

ESCI 0010 - INTRODUCTION TO EARTH SCIENCE

Catalog Description

Prerequisite: Eligibility for ENGL 1A

Hours: 54 lecture

Description: Introduction to concepts of geology, oceanography, meteorology, and astronomy for science or nonscience majors. (C-ID GEOL 120) (CSU, UC)

Course Student Learning Outcomes

- CSLO #1: Describe the characteristics and origins of stars and planetary systems.
- CSLO #2: Explain the basics of atmospheric and oceanic circulation.
- CSLO #3: Describe the processes and features of the plate tectonic system.

Effective Term

Fall 2018

Course Type

Credit - Degree-applicable

Contact Hours

54

Outside of Class Hours

108

Total Student Learning Hours

162

Course Objectives

1. describe the basic natural processes that take place on our planet (atmosphere, hydrosphere and lithosphere) and beyond (solar system, universe);
2. relate the concepts presented during class sessions with real events (current or past) such as earthquakes, volcanic eruptions, and severe weather patterns;
3. evaluate the validity of the information in reports on Earth Science aspects from their community, county, or state;
4. illustrate (by means of charts, graphs, or diagrams) the concepts discussed during class sessions, such as the rock cycle;
5. interpret information given by means of graphs, charts or diagrams, such as the distribution of water on the planet;
6. formulate hypotheses based on information from the natural environment and test their validity;
7. compare and contrast natural features as they relate to their formation process, such as glacial vs. stream landscape features of erosion (or deposition);
8. distinguish between different categories of minerals, rocks, structures, and environments;

9. calculate basic information related to natural processes such as the age of a rock, the depth of an ocean or the difference in strength between two earthquakes;
10. interpret the history of an area based on principles of relative dating;
11. evaluate the evidence presented by the scientific community to support or reject the hypothesis of continental drift;
12. compare and contrast the hypothesis of continental drift and the theory of plate tectonics;
13. integrate the concept of plate tectonic boundaries with geologic processes;
14. relate seismic activity to damage associated to earthquakes and other natural disasters triggered by them;
15. illustrate atomic bonding leading to viable chemical compounds, such as the ionic transfer between sodium and chlorine for sodium chloride;
16. assess the damage of human activities on the landscape, such as contamination of our water sources;
17. assess the relevance of the steps that lead to changing scientific paradigms within the Earth Sciences;
18. compare and contrast the components of our solar system in terms of mass, density, diameter, and composition;
19. compare and contrast stars on the basis of physical properties;
20. compare and contrast the life cycles of stars of different masses;
21. relate the larger scale structure of the universe to concepts of its origin;
22. evaluate the causes of global climate change;
23. analyze the changes in temperature and pressure vs. altitude in our planet's atmosphere;
24. relate solar energy and the Earth's orbital parameters to insolation differences; and
25. apply the basic elements of climate to interpret weather.

General Education Information

- Approved College Associate Degree GE Applicability
 - AA/AS - Physical Sciences
- CSU GE Applicability (Recommended-requires CSU approval)
 - CSUGE - B1 Physical Science
- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)
 - IGETC - 5A Physical Science

Articulation Information

- CSU Transferable
- UC Transferable

Methods of Evaluation

- Classroom Discussions
 - Example: Example: Discuss the evidence presented by Wegener to support his hypothesis and the reaction of the scientific community.
- Essay Examinations
 - Example: Example: Explain the mechanism and driving force in Plate tectonics.
- Objective Examinations
 - Example: Example: Compare and contrast dissolution and hydrolysis.
- Problem Solving Examinations
 - Example: Example: Assess the volcanic hazard for several sites based on information on volcano type, history of eruptive events, and prevailing winds

- Reports
 - Example: Example: Read a journal or periodical article and summarize in two pages. Summary will be graded based upon accuracy, level of analysis, and presentation of writing.

Repeatable

No

Methods of Instruction

- Lecture/Discussion
- Distance Learning

Lecture:

1. Instructor leads an in-session discussion (either in class or online) on how the scientific community has resolved the issues that prevented the hypothesis of continental drift from becoming a scientific theory, merging the lines of evidence presented by the hypothesis with seafloor spreading and mantle convection to elevate plate tectonics to scientific theory status.

Distance Learning

1. Instructor facilitates group work on classifying igneous rock samples based on in-session discussion (either in class or online) on their textures and mineralogy.

Typical Out of Class Assignments

Reading Assignments

1. Read about igneous rocks in the textbook and classify a set of given samples during class session. 2. Read and analyze a newspaper article on a current event such as an earthquake.

Writing, Problem Solving or Performance

1. Using the information obtained in a public source (newspaper, online news) on a current event, write a 200-word essay introducing the topic, listing the details of the event (e.g., the destruction caused by an earthquake), relating the event to the concepts or processes discussed during class sessions. 2. Given a cross-section of an area, interpret the geologic history by applying relative dating methods.

Other (Term projects, research papers, portfolios, etc.)

Required Materials

- Earth Science
 - Author: Tarbuck, Lutgens & Tasa
 - Publisher: Prentice Hall
 - Publication Date: 2014
 - Text Edition: 14th
 - Classic Textbook?:
 - OER Link:
 - OER:

Other materials and-or supplies required of students that contribute to the cost of the course.