission of the department chair and course instructor.

AVN 454 Senior Practicum/Capstone Sem./Project./Credit 3. Designed as a capstone course for all aviation courses of study. Emphasis will be placed upon participating in an assessment designed for the student's area of study which may include any or all of the following: comprehensive oral and/or written examination, comprehensive project, FAA or other industry certification, independent research project, or assigned by academic adviser and approved by department chair.

AVN 455 Aviation Research Sem./Prj./Credit 3-6. Designed as an advanced study course for students serving as research assistant or awarded research scholarship. Emphasis will be placed upon participating in an independent research project with a designated research mentor. The student will produce a publication quality research report or thesis. Prerequisite: Consent of the research mentor and approved research proposal.

AVN 460 Certified Flight Instructor (Instrument) Lec. 3./Credit 3. Preparation for the FAA Instrument Flight Instructor Certificate. Includes presentation of methodology used in teaching instrument flight. Prerequisites: AVN 321 and 345.

AVN 463 Advanced Aircraft Systems Lec. 3./Credit 3. In-depth discussion of electrical, mechanical, hydraulic, environmental and electronic systems on aircraft, design and performance standards, capabilities and limitations, and conformance to FAA specifications. Includes crew concept procedures, cockpit resource management, and emergency procedures.

AVN 464 Advanced Aerodynamics and Aircraft Performance Lec. 3./Credit 3. Advanced theories of flight and flight factors, including air-foil shape, drag, velocity, lift and thrust, stability and control; advanced principles of performance, including capabilities and limitations, performance and design criteria, load factors, weight and balance charts, comparative analysis of aircraft, and certification of aircraft.

AVN 470 Air Traffic Management Lec 3./Credit 3. This course introduces students to the NextGen environment, an evolution from ground-based system of air traffic control to a satellite-based system of air traffic management. Topics covered include NextGen technologies, data networking, digital communication, airport infrastructure and decision making responsibility from ground to cockpit.

AVN 471 Non-Radar II w/lab Lec./Lab 3./Credit 3. Non-radar air traffic control rules, regulations and procedures as utilized by the FAA Academy's controller screen. Includes separation criteria and procedures peculiar to the Academy. Students will apply non-radar procedures to simulated traffic situations in the laboratory. This course is designed for those students who wish to pursue a career as air traffic controllers with the FAA, and should be taken as close to graduation as possible. Students registering for this course are required to contact the department prior to the beginning of the semester to obtain a copy of the associated airspace which must be committed to memory no later than the first class period.

AVN 480 Airport Design Lec. 3/Credit 3. A managerial level course focused on the principles of airport design. This course covers essential elements of airport design trends, including geometric design and layout of the airfield and terminal facilities, obstruction analysis, signage and lighting, forecasting, airside and landside interface, and capacity and delay effects. This course also focuses on environmental design issues, such as local wildlife habitats and hazards, noise abatement issues, and land use. Students will study the airport design elements as they relate to safety and security, economic impacts of airport operations, airport performance standards, and current political trends and issues of direct concern to airport operations such as regulations of the Department of Homeland Security, the Transportation Security Administration, and the Federal Aviation Administration.

AVN 481 Concepts of Air Transportation Utilizations Lec. 3./Credit 3. This course is a study of factors involved in the effective utilization of aircraft in the transportation of passengers and cargo, including aircraft design and cost effectiveness, operational and marketing consideration, depreciation and suitability