

# Earth Science

## Course Description

This engaging course introduces 7<sup>th</sup>-8<sup>th</sup> grade students to the dynamic systems of our planet. Covering geology, meteorology, and hydrology students will explore the Earth's structure, geologic activity, weather patterns, and water cycles. Through hands-on activities, interactive lessons, and field studies, students will develop critical thinking and problem-solving skills while gaining a deeper appreciation for our planet and its place in the cosmos.

## Course Objective

By the end of this course, students will develop a comprehensive understanding of Earth's dynamic systems, including the geosphere, hydrosphere, atmosphere, and biosphere, analyzing the interactions between these systems and their impact on Earth's processes and history. Students will gain skills in scientific observation and critical thinking, enabling them to evaluate environmental issues and contribute to sustainable solutions.

## Learning Outcomes

By the end of this course students should be able to:

- Identify and describe the components of the geosphere, hydrosphere, atmosphere, and biosphere.
- Explain how these systems interact and influence Earth's processes.
- Understand the theory of plate tectonics and its role in shaping Earth's surface.
- Explain the processes of weathering, erosion, and deposition.
- Investigate the causes and effects of earthquakes, volcanoes, and mountain formation.
- Describe the stages of the water cycle and the movement of water through Earth's systems.
- Analyze weather patterns, climate zones, and the factors that influence them.
- Describe the characteristics of different ecosystems and biomes.
- Understand the flow of energy and matter through ecosystems and the importance of biodiversity.
- Understand the impact of natural disasters on human societies.
- Explore the importance of natural resources and environmental conservation.
- Develop skills in scientific observation, data collection, and analysis.
- Apply critical thinking to evaluate scientific information and environmental issues.

## Modules:

- Understand Earth's Systems
- Geologic Processes
- Hydrologic Cycle
- Atmosphere
- Biosphere and Ecosystems
- Environmental Issues

## NGSS Standards Alignment

*Next Generation Science Standards*

Science and Engineering Practices	
Asking questions and defining problems	X
Developing and using models	X
Planning and carrying out investigations	X
Analyzing and interpreting data	X
Using mathematics and computational thinking	X
Constructing explanations and designing solutions	
Engaging in argument from evidence	
Obtaining, evaluating, and communicating information	X

Crosscutting Concepts	
Patterns	X
Cause and effect	X
Scale, proportion, and quantity	X
Systems and system models	X
Energy and matter	
Structure and function	X
Stability and change	X

Disciplinary Core Ideas	
MS-ESS2-1. Earth's Materials and Systems: All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms.	X

MS-ESS2-2: Earth's Materials and Systems: The planet's systems interact over scales that range from microscopic to global in size. These interactions have shaped Earth's history and will determine its future.	X
MS-ESS2-6: Weather and Climate: Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things. These interactions vary with latitude, altitude, and local and regional geography, all of which can affect oceanic and atmospheric flow patterns.	X
MS-ESS3-1: Natural Resources: Humans depend on Earth's land, ocean, atmosphere, and biosphere for many different resources.	X