

# ASC: Aviation Science: General Courses

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## **ASC 1210 Aviation Weather**

College of Business, Department of Department of Commerce

3 sh (may not be repeated for credit)

Meteorology for flight students and aviation professionals. Includes weather services and products and the identification of potentially hazardous in-flight weather conditions. Also addresses atmospheric circulation, stability, convection, moisture, air masses and fronts. Covers cross country weather planning procedures. Also covers synoptic weather systems and basic prediction techniques for flight planning and seasonal weather patterns and associated hazardous flying conditions.

## **ASC 1610 Aircraft Engines, Structures, and Systems**

College of Business, Department of Department of Commerce

3 sh (may not be repeated for credit)

Covers theory and operating characteristics of modern transport aircraft systems, including engine, fuel, electric, hydraulic, pneumatic, flight control, environmental and computer systems and displays. Presents the details of aircraft systems specific to light general aviation aircraft. Includes reciprocating aircraft engines, propellers systems, airframe, flight controls, landing gear systems, electrical systems, de-ice/anti-ice systems and pressurization/environmental control systems. The course will enhance the students' understanding of basic aircraft systems to include constant speed propellers, retractable landing gear, autopilots, flight directors, fuel systems and electrical systems.

## **ASC 3111 Advanced Navigation**

College of Business, Department of Department of Commerce

3 sh (may not be repeated for credit)

This course provides academic background for pilots preparing for the FAA Commercial Pilot license and FAA Instrument rating. The course will cover basic visual navigation, (pilotage and dead reckoning), instrument navigation, use of Global Positioning Systems and an introduction to Flight Management Systems. A Private Pilot Certificate is required to enroll in this course.

## **ASC 3322 Aviation Law and Regulations**

College of Business, Department of Department of Commerce

3 sh (may not be repeated for credit)

Overviews the fundamentals of aviation law. Emphasizes factors guiding operational decision making by aviation managers and professional pilots to minimize exposure to legal liability. Covers federal U.S. air carrier regulation and considers international differences including various treaties and agreements and the structure and operation of the International Civil Aviation Organization (ICAO). Also covers aviation accident litigation and legal aspects associated with aviation business models and organizations.

## **ASC 3554 Applied Aerodynamics and Propulsion**

College of Business, Department of Department of Commerce

3 sh (may not be repeated for credit)

Prerequisite: ASC 1610

Presents fundamental aeronautical factors that affect aircraft design and performance. The course covers the basic principles of flight theory in both low and high-speed regimes. Major topics include atmospheric properties, airflow theory, airfoil design, lift, drag, thrust, aircraft performance, stability and control, operating strength limitations, and aerodynamics of specific flying problems including stall/spin aerodynamics and recovery.

## **ASC 3567 Unmanned Aerial Vehicles: Systems and Operations**

College of Business, Department of Department of Commerce

3 sh (may not be repeated for credit)

This course provides an overview of Unmanned Aircraft Systems (UAS) and Unmanned Aerial Vehicles (UAV). Topics include the development and history of UAS, current and upcoming operational regulations, airspace classifications, sources of weather, loading and performance, radio communications, airport operations, maintenance and inspection procedures, industry and societal implications, career outlooks, ethical considerations, and basic components required to operate a UAS. The course will also introduce hands-on UAV flight and operation principles through actual flight and computer simulation. All training is conducted in accordance with Federal Aviation Regulations (FAR) Part 107. Requires FAA remote pilot certificate to enroll.

## **ASC 3672 Avionics and Display Systems**

College of Business, Department of Department of Commerce

3 sh (may not be repeated for credit)

Prerequisite: ATF 2306L

The learner is introduced to electronic flight display systems and multifunction displays. Includes working with advanced GPS navigation systems and digital engine monitoring. The learner will also get exposure to technologically advanced aircraft including flight directors and autopilot systems along with synthetic vision. The course will also involve exposure to aircraft simulation and its use in aviation training. Textual materials include the FAA Advanced Avionics Handbook and documentation from various avionics manufacturers.

## **ASC 3872 Aviation Safety**

College of Business, Department of Department of Commerce

3 sh (may not be repeated for credit)

Explores the historical roots of modern safety organizations and the safety responsibilities and operations of the FAA and the NTSB. Detailed coverage of factors pertaining to aviation operations including aviation safety planning, weather and accidents. Presents civil aviation security measures required of all airports and airlines engaged in international civil aviation operations and includes international and U.S. regulatory requirements, current security issues, threat analysis and technological developments. Introduces the field of engineering psychology (ergonomics) that examines the interaction of humans and machines. The course encompasses a wide range of knowledge, skills and attitudes including communications, situational awareness, problem solving, decision making, and teamwork. Examines Crew Resource Management (CRM) defined as a management system which makes optimum use of all available resources; equipment, procedures, and people to promote flight safety and enhance the efficiency of flight operations.

**ASC 4460 Human Factors and Crew Resource Management**

College of Business, Department of Department of Commerce

3 sh (may not be repeated for credit)

Prerequisite: ASC 3872

This course focuses on the interaction between humans and machines in the flight environment. Topics include human factors principles, human performance limitations, and the role of automation in aviation. Communication, situation awareness, problem-solving, decision-making, and teamwork are explored within the context of human aviation interactions. Human behavior and cognitive biases are also discussed.