# 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 |
| Grading Policy | Standard Letter (S),<br>• Pass/No Pass (B) |
| Local General Education (GE) | • GWC Physical Universe*** (GB1)<br>• GWC Lifelong Understanding (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 Earths atmosphere.
- 2. Explain the Earths 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: Masters degree in geography OR bachelors degree in geography AND masters degree in geology, history, meteorology, or oceanography OR the equivalent OR see interdisciplinary studies. Masters 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.