



# 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 & Plate Tectonics**

Characteristics of hydrothermal vents  
How hydrothermal vents are formed

## **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

## **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: The 3 R's of Clean Energy**

Reduce, reuse, and recycle  
Clean energy options  
Benefits and drawbacks of clean energy options

**Lesson 35: Exam 4**