



## Course Information

<b>Division</b>	Science/Mathematics
<b>Contact Hours</b>	75
<b>Lecture Hours</b>	45
<b>Lab Hours</b>	30
<b>Total Credits</b>	4

## Prerequisites

English 090, Reading 090 and MATH 090 or qualifying score on accepted placement tests

## Course Description

This course provides an introduction to atmospheric processes that create daily weather patterns. Students will study topics such as heat and energy, daily and seasonal temperatures, humidity, cloud development and precipitation types, air pressure and winds, development of pressure systems and fronts, weather forecasting and severe weather. Additionally, special emphasis on local weather patterns, climatology and climate change will be discussed.

**This course is approved as a General Education competency satisfier.**

**General Education Goal:** Critical Thinking

**Competency:** Understand the elements of scientific inquiry and scientific principles in a natural science college laboratory course setting.

**Learning Outcome:** Students will use the scientific method to define a problem, utilize appropriate methods to solve the problem, and propose and evaluate a solution to the problem.

## General Education Learning Objectives

- A. Observe and describe natural phenomena and formulate hypotheses.
- B. Plan and implement scientific experiments to test hypotheses.
- C. Utilize scientific laboratory skills for data collection within a college laboratory setting.
- D. Evaluate experimental data and propose solutions based on this data.
- E. Evaluate the proposed implications of a solution.



#### Course Outcomes

In order to evidence success in this course, the students will be able to:

1. Identify the composition of the atmosphere and diagram the different layers.  
Applies to General Education Objectives
  - A. Observe and describe natural phenomena and formulate hypotheses.
  
2. Recognize pressure systems and fronts on a surface weather map.  
Applies to General Education Objectives
  - A. Observe and describe natural phenomena and formulate hypotheses.
  - B. Utilize scientific laboratory skills for data collection within a college laboratory setting.
  
3. Measure components of the atmosphere, including temperature, humidity, air pressure and wind.  
Applies to General Education Objectives
  - A. Observe and describe natural phenomena and formulate hypotheses.
  - B. Plan and implement scientific experiments to test hypotheses.
  - C. Utilize scientific laboratory skills for data collection within a college laboratory setting.
  - D. Evaluate experimental data and propose solutions based on this data.
  - E. Evaluate the proposed implications of a solution.
  
4. Explain the different modes of heat transfer.  
Applies to General Education Objectives
  - A. Observe and describe natural phenomena and formulate hypotheses.
  
5. Predict influences on daily maximum and minimum temperatures.  
Applies to General Education Objectives
  - A. Observe and describe natural phenomena and formulate hypotheses.
  - B. Plan and implement scientific experiments to test hypotheses.
  - C. Utilize scientific laboratory skills for data collection within a college laboratory setting.
  - D. Evaluate experimental data and propose solutions based on this data.
  - E. Evaluate the proposed implications of a solution.
  
6. Assess how changes in temperature and dew point affect relative humidity.  
Applies to General Education Objectives
  - A. Observe and describe natural phenomena and formulate hypotheses.
  - B. Plan and implement scientific experiments to test hypotheses.
  - C. Utilize scientific laboratory skills for data collection within a college laboratory setting.
  - D. Evaluate experimental data and propose solutions based on this data.
  - E. Evaluate the proposed implications of a solution.



7. Identify the development and structure of different cloud types.  
Applies to General Education Objectives
  - A. Observe and describe natural phenomena and formulate hypotheses.
  - B. Utilize scientific laboratory skills for data collection within a college laboratory setting.
  
8. Distinguish between different types of fog.  
Applies to General Education Objectives
  - A. Observe and describe natural phenomena and formulate hypotheses.
  - B. Utilize scientific laboratory skills for data collection within a college laboratory setting.
  - C. Evaluate experimental data and propose solutions based on this data.
  - D. Evaluate the proposed implications of a solution.
  
9. Contrast a stable versus unstable atmosphere.  
Applies to General Education Objectives
  - A. Observe and describe natural phenomena and formulate hypotheses.
  
10. Distinguish between different precipitation types and how each is formed based on the lower atmospheric temperature profile.  
Applies to General Education Objectives
  - A. Observe and describe natural phenomena and formulate hypotheses.
  - B. Plan and implement scientific experiments to test hypotheses.
  - C. Utilize scientific laboratory skills for data collection within a college laboratory setting.
  
11. Demonstrate an understanding of air masses and fronts and their significance to weather forecasting.  
Applies to General Education Objectives
  - A. Observe and describe natural phenomena and formulate hypotheses.
  - B. Plan and implement scientific experiments to test hypotheses.
  - C. Utilize scientific laboratory skills for data collection within a college laboratory setting.
  - D. Evaluate experimental data and propose solutions based on this data.
  - E. Evaluate the proposed implications of a solution.
  
12. Contrast different air mass source regions and properties.  
Applies to General Education Objectives
  - A. Observe and describe natural phenomena and formulate hypotheses.



13. Examine the characteristics of the mid and upper level jet stream flow in terms of large scale weather impacts.

Applies to General Education Objectives

- A. Observe and describe natural phenomena and formulate hypotheses.
- B. Plan and implement scientific experiments to test hypotheses.
- C. Utilize scientific laboratory skills for data collection within a college laboratory setting.
- D. Evaluate experimental data and propose solutions based on this data.
- E. Evaluate the proposed implications of a solution.

14. Utilize currently available technology, including numerical weather models, in terms of creating a short term weather forecast.

Applies to General Education Objectives

- A. Observe and describe natural phenomena and formulate hypotheses.
- B. Plan and implement scientific experiments to test hypotheses.
- C. Utilize scientific laboratory skills for data collection within a college laboratory setting.
- D. Evaluate experimental data and propose solutions based on this data.
- E. Evaluate the proposed implications of a solution.

15. Identify conditions that are favorable for severe weather and tornado development.

Applies to General Education Objectives

- A. Observe and describe natural phenomena and formulate hypotheses.
- B. Utilize scientific laboratory skills for data collection within a college laboratory setting.
- C. Evaluate experimental data and propose solutions based on this data.
- D. Evaluate the proposed implications of a solution.

16. Outline the criteria for a thunderstorm to become severe.

Applies to General Education Objectives

- A. Observe and describe natural phenomena and formulate hypotheses.

17. Interpret Doppler radar and satellite imagery.

Applies to General Education Objectives

- A. Observe and describe natural phenomena and formulate hypotheses.
- B. Plan and implement scientific experiments to test hypotheses.
- C. Utilize scientific laboratory skills for data collection within a college laboratory setting.
- D. Evaluate experimental data and propose solutions based on this data.
- E. Evaluate the proposed implications of a solution.

18. Explain how tornados are formed.

Applies to General Education Objectives

- A. Observe and describe natural phenomena and formulate hypotheses.



MONROE COUNTY  
COMMUNITY COLLEGE

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# Course Outcome Summary

**General Education Satisfier Course**

**MET 151 Introduction to Meteorology & Climate**

19. Outline the stages of hurricane development.

Applies to General Education Objectives

A. Observe and describe natural phenomena and formulate hypotheses.

20. Demonstrate an understanding of local climatology and potential impacts to weather due to climate change.

Applies to General Education Objectives

A. Observe and describe natural phenomena and formulate hypotheses.

B. Plan and implement scientific experiments to test hypotheses.

C. Utilize scientific laboratory skills for data collection within a college laboratory setting.

D. Evaluate experimental data and propose solutions based on this data.

E. Evaluate the proposed implications of a solution.

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By: K. Cooper