

Honors Earth Science- Part A

COURSE DESCRIPTION: This challenging course provides students with an honors-level earth science curriculum, focusing on geology, oceanography, astronomy, weather, and climate. The program consists of online lessons, an associated reference book, collaborative activities, and hands-on laboratories students can conduct at home. The course prepares students for advanced studies in geology, meteorology, oceanography, and astronomy courses, and gives them more sophisticated experience in implementing scientific methods. Additional honors assignments include debates, research papers, extended collaborative laboratories, and virtual laboratories.

PREREQUISITES: Middle school Life Science (or equivalent), success in previous science course, and teacher/school counselor recommendation

COURSE LENGTH: One Semester

REQUIRED TEXT: Earth Science: A Reference Guide

MATERIALS LIST: No required materials for this course

COURSE OUTLINE:

Unit 1: Earth Science and Systems

- Lesson 1: Earth Science Semester 1 Introduction
- Lesson 2: Why Study Earth Science?
- Lesson 3: Historical Contributions in Earth Science 1
- Lesson 4: Historical Contributions in Earth Science 2
- Lesson 5: Spheres as Earth Systems
- Lesson 6: Laboratory: Topographical Maps
- Lesson 7: Earth Systems and Interactions
- Lesson 8: Laboratory: Modeling Earth Science Processes 1
- Lesson 9: Laboratory: Modeling Earth Science Processes 2
- Lesson 10: Your Choice
- Lesson 11: Unit Test

Unit 2: Dynamic Earth

- Lesson 1: Introduction to Plate Tectonics
- Lesson 2: Pangaea and Continental Drift
- Lesson 3: Moving Plates
- Lesson 4: Plate Boundaries 1
- Lesson 5: Plate Boundaries 2
- Lesson 6: Plate Tectonics: Historical Perspective
- Lesson 7: Where Earthquakes and Volcanoes Occur
- Lesson 8: Structure of Earth's Interior
- Lesson 9: Laboratory: Island Chain Formation
- Lesson 10: How Earthquakes Happen
- Lesson 11: Your Choice
- Lesson 12: Mid-Unit Test
- Lesson 13: Locating Earthquakes
- Lesson 14: Earthquakes and Waves
- Lesson 15: Laboratory: Earthquake Epicenter
- Lesson 16: How Volcanoes Form
- Lesson 17: Volcanic Zones
- Lesson 18: Mountain Building
- Lesson 19: Impact of Geologic Events
- Lesson 20: Unit Test

Unit 3: Composition of the Earth

- Lesson 1: Minerals on Earth
- Lesson 2: Mineral Properties
- Lesson 3: Valuable Minerals
- Lesson 4: Crystal Structures
- Lesson 5: Rocks and Their Mineral Composition
- Lesson 6: Three Kinds of Rocks
- Lesson 7: Laboratory: Rocks and Minerals 1
- Lesson 8: Laboratory: Rocks and Minerals 2
- Lesson 9: Mid-Unit Test
- Lesson 10: Rock Origins 1
- Lesson 11: Rock Origins 2

- Lesson 12: The Rock Cycle
- Lesson 13: Earth Materials Change
- Lesson 14: Weathering and Erosion
- Lesson 15: Land Use and Its Effects
- Lesson 16: Your Choice
- Lesson 17: Unit Test

Unit 4: Geologic History

- Lesson 1: Earth's History
- Lesson 2: Earth's History and Change
- Lesson 3: The Fossil Record
- Lesson 4: Age of Geologic Features
- Lesson 5: Earth's History Written in Rocks
- Lesson 6: Laboratory: Interpreting Geologic History, Day 1
- Lesson 7: Laboratory: Interpreting Geologic History, Day 2
- Lesson 8: Your Choice
- Lesson 9: Unit Test

Unit 5: Earth's Atmosphere

- Lesson 1: Layers in the Atmosphere
- Lesson 2: Composition of the Atmosphere
- Lesson 3: History of Earth's Atmosphere
- Lesson 4: Atmosphere and Life on Earth
- Lesson 5: Laboratory: Barometer 1
- Lesson 6: Laboratory: Barometer 2
- Lesson 7: Mid-Unit Test
- Lesson 8: The Sun and Energy
- Lesson 9: Solar Radiation
- Lesson 10: Temperature and Air Pressure
- Lesson 11: Air Circulation Patterns 1
- Lesson 12: Air Circulation Patterns 2
- Lesson 13: Air Movement and Weather
- Lesson 14: Wind and Human Activity
- Lesson 15: Laboratory: Energy Absorption/Reflection 1

- Lesson 16: Laboratory: Energy Absorption/Reflection 2
- Lesson 17: Your Choice
- Lesson 18: Unit Test

Unit 6: Weather 1

- Lesson 1: What Makes the Weather?
- Lesson 2: Gathering Weather Data
- Lesson 3: Weather Maps
- Lesson 4: Laboratory: Weather Map Interpretation 1
- Lesson 5: Laboratory: Weather Map Interpretation 2
- Lesson 6: Cloud Formation
- Lesson 7: How Storms Develop
- Lesson 8: Determining Level of Risk
- Lesson 9: Preparing for Severe Weather
- Lesson 10: Your Choice
- Lesson 11: Unit Test

Unit 7: Semester 1 Review and Test

- Lesson 1: Semester Review
- Lesson 2: Your Choice
- Lesson 3: Your Choice
- Lesson 4: Semester Test