

Earth Science

SCIH 041 055

Credits: 0.5 units / 5 hours / NCAA

Course Description

Have you ever wondered where marble comes from? or how deep the ocean is? or why it rains more in areas near the Equator than in other places? In this course students will study a variety of topics designed to give them a better understanding of the planet on which we live. They will study the composition of Earth including minerals and different rock types, weathering and erosion processes, mass movements, and surface and groundwater. They will also explore Earth's atmosphere and oceans, including storms, climate and ocean movements, plate tectonics, volcanism, earthquakes, mountain building, and geologic time. This course concludes with an in-depth look at the connections between our Earth's vast resources and the human population's dependence and impact on them.

Graded Assessments: 5 Unit Evaluations; 2 Projects; 2 Proctored Progress Tests, 5 Teacher Connect Activities

Course Objectives

When you have completed the materials in this course, you should be able to:

1. Describe how Earth materials move through geochemical cycles (carbon, nitrogen, oxygen) resulting in chemical and physical changes in matter.
2. Understand the relationships among Earth's structure, systems, and processes.
3. Describe how heat convection in the mantle propels the plates comprising Earth's surface across the face of the globe (plate tectonics).
4. Evaluate the impact of human activity and natural causes on Earth's resources (groundwater, rivers, land, fossil fuels).
5. Describe the relationships among the sources of energy and their effects on Earth's systems.
6. Describe how radiation, conduction, and convection transfer heat in Earth's systems.
7. Identify internal and external sources of heat energy in Earth's systems.
8. Compare and contrast benefits of renewable and nonrenewable energy sources.
9. Describe natural influences (Earth's rotation, mountain ranges, oceans, differential heating) on global climate.
10. Recognize that in any sequence of sediments or rocks that has not been overturned, the youngest sediments or rocks are at the top of the sequence and the oldest are at the bottom (law of superposition).
11. Interpret Earth's history by observing rock sequences, using fossils to correlate the sequences at various locations, and using data from radioactive dating methods.
12. Compare and contrast the physical and biological differences of the early Earth with the planet we live on today.

Course Outline

Unit 1: Composition of Earth

Teacher Connect Activity 1
Lesson 1: Mapping Our World
Lesson 2: Minerals
Lesson 3: Igneous Rocks
Lesson 4: Sedimentary and Metamorphic Rocks
Unit 1 Evaluation

Unit 2: Surface Processes on Earth

Lesson 5: Weathering, Erosion, and Soil
Lesson 6: Mass Movements, Wind, and Glaciers
Lesson 7: Surface Water
Lesson 8: Groundwater
Unit 2 Evaluation
Teacher Connect Activity 2
Project 1
Progress Test 1

Unit 3: The Atmosphere and the Oceans

Lesson 9: Atmosphere
Lesson 10: Weather and Storms
Lesson 11: Climate
Lesson 12: Earth's Oceans
Unit 3 Evaluation
Teacher Connect Activity 3

Unit 4: The Dynamic Earth

Lesson 13: Plate Tectonics
Lesson 14: Volcanism
Lesson 15: Earthquakes
Lesson 16: Mountain Building
Unit 4 Evaluation
Teacher Connect Activity 4

Unit 5: Geologic Time & Earth's Resources

Lesson 17: Fossils and the Rock Record
Lesson 18: Earth Resources
Lesson 19: Energy Resources

Lesson 20: Human Impact on Resources

Unit 5 Evaluation

Teacher Connect Activity 5

Project 2

Progress Test 2

Required Textbook and Materials

(available through Follett virtual bookstore at <http://highschool.nebraska.bkstr.com>)

Textbook: *Glencoe Earth Science*. McGraw-Hill Education. 2017. ISBN: 9780076774913

The following materials are needed to complete the lab activities in this course. The student will select lab activities to be submitted for grading as part of the projects.

Lab Activity 1: graph paper (or lined paper)

colored pencils or crayons

ruler

string

Lab Activity 2: examples of 5 different minerals

Lab Activity 3: Spoon

metric ruler

clear plastic wide mouth jar or bottle with a lid (a plastic tennis ball can works great, but any similar container will work)

tap water

Lab Activity 4: metric ruler

Lab Activity 5: None

Lab Activity 6: None

Lab Activity 7: None

Lab Activity 8: two thermometers

1 clean glass jar big enough to cover the thermometer

1 cardboard box

Lab Activity 9: printed map of the United States and access to online map services

(Google Maps, Mapquest, etc.) <https://www.google.com/maps>

Lab Activity 10: None