South Central College

GEOG 104 Introduction to Weather and Climate

Course Outcome Summary

Course Information

Description This course will serve as an introduction to the basic atmospheric processes described as weather. Topics including atmospheric pressure, winds, temperature patterns, humidity and precipitation, and severe weather phenomena will be examined. The spatial distribution of global climates and climate change will also be explored. (Prerequisite: Accuplacer Reading Comprehension Score of 78 or above or completion of READ 0090) (MNTC 3 & 10)

Total Credits 3

Total Hours 64

Types of Instruction

Instruction Type	Credits/Hours
Lecture	2/32
Lab	1/32

Pre/Corequisites

Accuplacer Reading Comprehension Score of 78 or above or completion of READ 0090

Institutional Core Competencies

Communication - Students will be able to demonstrate appropriate and effective interactions with others to achieve their personal, academic, and professional objectives.

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

Course Competencies

1. **Apply the basic methodologies of science.**

   Learning Objectives
   Describe the steps involved in scientific method.
   Demonstrate a respect for scientifically derived knowledge.
   Formulate, test, and revise hypotheses.

2. **Utilize geographic tools to understand and analyze weather.**

Learning Objectives
Interpret and utilize satellite imagery.
Analyze surface weather maps and upper air charts.
Recognize fronts from patterns depicted by isobars on surface weather maps.

3. Explain Earth-Sun relationships and how energy is transferred and produces weather and climate.

Learning Objectives
Discuss Electromagnetic Radiation (EMR) and its impact on earth.
Recognize how the sun creates seasons on earth.
Explain how and why the length of daylight hours varies by latitude and by hemisphere.

4. Analyze earth's atmosphere and air temperature.

Learning Objectives
Describe the reasons why earth's atmosphere is unique from other planets and why it is essential to life on earth.
Conceptualize the ways that solar energy interacts with earth's atmosphere and surface.
Explain the various heat transfer mechanisms.
Outline the characteristics of the temperature-based layers of the atmosphere.
Discuss both short term and long term temperature control mechanisms.

5. Describe how clouds and various types of precipitation form.

Learning Objectives
Diagram the hydrologic cycle and scrutinize how it influences weather.
Differentiate between absolute humidity, relative humidity, and specific humidity.
Examine the development and structure of different cloud types.
Determine what processes cause the air to reach the dew point.
Examine why precipitation varies across earth's surface.

6. Analyze atmospheric pressure and its effects on wind and weather.

Learning Objectives
Measure barometric pressure using a barometer.
Locate local and global wind systems.
Describe Coriolis force and its effects on winds.
Discuss the reasons why global pressure belts vary with latitude.
Identify how various communities around the world are affected by and utilize wind.

7. Develop a short-term weather forecast for a specific location.

Learning Objectives
Discuss middle latitude cyclones and their impact on weather in North America.
Differentiate between the four types of fronts.
Determine the movement of weather systems.
Collect and analyze weather data to determine the accuracy of forecasts.

8. Examine weather hazards.

Learning Objectives
Explain how severe weather events form.
Acknowledge the serious risks associated with hazardous weather events including hurricanes, thunderstorms, and tornadoes.
Examine historical hazardous weather events and their impacts on people.
Describe the steps that should be taken by people in the event of severe weather.

9. Classify global climate regions.

Learning Objectives
Distinguish between local and global climate classification methods.
Identify how cultures around the world are able to adapt to local climates.
Assess the ways in which humans may need to adapt to live with changing climates.

10. Investigate the potential ways in which humans may alter weather and climate.

Learning Objectives

Evaluate the results of research into the role human activity has played in causing climate change.
Discuss the impacts earth's changing climate will have on environments.
Examine how people alter small-scale weather events.
Discuss the potential risks and rewards of allowing people to alter weather.

11. Explore the latest technologies used for weather and climate forecasting.

Learning Objectives

Apply currently available technology to predict weather.
Acknowledge the shortcomings of modern technology when applied to weather and climate.
Investigate "next generation" technologies currently being developed.
Explore how scientists have documented earth's changing climate.

SCC Accessibility Statement

South Central College strives to make all learning experiences as accessible as possible. If you have a disability and need accommodations for access to this class, contact the Academic Support Center to request and discuss accommodations. North Mankato: Room B-132, (507) 389-7222; Faribault: Room A-116, (507) 332-7222.

Additional information and forms can be found at: www.southcentral.edu/disability

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