

STRANDS AND STANDARDS

AVIATION WEATHER



Course Description

Aviation Weather will give students the knowledge related to the Private Pilot's License and prepare them for careers in aviation. Areas of study will include atmosphere, weather patterns, weather hazards, and pilot weather products.

Intended Grade Level	9-12
Units of Credit	0.5
Core Code	40.11.00.00.134
Concurrent Enrollment Core Code	N/A
Prerequisite	N/A
Skill Certification Test Number	N/A
Test Weight	N/A
License Area of Concentration	CTE and/or Secondary Education 6-12
Required Endorsement(s)	
Endorsement 1	Aviation-Flight
Endorsement 2	N/A
Endorsement 3	N/A

STRAND 1

Students will understand the composition and elements of the Earth's atmosphere.

Standard 1

Elements and composition of Earth's atmosphere

- Describe basic elements and gas composition of the atmosphere.
- Differentiate the layers in the atmosphere.
- Explain stability and lapse rates and how they affect aviation.

Standard 2

Cloud formations and locations

- Identify cloud formations and weather associated with each type:
 - Stratiform
 - Cirriform
 - Stratocumuliform
 - Cumuliform
 - Cumulonimboform
- Describe cloud classifications (genus) and location of each:
 - Cirro-
 - Alto-
 - Cumulo-
 - Nimbo-
 - Strato-

Standard 3

Atmospheric pressure and gas laws

- Understand atmospheric pressure.
- Describe gas laws relating to the atmosphere.

Standard 4

Atmospheric moisture

- Discuss relationship between temperature moisture (dew point), and precipitation.
- Describe fog formation and impacts to aviation.

STRAND 2

Students will understand properties of cold and warm air masses.

Standard 1

Moving air masses

- Describe weather fronts and associated weather patterns:
 - Cold Front
 - Warm Front
- Understand boundary layers and related winds.
- Describe hazards of Low-Level Wind Shear.

Standard 2

Define and identify hazards of Airframe Icing.

Standard 3

Define turbulence and associated hazards.

- Describe hazardous winds including mountain winds.

Standard 4

Identify thunderstorms and associated hazards.

STRAND 3

Students will become familiar with common aviation weather information sources.

Standard 1

Read basic aviation weather information sources:

- Terminal Aerodrome Forecast (TAF)
- Meteorological Aerodrome Report (METAR)
- Pilot Report (PIREP)

Standard 2

Describe and read weather advisories.

- Significant Meteorological Information – SIGMET
 - Convective
 - Non-convective
- Airmen Meteorological Information – AIRMET
- Convective Weather Information – CW
- Analyze Upper Winds and Temperatures.

Standard 3

Read aviation weather charts

- Surface charts
- Upper air charts
- Significant weather charts.

STRAND 4

Students will be able to describe other weather phenomena hazardous to aviation and interpret weather radar data.

Standard 1

Describe weather hazards associated with hurricanes.

Standard 2

Understand impacts of space weather.

Standard 3

Describe the hazards of volcanic ash to aviation.

Standard 4

Understand the causes and hazards of sand/dust storms.

Standard 5

Read satellite imagery.

Performance Skills

- Read a basic METAR/TAF/Prog Chart/Winds Aloft/PIREP
- Make a go/no go decision for flight based on weather data
- Explain weather associated with cold or warm fronts
- Calculate windspeed and direction from flight data
- Identify cloud formations approximate levels

Workplace Skills

Students will develop professional and interpersonal skills needed for success in industry. Determine the difference between hard skills and soft skills.

- **Hard Skills:** Hard skills are specific, teachable abilities that can be defined and measured
- **Soft Skills:** Personal attributes that enable someone to interact effectively and harmoniously with other people.

Identify soft skills needed in the workplace

- Professionalism
- Respect legal requirements/expectations
- Good communication skills
- Resourcefulness & creativity
- Work ethic