

## **Course Description**

### **ASC 1210 Aviation Meteorology**

This is a core aviation course. The student will be prepared to understand weather and environmental issues in commercial aviation. Topics covered will be atmospheric phenomena relating to aircraft operations, the analysis and use of weather data as presented by the U.S. National Weather Service. Prerequisite: ATT1100 or equivalent; corequisite: ATT2110 or equivalent.

### **Course Competencies:**

**Competency 1:** The student will demonstrate knowledge and understanding of aviation meteorology by:

1. Describing the composition of the atmosphere and the transfer of atmospheric energy.
2. Demonstrating an understanding of pressure as it relates to altitude and density, as well as its measurements of the atmosphere
3. Discussing and demonstrating an understanding of the general atmospheric circulation and the fundamental causes of wind
4. Analyzing the vertical motions of air in the atmosphere and calculating problems dealing with adiabatic lapse rates
5. Explaining the causes and effects of state changes between water, as well as the different types of precipitation, and the formation and dissipation of clouds
6. Examining and understanding macroscale systems, mesoscale systems, and atmospheric circulation.
7. Describing the characteristics of thunderstorms, including their formation, associated hazardous weather, and avoidance procedures
8. Distinguishing the various local wind patterns, including thermally driven local
9. Winds and externally driven local winds
10. Demonstrating knowledge of various other weather-related hazards to aviation operations, including wind shear, turbulence, icing, and instrument meteorological conditions

**Competency 2:** The student will analyze, interpret, and decode various weather reports, charts, forecasts, and documents from the US Weather Bureau and/or the National Weather Service, including by:

1. Identifying station reports (METAR), terminal aerodrome forecasts (TAF), area forecasts (FA), surface analysis charts, weather depiction charts, radar summary charts, low-level and high-level significant weather prognostic charts, winds and temperatures aloft charts
2. Analyzing constant pressure charts, aeronautical meteorological reports (AIRMETS), and significant meteorological reports (SIGMETS)
3. Informing convective SIGMETS and notices to airmen (NOTAM) and pilot reports (PIREP)

**Competency 3:** The student will demonstrate and produce reasoned, critical responses to common concerns in aviation meteorology by:

1. Discussing the various sources of weather information available to the pilot and the agencies that collect and distribute pertinent weather information
2. Describing the limitations of the aviation forecasts and reports used in flight planning
3. Collecting a standard weather briefing for a pre-planned flight and decoding the pertinent information to make a competent go/no-go decision as a pilot in command of a civilian aircraft

### **Learning Outcomes:**

- Communicate effectively using listening, speaking, reading, and writing skills
- Use quantitative analytical skills to evaluate and process numerical data
- Solve problems using critical and creative thinking and scientific reasoning