

SAN DIEGO COMMUNITY COLLEGE DISTRICT  
CONTINUING EDUCATION  
COURSE OUTLINE

**SECTION I**

SUBJECT AREA AND COURSE NUMBER

HSDP 513

COURSE TITLE

EARTH SCIENCE 1

TYPE COURSE

NON-FEE

BASIC SKILLS

CATALOG COURSE DESCRIPTION

This course provides an introduction to the scientific method, the geographic coordinate system, the solar system, the composition of earth, and dynamic earth processes. 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 the steps of the scientific method as they relate to earth science.
2. Students will learn how to use terminology, methods and techniques to understand the solar system.
3. Students will learn about the properties and processes of the sun.
4. Students will learn about the formation and types of rocks.
5. Students will learn how to analyze and explain earthquake formation.
6. Students will learn how to explain the system of plate tectonics and its influence on processes of the earth.

## COURSE OBJECTIVES

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

1. Explain the goal of science and describe the scientific method.
2. Examine and describe the formation of the solar system and earth's place in the universe.
3. Examine and describe the composition and energy processes of the sun.
4. Analyze, compare and explain the properties of rocks based on the physical and chemical conditions in which they formed.
5. Explain why and how earthquakes occur and be able to identify the scales used to measure their intensity and magnitude.
6. Explain the process of plate tectonics and how it relates to continents, earthquakes, volcanoes, and global distribution of fossils and rocks.

## SECTION II

### COURSE CONTENT AND SCOPE

1. The Nature of Science
  - 1.1. Introducing earth science
  - 1.2. Scientific thinking and processes
2. Geographic Coordinate System
  - 2.1. Latitude and longitude
  - 2.2. Time zones
  - 2.3. Cartography
3. Solar System
  - 3.1. Formation of the solar system
  - 3.2. Inner and outer planets

COURSE CONTENT AND SCOPE (CONTINUED)

4. Sun-Earth-Moon System
  - 4.1. Astronomy
  - 4.2. Moon
    - 4.2.1. The moon and earth
    - 4.2.2. Moon impact theory
    - 4.2.3. Phases of the moon
5. Stars, Galaxies, and the Universe
  - 5.1. The sun
    - 5.1.1. Composition
    - 5.1.2. Processes
  - 5.2. Stars
    - 5.2.1. Properties
    - 5.2.2. Star formation
    - 5.2.3. Helium core
    - 5.2.4. Star groupings
    - 5.2.5. Doppler effect
    - 5.2.6. Parallax
    - 5.2.7. Spectral types
  - 5.3. Galaxies and the Universe
    - 5.3.1. The milky way galaxy
    - 5.3.2. Stars of the milky way galaxy
    - 5.3.3. Population I and II stars
    - 5.3.4. Other galaxies in the universe
    - 5.3.5. Cosmology
    - 5.3.6. Black holes
6. Composition of Earth
  - 6.1. Matter
  - 6.2. Minerals
    - 6.2.1. Properties and types
    - 6.2.2. Mohs scale of hardness
    - 6.2.3. Silicon-oxygen-tetrahedron
  - 6.3. Igneous rocks
    - 6.3.1. Formation, types, and classification
  - 6.4. Sedimentary rocks
    - 6.4.1. Formation, types, and classification
    - 6.4.2. Crossbedding and ripple marks
  - 6.5. Metamorphic rocks
    - 6.5.1. Formation, types, and classification
7. Dynamic Earth Processes
  - 7.1. Plate tectonics
    - 7.1.1. Continental drift
    - 7.1.2. Sea floor spreading
    - 7.1.3. Plate boundaries

### COURSE CONTENT AND SCOPE (CONTINUED)

- 7.2. Volcanism
  - 7.2.1. Types of volcanoes
  - 7.2.2. Eruptions
  - 7.2.3. Subduction
  - 7.2.4. Caldera formation
- 7.3. Earthquakes
  - 7.3.1. Faults
  - 7.3.2. Seismic waves
  - 7.3.3. Measuring and locating earthquakes
  - 7.3.4. P-waves and s-waves
  - 7.3.5. The Richter scale
  - 7.3.6. Mercalli intensity scale
- 7.4. Mountain Building
  - 7.4.1. Types and processes
  - 7.4.2. Orogeny

### 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