



PSC 11 - Earth Science with Lab

Catalog Description

Transfer Status: CSU/UC

Unit(s): 4.00

Lecture: 51.00 Contact hours/102.00 Out of class hours/153.00 Total hours/3.00 Unit(s)

Lab: 51.00 Contact hours/0.00 Out of class hours/51.00 Total hours/1.00 Unit(s)

Total: 102.00 Contact hours/102.00 Out of class hours/204.00 Total hours/4.00 Unit(s)

Course Description: An introduction to the essentials of Earth Science with a laboratory. Topics include the geosphere, atmosphere, hydrosphere, and solar system. This course focuses on the interactions between physical and chemical systems of the Earth such as the tectonic cycle, rock cycle, hydrologic cycle, weather and climate. (C-ID GEOL 121).

Objectives

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

1. Explain and practically apply the principles of the scientific method.
2. Demonstrate a fundamental understanding of and be able to practically apply concepts, principles and interactions of Earth's systems including: Hydrologic Cycle, Rock Cycle, Plate Tectonics Cycle, Solar System, Geologic Time and Weather and Climate.
3. Be able to explain basic properties of minerals and rocks and to identify representative samples.
4. Explain the processes that shape the Earth and how they change over geologic time.
5. Communicate complex course concepts effectively in writing and diagrams.

Course Content

Topic Titles / Suggested Time Topic		
	<u>Lecture</u>	
<u>Topics</u>		<u>Lec Hrs</u>
Studying Earth Science		6.00
• What is Earth Science		
• Introduction to the Scientific Method		
Earth's Internal Forces		7.00
• Plate Tectonics		
• Geologic Structures		
• Mountain Building		
• Earthquakes		
• Volcanoes		
Earth's Materials		6.00
• Minerals		
• Igneous, Sedimentary and Metamorphic Rocks		
• Soils		
Earth History		6.00
• Geologic Time		
• Relative and Absolute Dating		
• Fossils and Fossilization		
Earth's External Processes		6.00
• Surface Water and Groundwater		
• Glaciers		
• Deserts		
Oceanography		6.00
• Ocean Currents		
• Tides		
• Shorelines		
Atmosphere		7.00
• Composition of the Atmosphere		
• Seasons		
• Atmospheric Moisture		
• Weather Patterns and Severe Weather		
• Climate		

<u>Topics</u>	<u>Lec Hrs</u>
Astronomy	7.00
• The Solar System	
• Stars and Stellar Evolution	
• Interstellar Matter	
• Formation of the Universe	

Total Hours: 51.00

Lab

<u>Topics</u>	<u>Lab Hrs</u>
The Scientific Method	4.00
Plate Tectonics, Earthquakes and Volcanoes	4.00
Faults and Folds	4.00
Mineral Properties and Identification	4.00
Rock Properties and Identification	4.00
Groundwater and Subsidence	4.00
Surface Processes	4.00
Astronomy	4.00
Relative and Absolute Dating and Geologic Time	4.00
Oceans	4.00
Fossil Properties and Identification	4.00
Weather Systems and Atmospheric Moisture	4.00
Field Trips	3.00

Total Hours: 51.00

Methods of Instruction

- A. Discussion
- B. Field Trips
- C. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
- D. Laboratory Experiments
- E. Lecture
- F. Multimedia Presentations

Methods of Evaluation

- A. Exams/Tests
- B. Research Projects
- C. Projects
- D. Homework
- E. Lab Projects
- F. Written Assignments

Examples of Assignments

Reading Assignments

1. Read the chapter on plate tectonics. Be prepared to explain the evidence that supports the theory and give two examples of the evidence on a quiz.
2. Read the chapter on the scientific method. Be prepared to discuss in class whether something is science or pseudoscience.

Writing Assignments

1. Write an imaginative diary, complete with maps and illustrations, to record and document your voyage as a drop of ocean water as you evaporate from the ocean, travel through the atmosphere, rain upon the land, and return to the ocean.
2. Watch Dante's Peak the movie and write a movie critic review from the perspective of a geologist.

Out-of-Class Assignments

1. Design and create a poster with descriptive captions that discuss ten geological features found in Butte and/or Glenn county.
2. Go to a local observatory or planetarium and submit a one page summary of the experience.

Recommended Materials of Instruction

Tarback, E.J., Lutgens, F.K., Tasa, G. (2018). Earth Science. *Prentice Hall*, 15th. 9780134610115.

Reynolds and Johnson. (2023). Exploring Earth Science. *McGraw Hill*, 3rd. 9781260722222.

Owen, Claudia; Pirie, Diane; Draper, Grenville. (2010). Earth Lab: Exploring the Earth Sciences Lab Manual. *Brooks/Cole*, 3rd. 9780538737005.

Minimum Qualifications

Earth Science (Masters Required)

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Date: 11/07/2022