

SAN DIEGO COMMUNITY COLLEGE DISTRICT  
CONTINUING EDUCATION  
COURSE OUTLINE

**SECTION I**

SUBJECT AREA AND COURSE NUMBER

HSDP 514

COURSE TITLE

EARTH SCIENCE 2

TYPE COURSE

NON-FEE

BASIC SKILLS

CATALOG COURSE DESCRIPTION

This course will introduce students to historic geology, California geology, surface processes, atmospheric and oceanic sciences, and resources and the environment. The laboratory component utilizes both hands-on and online activities. (FT)

LECTURE/LABORATORY HOURS

90

ADVISORIES

NONE

RECOMMENDED SKILL LEVEL

NONE

INSTITUTIONAL STUDENT LEARNING OUTCOMES

1. Social Responsibility  
SDCE students demonstrate interpersonal skills by learning and working cooperatively in a diverse environment.
2. Effective Communication  
SDCE students demonstrate effective communication skills.
3. Critical Thinking  
SDCE students critically process information, make decisions, and solve problems independently or cooperatively.

INSTITUTIONAL STUDENT LEARNING OUTCOMES (CONTINUED)

4. Personal and Professional Development

SDCE students pursue short term and life-long learning goals, mastering necessary skills and using resource management and self advocacy skills to cope with changing situations in their lives.

COURSE GOALS

1. Students will learn about the history of changes in Earth's climate, geography, and atmosphere.
2. Students will understand that the geology of California underlies the state's wealth of natural resources, as well as its natural hazards.
3. Students will learn about surface processes, including the different cycles and components in Earth's systems.
4. Students will learn how the ocean and atmosphere move and transfer energy around the planet.
5. Students will understand the impacts of human activities on the environment and biodiversity.

COURSE OBJECTIVES

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

1. Examine and describe how Earth's climate has changed over time, corresponding to changes in Earth's geography and atmospheric composition.
2. Identify the resources of major economic importance of California and discuss their relation to California's geology.
3. Analyze and explain the relationships between surface processes and the location of land features.
4. Explain how interactions between the oceans and the atmosphere influence global and regional climate.
5. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

**SECTION II**

COURSE CONTENT AND SCOPE

1. Historic Geology
  - 1.1. Fossils
  - 1.2. Rock record
  - 1.3. Relative-age and absolute-age dating
  - 1.4. Angular unconformity
  - 1.5. Alpha decay
  - 1.6. Half-lives

COURSE CONTENT AND SCOPE (CONTINUED)

- 1.7. Geologic time scale
  - 1.7.1. Precambrian earth
  - 1.7.2. Early earth and life
  - 1.7.3. Formation of the crust and continents
  - 1.7.4. Formation of the atmosphere and oceans
  - 1.7.5. Miller-urey experiment
  - 1.7.6. Paleozoic, mesozoic, and cenozoic eras
2. California Geology
  - 2.1. Natural resources
  - 2.2. Natural hazards
  - 2.3. Origins of California's freshwater
  - 2.4. Geologic hazard maps
3. Surface Processes
  - 3.1. Weathering, erosion, and soil
  - 3.2. Mass movements, wind, and glaciers
    - 3.2.1. Rock slides
    - 3.2.2. Types of dunes
    - 3.2.3. Dune migration
    - 3.2.4. Glacier formation
  - 3.3. Surface water
    - 3.3.1. Water cycle
    - 3.3.2. Movement
    - 3.3.3. Stream development
    - 3.3.4. Lakes and freshwater wetlands
    - 3.3.5. Meander formation
  - 3.4. Groundwater
    - 3.4.1. Movement and storage
    - 3.4.2. Weathering and deposition
    - 3.4.3. Supply
    - 3.4.4. Pollution and contamination
4. Atmospheric Science
  - 4.1. Properties and composition of the atmosphere
  - 4.2. Clouds and precipitation
  - 4.3. Conduction, convection, and radiation
  - 4.4. Meteorology
    - 4.4.1. Causes of weather
    - 4.4.2. Weather systems
    - 4.4.3. Weather data, analysis, and prediction
    - 4.4.4. Air mass characteristics
    - 4.4.5. Coriolis effect
    - 4.4.6. Fronts
  - 4.5. Storms
    - 4.5.1. Thunderstorms
    - 4.5.2. Tropical storms
    - 4.5.3. Tornadoes
    - 4.5.4. Cyclones
    - 4.5.5. The heat index

COURSE CONTENT AND SCOPE (CONTINUED)

- 4.6. Climate
  - 4.6.1. Classification
  - 4.6.2. Climatic changes
  - 4.6.3. Seasons
  - 4.6.4. Greenhouse effect
- 5. Oceanic Science
  - 5.1. Earth's oceans
    - 5.1.1. Overview
    - 5.1.2. Ocean movements
    - 5.1.3. Seawater
    - 5.1.4. The salt cycle
  - 5.2. Marine environment
    - 5.2.1. Shoreline features
    - 5.2.2. Seafloor features
    - 5.2.3. Longshore currents
- 6. Earth Resources
  - 6.1. Natural resources
  - 6.2. Resources from earth's crust
  - 6.3. Air and water resources
  - 6.4. Carbon and nitrogen cycles
- 7. Energy Resources
  - 7.1. Conventional and alternative energy resources
  - 7.2. Conservation of energy resources
  - 7.3. Geothermal power
  - 7.4. Fission reactor
- 8. Environment
  - 8.1. Human impact on land, air, and water resources
    - 8.1.1. Carrying capacity
    - 8.1.2. Ozone depletion
    - 8.1.3. Climate change

APPROPRIATE READINGS

Textbook and current research studies related to the course material.

WRITING ASSIGNMENTS

1. Maintain a scientific lab notebook outlining purpose, procedure, measurements, data, and understanding of all experiments and simulations.
2. Generate, read, and interpret maps, graphs and data tables.

OUTSIDE ASSIGNMENTS

Assignments may include, but are not limited to: appropriate research projects, reading and writing assignments.

APPROPRIATE ASSIGNMENTS THAT DEMONSTRATE CRITICAL THINKING

Read and interpret current case studies related to the course material.

EVALUATION

1. Exams which include essay questions to test for content, terminology, and knowledge of subject matter.
2. Post-laboratory reports to assess knowledge and understanding of major scientific concepts.
3. Laboratory write-up and exam questions to assess student's ability to read, interpret, or construct a map, data table, or graph based on course related data.
4. Participation of in-class discussions related to course material and lecture topic.
5. Project-based learning experiences related to course material.

METHOD OF INSTRUCTION

Lectures, laboratories, seminars, virtual laboratory experiments, virtual class demonstrations, collaborative group projects and field trips.

This course, or sections of this course, may be offered through distance education.

TEXTS AND SUPPLIES

*Earth Science: Geology, the Environment, and the Universe*, Borrero, F. & Hess, F.S.  
McGraw-Hill Education, current edition.

Supplies:

Instructor provided online supplemental resources.  
Scientific lab notebook.

PREPARED BY: Holly Rodriguez, Leticia Flores DATE: 10/05/15

REVISED BY: Leticia Flores DATE: June 3, 2020

Instructors must meet all requirements stated in Policy 3100 (Student Rights, Responsibilities and Administrative Due Process), and the Attendance Policy set forth in the Continuing Education Catalog.

REFERENCES:

San Diego Community College District Policy 3100  
California Community Colleges, Title 5, Section 55002  
Continuing Education Catalog