NFC ACADEMY

Welcome to Honors Earth Science!

COURSE OVERVIEW

Earth Science Honors is a high school science course that explores Earth's structure, interacting systems, and place in the universe. The course uncovers concepts and processes found in:

- Astronomy – Earth's place in and interaction with space,
- Geology – physical structure and dynamic processes,
- Meteorology – atmosphere, weather and climate, and
- Oceanography – oceans and marine life.

Students will have the opportunity to evaluate and explore many scientific concepts by participating in interactive lab sessions, conducting hands-on activities, and completing projects designed to improve the understanding of Earth and its dynamic functions.

OBJECTIVES

- **DYNAMIC STRUCTURE OF EARTH:** Students will explore the changes and cycles constantly affecting the Earth.
- **FORCES AND FEATURES OF EARTH:** Students will learn about the forces at work on the Earth, such as earthquakes and volcanoes and how to use maps.
- **FEATURES OF EARTH'S CRUST:** Students will learn about rocks, minerals and other resources.

- **SHAPING EARTH'S CRUST:** Students will explore the forces that shape the Earth's crust, such as weathering and erosion, and other constructive and destructive forces.
- **EARTH'S WATER:** Students will explore the water cycle and the different bodies of water on the Earth.
- **EARTH'S ATMOSPHERE:** Students will explore the make-up of the Earth's atmosphere and the impact of humans on the atmosphere.
- **EARTH'S WEATHER AND CLIMATE:** Students will explore weather and climate and how to measure and predict weather.
- **ASTRONOMY:** Students will explore the solar system and other celestial bodies in the universe.

CURRICULUM CONTENT & SKILL FOCUS

UNIT 1: DYNAMIC STRUCTURE OF EARTH

- Examine the significance of Earth's orbital position, moon, and composition
- Describe the internal structure of the earth
- Analyze the fossil, geologic, and climatic evidence for continental drift
- Describe the four main spheres of Earth's exterior and how they are interdependent
- Identify how Earth's geochemical cycles support a balance of materials on Earth
- Identify how Earth's biochemical cycles create a balance of materials

UNIT 2: FORCES AND FEATURES OF EARTH

- Describe the forces involved with earthquakes and compare and contrast the types of seismic waves produced by an earthquake
- Define faults, folds, and their features
- Summarize the structure, force, and location of volcanoes
- Distinguish the different types of volcanic mountains
- Describe the basic features of map
- Interpret the shape and elevation of surface features on a topographic map

UNIT 3: FEATURES OF EARTH'S CRUST

- Identify the five conditions that define a mineral and categorize minerals by chemical composition
- Identify common characteristics if igneous, sedimentary, and metamorphic rocks
- Describe the rock cycle and compare and contrast the processes that cause igneous, metamorphic, and sedimentary
- Identify advantages and disadvantages of renewable energy source
- Identify the advantages and disadvantages of nonrenewable energy sources

UNIT 4: SHAPING EARTH'S CRUST

- Compare and contrast biological, physical, and chemical weathering
- Describe the erosion process and compare and contrast water and wind erosion
- Distinguish the four types of erosional forces and effects of rivers, waves, gravity and glaciers, and wind
- Identify destructive forces in nature and how they change the Earth's crust
- Identify constructive forces in nature and how they change the Earth's crust

UNIT 6: EARTH'S WATER

- Explain the water cycle and describe evaporation, condensation, sublimation, transpiration, infiltration, and precipitation
- Describe the basic chemical and physical properties of water and how it is affected by temperature, pH, and dissolved minerals
- Describe the distribution of Earth's water
- Define groundwater, how it forms, and how it is located and compare and contrast the three types of aquifers
- Describe the four main physical and chemical properties of ocean water and how it is used

- Explain the effect of wind and Earth's rotation on surface currents

UNIT 7: EARTH'S ATMOSPHERE

- Understand that Earth's atmosphere allows for respiration and photosynthesis
- Identify the primary gases and distinguish among the layers of the atmosphere
- Explain the impact biogeochemical cycles have on life
- Discuss how heat is maintained and distributed in the atmosphere
- Describe the causes and effects of air pollution and climate change

UNIT 8: EARTH'S WEATHER AND CLIMATE

- Differentiate weather and climate and identify global weather patterns and climate zones
- Distinguish between the different types of clouds and precipitation and how they relate to weather conditions
- Distinguish between different types of fronts and relate air masses and fronts to weather conditions
- Describe how the Sun influences weather conditions
- Identify factors that determine climate zones and recognize factors that can change global climate
- describe how a meteorologist measures and forecasts the weather

UNIT 9: ASTRONOMY

- Distinguish planets from other types of solar system objects
- Describe Kepler's three laws of planetary motion
- Relate Newton's laws of gravity and motion to the orbit of planets
- Explain the relationship between the earth's tilt on its axis and the seasons
- Identify important characteristics of the Sun and other stars
- Dstinguish between spiral, irregular, and elliptical galaxies and describe the development of galaxies over time

ADDITIONAL RESOURCES

All of the activities in this course can be completed with online resources. Earth Science labs are all online using Smart Science Labs for the virtual labs. Earth Science also includes extra alternate assignments, experiment/projects and tests for use in enhancing instruction or addressing individual needs as determined by the instructor.

Students in any honors course should expect to complete more extensive research and writing for the successful completion of the course in addition to the basic course program for the course. Science honor's course would require additional labs in addition to the research and writing component of an honor's course.

GRADING INFORMATION

GRADING COMPONENTS *(Honors)*

Lessons	30%	
Quizzes	25%	
Projects	15%	*(includes science labs)*
Tests	30%	

GRADING SCALE

100-90	A
89-80	B
79-70	C
69-60	D
Below 60	F