



MERCER
COUNTY COMMUNITY COLLEGE

COURSE OUTLINE

Course Number AVI 105	Course Title Aviation Weather	Credits 3
Hours: 3 Lecture	Co- or Pre-requisite: None	Implementation Fall 2023

Catalog description:

Analysis of aviation weather applicable to professional commercial pilots. Topics include weather hazards including thunderstorms, turbulence, wind shear, restrictions to visibility, icing and hydroplaning. Weather services available along with details of coded weather reports, forecasts, weather charts and prognostic charts are explored and applied in class for flight planning and in-flight decision-making.

General Education Category:
Not GenEd

Course coordinator:
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Required texts & Other materials:

1. Aviation Weather Handbook by FAA – Free download (ASA hardcopy 1644252961)

Optional

1. Aviation Weather by Peter F. Lester, 4th Edition (ISBN 0884875946)

https://www.faa.gov/regulations_policies/handbooks_manuals/aviation

Course Student Learning Outcomes (SLO):

Upon successful completion of this course the student will be able to:

1. Utilize aviation weather services to interpret aviation weather information [Supports ILGs #4 and #11; PLOs #1 and #4]
2. Describe various weather phenomenon and theory applicable to aviation [Supports ILGs #2, #3, #4 and #11; PLOs #1, #4, and #5]
3. Read and interpret aviation weather products and aviation weather tools [Supports ILGs #3, #4 and #11; PLOs #1, #4, and #5]
4. Apply aviation weather theory to interpreted aviation weather products, forecasts, and tools to make critical weather decisions [Supports ILGs #2, #3, #4 and #11; PLOs #1, #4, and #5]

Course-specific Institutional Learning Goals (ILG):

Institutional Learning Goal 2. Mathematics. Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.

Institutional Learning Goal 3. Science. Students will use the scientific method of inquiry, through the acquisition of scientific knowledge.

Institutional Learning Goal 4. Technology. Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.

Institutional Learning Goal 11. Critical Thinking: Students will use critical thinking skills understand, analyze, or apply information or solve problems.

Program Learning Outcomes for Aviation Technology (PLO)

Students will be able to:

1. Demonstrate the knowledge and skills required to obtain the private and commercial certificates and instrument rating, including aeronautical technical skills and decision making, while demonstrating safety as their primary focus.
4. Demonstrate effective and correct written and verbal communication.
5. Research and present information pertinent to their aviation discipline individually and in groups.

Units of study in detail – Unit Student Learning Outcomes:

Unit I **[Aviation Weather Service Program and Information]** [Supports Course SLO #1]

Learning Objectives

The student will be able to:

- Explain the Aviation Weather Service Program and Aviation Weather Information

Unit II **[Weather Theory and Aviation Hazards]** [Supports Course SLOs #2 and #4]

Learning Objectives

The student will be able to:

- Explain the earth's atmosphere, heat and temperature, water vapor, heat imbalances, atmospheric pressure and altimetry, global circulations and jet streams, and wind
- Explain the various air masses, fronts, vertical motion and clouds, atmospheric stability, and precipitation.
- Explain the principles of weather radar
- Explain mountain weather, tropical weather, and arctic weather
- Explain weather and obstructions to visibility
- Explain turbulence and icing
- Explain thunderstorms
- Explain space weather

Unit III **[Weather Products and Aviation Weather Tools]** [Supports Course SLOs #3 and #4]

Learning Objectives

The student will be able to:

- Read and interpret weather observations
- Analyze weather charts and various analysis products
- Read and interpret various weather advisory products
- Read and interpret aviation weather forecasts
- Analyze Aviation Weather Tools

Evaluation of student learning:

30% - minimum of 3 in-class tests

40% - minimum of 3 journals

30% - final exam

All units must be completed to attain a grade