

GEOG G130: INTRODUCTION TO WEATHER AND CLIMATE

Item	Value
Curriculum Committee Approval Date	04/07/2020
Top Code	220600 - Geography
Units	3 Total Units
Hours	54 Total Hours (Lecture Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S), • Pass/No Pass (B)
Local General Education (GE)	• Area 5 Natural Sciences (GB1) • Area 7E Lifelong Understanding and Self-Development (GE)
California General Education Transfer Curriculum (Cal-GETC)	• Cal-GETC 5A Physical Science (5A)
Intersegmental General Education Transfer Curriculum (IGETC)	• IGETC 5A Physical Science (5A)
California State University General Education Breadth (CSU GE-Breadth)	• CSU B1 Physical Science (B1)

Course Description

This course is an introduction to weather and climate patterns through an examination of the scientific method and Earth's atmosphere and processes including atmospheric composition and structure, solar radiation, energy balances, temperature, seasonality, atmospheric moisture, clouds and fog, precipitation, air pressure and circulation, air masses and fronts, cyclones, weather forecasting, climate, and climate change. Transfer Credit: CSU; UC. C-ID: GEOG 130. **C-ID:** GEOG 130.

Course Level Student Learning Outcome(s)

1. Course Outcomes
2. Explain the structure, composition, and function of the Earth's atmosphere.
3. Describe atmospheric circulation processes at multiple scales.
4. Explain weather events and global climates and their causal factors.

Course Objectives

- 1. Identify and describe the structure and characteristics of the Earth's atmosphere.
- 2. Explain the Earth's energy balance and global distribution of temperature.
- 3. Describe forces that cause atmospheric motion and the resulting pressure patterns, wind systems, and global and local circulation.
- 4. Describe atmospheric moisture including clouds and precipitation processes and their distributions.

- 5. Explain weather systems, distribution, and extreme events.
- 6. Classify global climates and identify the processes that determine their distribution.
- 7. Describe the causes and implications of historical climate change and current global warming.
- 8. Apply the scientific method to processes related to weather and climate

Lecture Content

Energy and the Atmosphere Scientific method application and processes Solar radiation and insolation Composition, structure, and function of the atmosphere Seasons Energy Balance and temperature Water in the Atmosphere Atmospheric moisture Lifting mechanisms Cloud and fog development Precipitation process Movement of Air Atmospheric pressure and distribution Atmospheric circulation from global to local Air masses and fronts Major weather events Midlatitude Cyclones Thunderstorms and Tornadoes Tropical Storms and Hurricanes Weather forecasting and analysis Methods Data Interpretation Tools and technology Past, present, and future climates Climate characteristics, distribution, and causes Methods and analysis of past climates and climate change Present climate change and global warming Projected future climates

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- DE Online Lecture (02X)

Instructional Techniques

Lecture Use of audio and visual media Use of charts, maps, models, graphs, diagrams, and illustrations Group discussions and activities Handouts, worksheets, or exercises Instructor feedback on projects and assignments

Reading Assignments

Textbook Chapters Handouts and other supplemental reading related to course content

Writing Assignments

Essays or research projects In-class writing assignments Written data analysis and interpretation

Out-of-class Assignments

Observations and data collection related to course content Homework related to course content

Demonstration of Critical Thinking

Apply concepts learned in the course to real-world phenomena related to weather and climate demonstrated through course assignments. Understand how weather and climate-related concepts apply to and interact with each other demonstrated through course assignments. Hypothesize and predict future weather and climate processes demonstrated through course assignments.

Required Writing, Problem Solving, Skills Demonstration

In-class writing assignments related to course content. Written analysis and interpretation of observations, maps, charts, graphs, tables, diagrams, and illustrations related to weather and climate. Essays or

research papers on issues, events or processes related to weather and climate.

Eligible Disciplines

Geography: Master's degree in geography OR bachelor's degree in geography AND master's degree in geology, history, meteorology, or oceanography OR the equivalent OR see interdisciplinary studies. Master's degree required.

Textbooks Resources

1. Required Ahrens, D.C., Henson, R.. Meteorology Today, 12th ed. Florence, KY: Cengage, 2019 2. Required Aguado, E.. Understanding Weather and Climate, 7th ed. Upper Saddle River, NJ: Pearson, 2015 Rationale: This is the standard textbook used throughout the discipline and is listed on the state-approved C-ID approved for this course.