



In partnership with The FAA Weather Technology in the Cockpit (WTIC) NexGen Program



WeatherXplore Course

Course Outline

Lesson 1: Carburetor Icing

Air temperature and humidity plays a huge role in aircraft performance. In regard to the engine, Carburetor icing is a common, dangerous, and in most instances, avoidable issue. This lesson covers:

- What carburetor icing is.
- At what temperatures and relative humidity levels it is most likely to occur.
- The impact of carburetor icing on engine performance.

Lesson 2: Variable Wind & Sudden Wind Shift

Variable and sudden wind shifts are especially dangerous when the aircraft is low and slow (such as when taking off or on final approach) as there is little room for recovery if the critical angle of attack is exceeded. This lesson covers:

- The difference between sudden and variable wind shifts and overall impact on aircraft performance.
- Windshear/Microbursts considerations and performance implications.

Lesson 3: AIREPS & PIREPS

Pilot reports (both automated and those reported by the pilot to ATC or FSS) are very important for flight planning purposes, especially in areas where limited weather reporting equipment exists. *This lesson covers:*

- What AIREPS and PIREPS are, and associated designations.
- Why PIREPs are important, and how they play a role in the bigger picture.
- When a PIREP should be made.

Lesson 4: Density Altitude

Density altitude plays a huge role in aircraft performance, both in regard to the engine and the airfoil. It is therefore critical for a pilot to have a thorough understanding of Density Altitude in order to ensure the safety of the flight. *This lesson covers:*

- What density altitude is and the variables that determine it.
- Prediction techniques & risk mitigation factors.
- How to calculate density altitude.

Lesson 5: Low Ceilings & Mountain Obscuration

A pilot can easily find themselves pushing the weather, flying lower and lower in hopes of finding better weather on the other side. This is a very common and often deadly hazard in General Aviation. It is therefore very important that pilots are able to identify this hazard and take immediate corrective action. *This lesson covers:*

- What causes low ceilings and mountain obscuration.
- Risks associated with flying in these conditions.
- Hazard recognition and mitigation.

Lesson 6: Thunderstorm Life Cycle

Thunderstorms and airplanes don't mix. There are obvious hazards associated with thunderstorms such as hail, strong winds, and lightning. *This lesson covers:*

- The stages of a thunderstorm.
- When thunderstorms are most hazardous to flight safety.
- Factors to be aware of and risk mitigation techniques.

Lesson 7: Graphic Area Forecast Tool

The Federal Aviation Administration has a great new interactive tool to increase pilot situational awareness in regard to weather for flight planning purposes. *This lesson covers:*

- What the Graphic Area Forecast (GFA) tool is, and how it works.
- GFA Tool limitations.
- Tips & Tricks to incorporate this tool into your flight planning.

Lesson 8: Center Weather Advisories

Center Weather Advisories, or "CWAs" serve as a warning to pilots and air traffic controllers about hazardous conditions over large areas. *This lesson covers:*

- What CWAs are.
- Conditions which will result in the issuance of a CWA.
- How CWAs are reported to pilots.

Lesson 9: Temperature – Dewpoint Spread

Temperature – Dewpoint spread plays a large role in determining the type of weather and visibility that can be expected for a given location. *This lesson covers:*

- What Temperature – Dewpoint spread is and how it affects weather.
- How moisture is added to the atmosphere.
- How Temperature – Dewpoint spread can be used for flight planning.

Lesson 10: Graphical AIRMETs & Convective SIGMETs

AIRMETs and SIGMETs serve as meteorological advisories to pilots about weather conditions over a defined area. *This lesson covers:*

- Types of AIRMETs and when they are issued.
- Types of SIGMETs and when they are issued.
- Duration of issuance.