EARTH SCIENCE EXPLORED

Scope & Sequence

Lesson 1: Introduction to Earth Science

What is earth science?
The metric system
Introduction to maps

Lesson 2: Topographic Maps

Cartography
A brief history of topographic maps
How to read topographic maps

Lesson 3: Spheres of the Earth

An introduction to the spheres of the earth: the atmosphere, geosphere, biosphere, hydrosphere, cryosphere, and magnetosphere

Lesson 4: The History of Plate Tectonics

A brief history of the theories of continental drift and seafloor spreading—the precursors of plate tectonics

Lesson 5: Tectonic Plate Boundaries and Events

Transform, divergent, and convergent boundaries between plates

Lesson 6: Explosive Volcanoes

Volcanoes at plate boundaries
Underwater volcanoes
Hot spot volcanoes
Shield, composite, and cinder volcanoes

Lesson 7: Powerful Earthquakes

- Earthquake origins
- Types of seismic waves
- Measuring an earthquake's magnitude
- Triangulating the epicenter of an earthquake
- Tsunamis

LESSON 8: EXAM 1

Lesson 9: Minerals

- Composition and characteristics of minerals
- Mineral formation
- Properties and identification of minerals

Lesson 10: Rocks

- Properties of igneous, sedimentary, and metamorphic rocks
- Rock identification

Lesson 11: Weathering & Erosion

- Physical & chemical weathering
- Movement of sediment by erosion
- Deposition of sediment

Lesson 12: Hydrologic Cycle

- The water cycle
- Surface and groundwater

Lesson 13: Geologic Time Theories

- A Christian foundation for understanding geology
- Uniformitarianism and catastrophism
- An introduction to the diluvial model geologic column

Lesson 14: The Story of the Earth

Presuppositions of old earth and young earth geologists
Brief survey of the geologic column and diluvial model

Lesson 15: The Fossil Record

Fossil formation
Types of fossils
Unconformities in the fossil record
Fossil anomalies

LESSON 16: EXAM 2

Lesson 17: Properties of the Oceans

Features of the ocean floor
Deep ocean basin sediments
Properties of ocean water: dissolved gasses, salinity, and density

Lesson 18: Ocean Currents

Deep ocean currents
Surface currents
Longshore currents
How ocean currents affect weather

Lesson 19: Tides & Complex Weather Patterns

Tides
El Nino & La Nina

Lesson 20: Hydrothermal Vents & Deep Sea Ecosystems

Characteristics of hydrothermal vents
Hydrothermal vents formation
Unique ecosystems found around hydrothermal vents

Lesson 21: The Earth's Atmosphere

Features of the atmosphere
Characteristics of each layer of the atmosphere

Lesson 22: The Sun: Our Source of Energy

Three kinds of heat transfer
Characteristics of urban heat islands

Lesson 23: Air Circulation & Weather

Convection currents in the atmosphere
Jet streams
Trade Winds
Global wind patterns
Land and Sea breezes

Lesson 24: Weather Maps

Weather maps
Symbols of a weather map
Barometric pressure
High and low pressure areas
How to read a weather map

Lesson 25: Storms & Severe Weather

Weather versus climate
Causes of severe weather
Severe weather safety

Lesson 26: The Earth's Climate

Factors affecting climate
Climate zones around the world
How plate tectonic movement affects climate

Lesson 27: EXAM 3

Lesson 28: The Earth's Orbit & Seasons

The Habitable Zone
Earth's orbit
Rotation versus revolution
Seasons

Lesson 29: The Sun-Earth Relationship

The sun as a unique star
Electromagnetic spectrum
Sunspots and solar flares

Lesson 30: Earth in the Solar System

Meteors, meteoroids, meteorites
How space bodies affect earth
Gravity

Lesson 31: The Earth-Moon Relationship

Moon phases affect tides
Solar & lunar eclipses

Lesson 32: Renewable vs. Nonrenewable Resources

Characteristics and uses of renewable resources
Characteristics and uses of non-renewable resources
How resources are obtained

Lesson 33: Eutrophication & the Environment

Eutrophication
How eutrophication affects life on earth
Ways to prevent eutrophication

Lesson 34: One Planet, Many Spheres

Capstone lessons reviewing concepts studied throughout the year demonstrating how the many layers of the Earth work together

Lesson 35: Exam 4