

**METRO 10 Course Outline as of Fall 2011****CATALOG INFORMATION**

Dept and Nbr: METRO 10 Title: INTRO TO METEOROLOGY

Full Title: Introduction to Meteorology

Last Reviewed: 9/12/2022

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	6	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00

Total Student Learning Hours: 157.50

Title 5 Category: AA Degree Applicable

Grading: Grade or P/NP

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly:

**Catalog Description:**

A descriptive introduction to the science of the atmosphere. Topics include Earth/Sun relationships, temperature, atmospheric pressure and wind, clouds and precipitation, storm fronts, hurricanes and tornadoes, weather forecasting, climate, and atmospheric optics. California weather patterns and climate will be included.

**Prerequisites/Corequisites:****Recommended Preparation:**

Eligibility for ENGL 1A or equivalent

**Limits on Enrollment:****Schedule of Classes Information:**

Description: A descriptive introduction to the science of the atmosphere. Topics include Earth/Sun relationships, temperature, atmospheric pressure and wind, clouds and precipitation, storm fronts, hurricanes and tornadoes, weather forecasting, climate, and atmospheric optics. California weather patterns and climate will be included. (Grade or P/NP)

Prerequisites/Corequisites:

Recommended: Eligibility for ENGL 1A or equivalent

Limits on Enrollment:

Transfer Credit: CSU;UC.

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>		Effective:	Inactive:
	C	Natural Sciences	Fall 1981	
<b>CSU GE:</b>	<b>Transfer Area</b>		Effective:	Inactive:
	B1	Physical Science	Fall 1981	
<b>IGETC:</b>	<b>Transfer Area</b>		Effective:	Inactive:
	5A	Physical Sciences	Fall 1981	
<b>CSU Transfer:</b>	Transferable	Effective:	Fall 1981	Inactive:
<b>UC Transfer:</b>	Transferable	Effective:	Fall 1981	Inactive:

**CID:**

**Certificate/Major Applicable:**

Both Certificate and Major Applicable

## **COURSE CONTENT**

### **Outcomes and Objectives:**

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

1. Define the nature of meteorology as a science.
2. Identify and describe fundamental meteorological variables.
3. Explain the processes that generate weather phenomena.
4. Identify weather phenomena and patterns on maps.
5. Distinguish between weather and climate.
6. Explain the Earth's seasons.
7. Describe the mechanisms of heat transfer and apply this knowledge to the Earth's radiation budget, greenhouse effect, ozone depletion, and climate change.
8. Recognize global climate patterns.
9. Evaluate merit of scientific claims.

### **Topics and Scope:**

- I. Introduction to science, the scientific method and meteorology as a science
- II. Atmosphere
  - A. Composition
  - B. Vertical structure
  - C. Weather and Climate
- III. Solar and terrestrial radiation
  - A. Electromagnetic spectrum
  - B. Insolation
  - C. Mechanisms of heat transfer
  - D. Earth/Sun relationships
  - E. Energy budget

- IV. Temperature
  - A. Heat and temperature
  - B. Measurement
  - C. Controlling factors
  - D. Global, regional and seasonal patterns
- V. Atmospheric moisture
  - A. Properties of water
  - B. Hydrologic cycle
  - C. Humidity and humidity measurement
  - D. Adiabatic processes and stability
  - E. Clouds and fog
  - F. Precipitation
    - i. Processes
    - ii. Types
    - iii. Measurement
  - G. Global, regional and seasonal patterns
- VI. Atmospheric pressure
  - A. Pressure, density, and temperature
  - B. Measurement
  - C. Mapping and analysis
  - D. Global, regional and seasonal patterns
- VII. Wind
  - A. Direction, speed, and measurement
  - B. Surface and upper level
  - C. Global, regional, and seasonal circulation patterns
  - D. Effects on oceanic circulation
- VIII. Air masses and weather systems
  - A. Air masses
  - B. Fronts
  - C. Midlatitude storms
  - D. Tropical storms
- IX. Weather analysis
  - A. Data acquisition and mapping
  - B. Forecasting
- X. Climate
  - A. Classification
  - B. Global patterns
  - C. Global climate change
- XI. Air Pollution
  - A. Types
  - B. Sources
  - C. Contributing factors
- XII. Optical phenomena
  - A. Nature of light
  - B. Types

**Assignment:**

1. Assigned readings (20-40 pages per week)
2. Assignments: written homework; problem solving homework; in class activities (5-15)
3. Quizzes (3-15)
4. Current event or issue papers (1-4)

## 5. Exams (2-5)

### Methods of Evaluation/Basis of Grade:

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Written homework; current event or issue papers.

Writing  
5 - 25%

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Problem solving homework; in class activities

Problem solving  
10 - 30%

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None

Skill Demonstrations  
0 - 0%

**Exams:** All forms of formal testing, other than skill performance exams.

Exams, including objective questions and essays; quizzes

Exams  
50 - 80%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

Participation and attendance.

Other Category  
0 - 10%

### Representative Textbooks and Materials:

The Atmosphere: An Introduction to Meteorology, 11th edition. Lutgens, Frederick K., Edward J. Tarbuck and Dennis Tassa. Prentice Hall: 2009

Essentials of Meteorology: An Invitation to the Atmosphere, 6th edition. Ahrens, C. Donald. Brooks and Cole: 2011

Meteorology Today: An Introduction to Weather, Climate, and the Environment, 9th edition. Ahrens, C. Donald. Brooks / Cole: 2009