

# BUTTE COLLEGE

## COURSE OUTLINE

### I. CATALOG DESCRIPTION

**PSC 50 - Introduction to Weather**

**3 Unit(s)**

**Prerequisite(s):** NONE

**Recommended Prep:** Reading Level IV, English Level IV, Math Level IV

**Transfer Status:** CSU/UC

51 hours Lecture

This course is an introduction to modern meteorology. Topics include air circulation, pressure and wind, temperature, moisture, fronts, storm systems, cloud types and air stability. The course will also include an introduction to interpreting weather maps, synoptic weather forecasting, and climate change. Math will be used at times during this course but emphasis will be on a conceptual understanding of basic meteorology. It is highly recommended that students also enroll in PSC 51.

### II. OBJECTIVES

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

- A. Use the scientific method to investigate and evaluate weather topics and atmospheric issues.
- B. Analyze the basic structure and composition of the atmosphere.
- C. Identify local weather and climate including nighttime radiation inversions, wind and rainfall patterns.
- D. Describe the greenhouse effect, natural climate change and global warming.
- E. Identify the basic concepts of atmospheric dynamics including wind, stability, fronts and air circulations.
- F. Describe seasonal and daily temperature variations.
- G. Identify and explain the major weather variables measured in the atmosphere including temperature, air pressure, humidity, clouds and wind.
- H. Describe the major precipitation growth processes in clouds and basic types of precipitation.
- I. Explain and analyze global climate including the Koppen classification system.
- J. Analyze atmospheric heat transfer processes and energy balance.

### III. COURSE CONTENT

#### **A. Unit Titles/Suggested Time Schedule**

| Lecture                                      |              |
|--|--------------|
| <u>Topics</u>                                | <u>Hours</u> |
| 1. Scientific Method                         | 2.00         |
| 2. The Earth and the Atmosphere              | 3.00         |
| 3. Air Temperature, Energy and Heat          | 3.00         |
| 4. Seasonal and Daily Temperature Variations | 3.00         |
| 5. Atmospheric Moisture                      | 3.00         |
| 6. Condensation, Fog and Clouds              | 3.00         |
| 7. Stability and Cloud Development           | 3.00         |
| 8. Precipitation Processes                   | 3.00         |
| 9. Air Pressure, Forces, and Winds           | 6.00         |
| 10. Mesoscale and Local Wind Circulations    | 3.00         |
| 11. Global Wind Circulations                 | 2.00         |

|                                       |       |
|---------------------------------------|-------|
| 12. Air Masses and Fronts             | 3.00  |
| 13. Mid-Latitude Cyclones             | 3.00  |
| 14. Thunderstorms                     | 3.00  |
| 15. Hurricanes                        | 3.00  |
| 16. Weather Charts and Forecasting    | 1.00  |
| 17. Climate Change and Global Warming | 3.00  |
| 18. Global Climate                    | 1.00  |
| Total Hours                           | 51.00 |

#### **IV. METHODS OF INSTRUCTION**

- A. Lecture
- B. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
- C. Discussion
- D. Demonstrations
- E. Reading Assignments
- F. Multimedia Presentations

#### **V. METHODS OF EVALUATION**

- A. Exams/Tests
- B. Homework
- C. Essays and research papers
- D. The 1500 word requirement will be fulfilled through research papers and essay questions on exams.
- E. Participation

#### **VI. EXAMPLES OF ASSIGNMENTS**

- A. Reading Assignments
  - 1. Read about clouds and be able to compare and contrast different cloud types and features in class.
  - 2. Read the tropical weather topics in the textbook and be prepared to answer questions about these types of storms on the final exam.
- B. Writing Assignments
  - 1. Write a paper that is a minimum of two full pages in length about a weather experience that sparked your interest in weather.
  - 2. Write a four to five page essay summarizing the climate types for select cities and regions around the world. This assignment will help you differentiate the different climate zones that exist on the earth.
- C. Out-of-Class Assignments
  - 1. Use an online resource to keep track of the high and low temperature for a city in California during the next seven days. Be prepared to share your results in class. This assignment demonstrates that weather is not constant and must be monitored daily.
  - 2. Keep a journal of the clouds you observe in the sky each day during the semester. This assignment will encourage students to observe the atmosphere. The assignment can also demonstrate that cloud patterns can point to changes in the weather including approaching storms.

#### **VII. RECOMMENDED MATERIALS OF INSTRUCTION**

Textbooks:

- A. Aguado, E, Burt, J. Understanding Weather and Climate. 7th Edition. Pearson Education Inc.,

2015.

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