

Earth Science – MS/Part A

COURSE DESCRIPTION: The Earth Science curriculum builds on the natural curiosity of students. By connecting them to the beauty of geological history, the amazing landforms around the globe, the nature of the sea and air, and the newest discoveries about our universe, the curriculum gives students an opportunity to relate to their everyday world. Students will explore topics such as the fundamentals of geology, oceanography, meteorology, and astronomy; Earth's minerals and rocks; Earth's interior; plate tectonics, earthquakes, volcanoes, and the movements of continents; geology and the fossil record; the oceans and the atmosphere; and the solar system and the universe. Lesson assignments help students discover how scientists investigate the science of our planet.

COURSE OBJECTIVES:

- Describe through hands-on and virtual exploration the many aspects of the science of our planet, as well as the universe beyond our planet.
- Utilize tools and concepts to think critically about the fundamentals of geology, oceanography, meteorology, and astronomy; Earth's minerals and rocks; Earth's interior; plate tectonics, earthquakes, volcanoes, and the movements of continents; geology and the fossil record; the oceans and the atmosphere; and the solar system and the universe.
- Research and explain the key concepts and connections to the everyday world of geological history, landforms around the globe, the nature of the sea and air, and the newest discoveries about our universe.

PREREQUISITES: None

COURSE LENGTH: One Semester

REQUIRED TEXT: No required textbook for this course.

REQUIRED MATERIALS LIST

COURSE OUTLINE:

Module 1: Introduction to Earth Science

- Lesson 1: Introduction to Earth Science
- Lesson 2: Spheres of the Earth
- Lesson 3: Which Sphere
- Lesson 4: Mapping the Earth
- Lesson 5: Map Earth's Physical Features

- Lesson 6: Topo Challenge
- Lesson 7: Cartography
- Lesson 8: Mapping Mystery Island
- Lesson 9: Weathering
- Lesson 10: Weathering in Action
- Lesson 11- Erosion Part 1
- Lesson 12: Erosion Part 2
- Lesson 13: Soils of the Earth
- Lesson 14: Working with Scientific Data
- Lesson 15: Soil Profiles
- Lesson 16: Desertification
- Lesson 17: Module Review
- Lesson 18: Module Exam

Module 2: Rocks and Minerals

- Lesson 1: Rocks and Minerals
- Lesson 2: Minerals and Crystals Part 1
- Lesson 3: Minerals and Crystals Part 2
- Lesson 4: Mineral Classification Part 1
- Lesson 5: Mineral Classification Part 2
- Lesson 6: Mineral Identification
- Lesson 7: Mineralogy
- Lesson 8: Igneous Rocks
- Lesson 9: Igneous Rocks Presentation
- Lesson 10: Sedimentary Rocks
- Lesson 11: Sedimentary Rocks Presentation
- Lesson 12: Metamorphic Rocks
- Lesson 13: Metamorphic Rocks Presentation
- Lesson 14: The Rock Cycle
- Lesson 15: Rock and Roll Cycle
- Lesson 16: Meteorites
- Lesson 17: Module Review
- Lesson 18: Module Exam

Module 3: Geologic History

- Lesson 1: Geologic History
- Lesson 2: Steno's Principles
- Lesson 3: Fossil Succession
- Lesson 4: Linking Past and Present
- Lesson 5: Rates of Geologic Processes
- Lesson 6: Records in Rocks
- Lesson 7: Rock Record
- Lesson 8: Fossils
- Lesson 9: Environments of Long Ago
- Lesson 10: Index Fossils
- Lesson 11: Rock Layers and Index Fossils
- Lesson 12: American Geologic Tour Part 1
- Lesson 13: American Geologic Tour Part 2
- Lesson 14: Earth's Age
- Lesson 15: Determining Half-life
- Lesson 16: Journey Through Geologic Time
- Lesson 17: Module Review
- Lesson 18: Module Exam

Module 4: Plate Tectonics

- Lesson 1: Plate Tectonics
- Lesson 2: Earth's Interior
- Lesson 3: Mapping Earth's Interior
- Lesson 4: Continental Drift
- Lesson 5: Supercontinent
- Lesson 6: Seafloor Geography
- Lesson 7: Mapping the Ocean Floor
- Lesson 8: Seafloor Spreading
- Lesson 9: Calculating Seafloor Spreading
- Lesson 10: Moving Plates
- Lesson 11: Earth's Plates
- Lesson 12: Energy of Convection
- Lesson 13: Sources of Plate Motion
- Lesson 14: Plate Boundaries Part 1

- Lesson 15: Plate Boundaries Part 2
- Lesson 16: Plates and Structural Geography
- Lesson 17: Module Review
- Lesson 18: Module Exam

Module 5: Forces Shaping Earth's Surface

- Lesson 1: Forces Shaping Earth's Surface
- Lesson 2: Landforms
- Lesson 3: Volcanos
- Lesson 4: Folding and Faulting
- Lesson 5: Too Much Stress
- Lesson 6: Earthquakes
- Lesson 7: Locating the Epicenter
- Lesson 8: 100 Years of Earthquakes
- Lesson 9: Using Seismographs
- Lesson 10: Tsunamis
- Lesson 11: Hurricanes
- Lesson 12: Floods and Landslides
- Lesson 13: Wildfires
- Lesson 14: Tornadoes
- Lesson 15: Natural Disaster Research
- Lesson 16: Module Review
- Lesson 17: Module Exam
- Lesson 18: Portfolio

Course Asset Credits

SCI06B Grade 6 Science

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PREREQUISITES: None

COURSE LENGTH: One Semester

REQUIRED TEXT: No required textbook for this course.

REQUIRED MATERIALS LIST

COURSE OUTLINE:

Unit 1: Weather and Climate

- Weather and Climate
- Layers of the Atmosphere
- Three Kinds of Heat Transfer
- Daily Weather
- Air Circulation
- Isobars and Weather Maps

- Air Masses
- Weather Fronts
- Meteorology
- Forecast like a Meteorologist
- Weather vs. Climate
- Climate around the World
- Factors Affecting Climate
- Home Sweet Biome
- Global Warming
- Researching Global Warming

Unit 2: Water and Oceans

- Water and Oceans
- Water Cycle Part 1
- Water Cycle Part 2
- Ocean Water Part 1
- Ocean Water Part 2
- Surface Currents
- Wind and Ocean Current Pattern
- Deepwater Currents
- Ocean Waves Part 1
- Ocean Waves Part 2
- Ocean Tides
- Tidal Power
- Building a Tidal Power Plant
- Earth's Fresh Water
- Dams and Hydroelectric Power
- Power from Water

Unit 3: Energy and Earth's Resources

- Energy and Earth's Resources
- Energy Resources
- Fossil Fuels Part 1
- Fossil Fuels Part 2
- Environmental Effects Part 1
- Environmental Effects Part 2

- Energy for the Future
- Nuclear Power
- Alternative Sources Part 1
- Alternative Sources Part 2
- Water Power
- Wind Power
- Solar Power
- Research Renewable Energy
- Resource Management
- Conserving and Recycling
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Unit 4: Universe and the Solar System

- Universe and the Solar System
- Origin of the Universe
- The Solar System Part 1
- The Solar System Part 2
- Was the Earth Ever Really Flat
- Galaxies
- A Galaxy Far Far Away
- Gravitational Forces Part 1
- Gravitational Forces Part 2
- Rotation and Revolution
- The Inner Planets
- Inner Planet Presentation
- The Outer Planets
- Outer Planet Presentation
- Earth's Seasons
- Astronaut Training Part 1

Unit 5: Beyond Earth

- Beyond Earth
- Asteroids and Comets
- Famous Craters
- The Moon Part 1
- The Moon Part 2
- Moon Phases

- Phases of the Moon
- Eclipses
- Unmanned Space Exploration
- Unmanned Exploration Timeline
- Manned Space Exploration Part 1
- Manned Space Exploration Part 2
- Manned Exploration Timeline
- Future of Space Exploration
- Astronaut Training Part 2
- Portfolio

Unit 6: Labs

- Lab: Working with Weather
- Lab: Global Warming
- Lab: Power from Tides