

### Course Description:

MS Physical Science (2 of 2) investigates concepts from ecology and geology to explore the interactions between and among organisms in an ecosystem. Topics covered include types of rocks, the rock cycle, and Earth's resources to explore how Earth's processes can lead to natural hazard events and severe weather, and then discover how technology can help during disasters, as well as other benefits of technology.

### Course Objectives:

- Apply scientific processes to conduct investigations.
- Use logical thinking to identify relationships and draw conclusions.
- Examine how investigations and research in ecology and geology are important to gaining historical perspective and understanding the societal value of scientific advances.
- Evaluate topics in ecology and geology to better understand interactions between and among organisms, changes to ecosystems, impacts on populations, Earth's features, Earth's resources, natural hazard events, and geologic timescale.

### Required Materials:

In course.

### Schedule of Work:

#### **Unit 1: Interactions in an Ecosystem**

- Warm-Ups
- Big Questions
- Direct Instruction:
  - Ecological Levels Vocabulary
  - Ecological Levels Examples
  - Resources
  - Population Dynamics
  - Predator-Prey Relationships
  - Food Web and Food Chain
  - Changes to Biological Parts of an Ecosystem
  - Changes to Physical Parts of an Ecosystem
- Lesson Reviews and Discussion Board
- Project: Effects on Populations
- Checkpoints 1–4
- Unit 1 Review
- Unit 1 Exam

#### **Unit 2: Dynamic Populations**

- Warm-Ups
- Big Questions
- Direct Instruction:
  - Competition
  - Factors That Affect Populations
  - Population Data
  - Mutually Beneficial Interactions

- What Is Biodiversity?
- Impacts to Biodiversity
- Lesson Reviews and Discussion Board
- Project: Resource Availability
- Project: Predicting Interactions
- Project: Preserving Biodiversity
- Checkpoints 6–9
- Unit 2 Review
- Unit 2 Exam

### **Unit 3: Resources on Earth**

- Warm-Ups
- Big Questions
- Direct Instruction:
  - The Structure of Earth
  - Types of Rocks
  - Rock Cycle
  - Powering the Rock Cycle
  - Resource Needs
  - Uneven Distribution of Resources
  - Limited and Nonrenewable Resources
  - Resource Challenges
- Lesson Reviews and Discussion Board
- Project: Modeling the Rock Cycle
- Project: Reasons for the Uneven Distribution of Resources
- Checkpoints 11–14
- Unit 3 Review
- Unit 3 Exam

### **Unit 4: Hazards on Earth**

- Warm-Ups
- Big Questions
- Direct Instruction:
  - Processes inside Earth
  - Structure of Earth's Surface
  - Introduction to Natural Hazards
  - Natural Hazards: Severe Weather Events
  - Earthquakes
  - Reducing Earthquake Damage
  - Volcanoes
  - Studying Volcanoes
- Lesson Reviews and Discussion Board
- Project: Forecasting Disaster
- Checkpoints 16–19
- Unit 4 Review
- Unit 4 Exam

### **Unit 5: Earth's Changing Surface**

- Warm-Ups

- Big Questions
- Direct Instruction:
  - Changing Earth
  - Sudden Changes on Earth
  - Erosion
  - Erosional Features
  - Wegener's Continental Drift Hypothesis
  - Wegener and the 21st Century
  - Modern Evidence for Plate Motion
  - Building New Crust
  - Results of Plate Motion
- Lesson Reviews and Discussion Board
- Project: Evidence of Plate Motion
- Checkpoints 21–24
- Unit 5 Review
- Unit 5 Exam

### **Unit 6: Geology in the 21st Century**

- Warm-Ups
- Big Questions
- Direct Instruction:
  - Geologic Timescale
  - Technology Uncovers Past Events
  - Technology and Natural Hazards
  - Responsible Use of Technology
  - Technology: Learning from Nature
- Lesson Reviews
- Project: Changing Earth
- Checkpoints 26–28
- Unit 6 Review
- Unit 6 Exam
- Final Exam Units 1–6 Reviews
- Units 1–6 Vocabulary Reviews
- Final Exam