

# GEOG 20: INTRODUCTION TO EARTH SCIENCE

## Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2023
Units:	4
Hours:	4 lecture per week (48 total per quarter)
Advisory:	One of the following: ENGL 1A or 1AH or ESLL 26.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	CSU/UC
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

## Student Learning Outcomes

- Discuss the earth's atmosphere and how human actions have affected the earth's climate.
- Identify and explain major earth systems processes such as the structure of the solar system, the physical structure and age of the earth, the rock cycle, the water cycle, weathering processes and the oceans.
- Apply the scientific method to examine a basic earth science process.

## Description

An introduction to the essentials of Earth science, including the structure of the Earth and its internal processes, the atmosphere, the hydrosphere, and solar system. This course focuses on the interactions between physical and chemical systems of the Earth, such as the plate tectonics, the rock cycle, the hydrologic cycle, weather, and climate. Topics are aligned with the California State Science Standards for K-12 and will prepare pre-service teachers to teach these subjects.

## Course Objectives

The student will be able to:

1. Describe the structure of the solar system
2. Diagram and explain the structure of the Earth
3. Apply the scientific method to solve a basic Earth science problem
4. Discuss how the Earth's internal forces result in various surface features observed on a map or image
5. Explain how the rock cycle results in the various types of rocks and minerals observed on the Earth
6. Identify properties of igneous, sedimentary, and metamorphic rocks
7. Relate igneous, sedimentary, and metamorphic rocks to the type of environments in which they are formed
8. Discuss the age of the Earth and the rate of various geologic processes
9. Diagram the water cycle and identify how humans have influenced it
10. Identify evidence of glacial weathering
11. Describe the surface features associated with dry environments

12. Explain the composition of the atmosphere and human influences upon it
13. Discuss how atmospheric circulation results in various climate patterns and weather phenomena
14. Relate human actions to climate change
15. Explain tides, currents, and circulation within the Earth's oceans

## Course Content

1. Fundamentals of Earth science
  - a. The solar system
    - i. Size
    - ii. The sun
    - iii. Terrestrial planets
    - iv. Jovian planets
  - b. Structure of the Earth
    - i. Core
    - ii. Mantle
    - iii. Crust
  - c. The scientific method as a framework to explore Earth science
2. Earth's internal forces
  - a. Plate tectonics
  - b. Orogenesis
  - c. Volcanoes
  - d. Earthquakes
  - e. Folds and faults
3. Earth materials
  - a. Minerals
  - b. The rock cycle
    - i. Igneous
      1. Fossils and fossilization
    - ii. Sedimentary
    - iii. Metamorphic
4. Geologic time
  - a. Age of the Earth
  - b. Dating methods
    - i. Relative
    - ii. Radiometric
5. Surface processes
  - a. The water cycle
    - i. Water resources
  - b. Glacial weathering
  - c. Dry environments
6. The atmosphere
  - a. Composition
  - b. Circulation in the atmosphere
    - i. Weather patterns
    - ii. Climate patterns
  - c. Extreme weather
    - i. Cyclones
    - ii. Floods
    - iii. Drought
  - d. Climate change
7. Oceans

- a. Tides
- b. Currents
- c. Shorelines

## Lab Content

Not applicable.

## Special Facilities and/or Equipment

1. Maps and example mineral kits.
2. When taught as an online distance learning section, students and faculty need ongoing and continuous internet and email access.

## Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

Midterm exam  
Comprehensive final exam  
Paper or projects focusing on two or more elements of the course content

## Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

Lecture  
Discussion  
Cooperative learning exercises

## Representative Text(s) and Other Materials

Tarback, Edward J., Fredrick K. Lutgens, and Dennis G. Tasa. Earth Science. 2018.

## Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

1. Weekly reading assignments from the textbook and objective quizzes
2. Comprehensive midterm and final examinations
3. Written assessments that determine student's mastery of course learning outcomes (SLOs)

## Discipline(s)

Earth Science