

Teacher: CORE	
Earth and Space	Year: 2017-2018
Course: Earth and Space	
	Month: All Months

Historical Geology - This section of the course introduces students to geologic processes that have shaped the Earth.

MP 1

Essential Questions	Content	Knowledge and Skills	Vocabulary	Assessments	Lessons	Resources	Standards
How has the Earth's surface change over time?	Geologic History	Explain the principle of uniformitarianism and discuss how it differs from catastrophism.	catastrophism, uniformitarianism, numerical date,	Earth's Layers Lab, Geologic Time Line,			3.5.9.A-Compare Earth features with the processes of change.
	Relative Dating Principles	Distinguish between numerical dates and relative dates and apply relative dating principles to determine a time sequence of geologic events.	principle of superposition, relative dates, paleontology, geologic time scale	Geologic Time Project			3.7.9.B-Demonstrate the use of appropriate instruments to study processes.
	Geologic Time Scale	Define fossil and discuss the conditions that favor the preservation of organisms as fossils. List and describe various fossil types.					3.7.9.C-Apply basic computer operations and concepts.
	Numerical Dating	Explain how rocks of similar age that are in different places can be matched up. Distinguish among the four basic time units that make up the geologic time scale and explain why the time scale is considered to be a dynamic tool.					3.7.9.E-Apply basic computer communications systems. S11.D.1.1-Explain and analyze the forces in the lithosphere that continually shape Earth. 3.3.12.A3-Describe the absolute and relative dating methods used to measure geologic time, such as index fossils, radioactive dating, law of superposition, and crosscutting relationship.

Physical Geology -
MP 2

This section of the course introduces students to geologic processes that are constantly shaping the Earth.

Essential Questions	Content	Knowledge and Skills	Vocabulary	Assessments	Lessons	Resources	Standards
How and why is Earth's geosphere constantly changing?	Minerals	List the main characteristics that an Earth material must process to be considered a mineral and describe each.		Mineral Identification Lab, Minerals Project, Rock Identification, The Rock Cycle			3.1.9.B-Describe concepts of models as a way to predict and understand science and technology.
	Rocks	List and describe the properties that are used in mineral identification.					3.4.9.A-Explain concepts about the structural properties of matter.
	Continental Drift	Discuss Earth's natural resources in terms of renewability. Differentiate between mineral resources and ore deposits.					3.5.9.A-Compare Earth features with the processes of change.
	Plate Tectonics	Describe the two criteria used to classify igneous rocks and explain how the rate of cooling influences the crystal size of minerals.					3.5.9.B-Identify the sources and locations of Earth's resources.
	Earthquakes	List and describe the different categories of sedimentary rocks and discuss the processes that change sediment into sedimentary rock.					3.7.9.B-Demonstrate the use of appropriate instruments to study processes.
	Volcanoes	Define metamorphism, explain how metamorphism rocks form, and describe the agents of metamorphism.					3.7.9.C-Apply basic computer operations and concepts. 3.7.9.E-Apply basic computer communications systems.

S11.D.1.1.1-Classify and describe major types of rocks (i.e., igneous - granite, basalt, obsidian, pumice; sedimentary - limestone, sandstone, shale, coal; and metamorphic - slate, quartzite, marble, gneiss) and minerals (e.g., quartz, calcite, dolomite, clay, feldspar, mica, halite, pyrite) by their origin and formation.

3.3.10.A1-Describe the rock cycle and the processes that are responsible for the formation of igneous, sedimentary, and metamorphic rocks.

Meteorology - MP 3 This section of the course introduces students to meteorological processes and the complex Earth system.

Essential Questions	Content	Knowledge and Skills	Vocabulary	Assessments	Lessons	Resources	Standards
In what ways do changes in the atmosphere affect the rest of the Earth?	Atmosphere Composition, Structure, and Temperature	Distinguish between weather and climate and name the elements of weather and climate.		Layers of the Atmosphere Lab, Insolation Lab, Tracking Hurricane Floyd, Severe Weather Project			3.1.9.B-Describe concepts of models as a way to predict and understand science and technology.
	Air Pressure and Wind	Explain what causes the sun angle and length of daylight to change during the year and describe how these changes produce the season.					3.4.9.A-Explain concepts about the structural properties of matter.
	Weather Patterns and Severe Storms	List and describe the processes that cause water to change from one state of matter to another. Contrast the weather associated with low-pressure centers (cyclones) and high-pressure centers (anticyclones).					3.5.9.A-Compare Earth features with the processes of change. 3.5.9.B-Identify the sources and locations of Earth's resources.

Summarize Earth's idealized global circulation. Describe how continents and seasonal temperature changes complicate the idealized pattern.

Discuss air masses, their classification, and associated weather.

Compare and contrast typical weather associated with a warm front and a cold front. Describe an occluded front and a stationary front.

Identify areas of hurricane formation on a world map and discuss the conditions that promote hurricane formation. List the three broad categories of hurricane destruction.

3.7.9.B-Demonstrate the use of appropriate instruments to study processes.

3.7.9.C-Apply basic computer operations and concepts.

3.7.9.E-Apply basic computer communications systems.

Astronomy - MP 4

This section of the course introduces students to astronomy and the processes that shape our solar system and ultimately the universe.

Essential Questions	Content	Knowledge and Skills	Vocabulary	Assessments	Lessons	Resources	Standards
Where did all the material on Earth come from?	Ancient Astronomers	Explain the geocentric view of the solar system and describe how it differs from the heliocentric view.		Early Astronomers			3.1.9.B-Describe concepts of models as a way to predict and understand science and technology.
How do objects remain in our solar system?	Our Solar System	List and describe the contributions to modern astronomy of Nicholas Copernicus, Tycho Brahe, Johannes Kepler, Galileo Galilei, and Isaac Newton		Project, Adopt a Constellation Project, Planet Debate Project,			3.4.9.A-Explain concepts about the structural properties of matter.
What objects are beyond our solar system?	Light and the Sun	Describe the formation of the solar system according to the nebular theory. Compare and contrast the terrestrial and Jovian planets.					3.5.9.A-Compare Earth features with the processes of change.

Beyond Our Solar
System

Compare and contrast terrestrial and
Jovian planets.

List and describe the principal
characteristics of the small bodies
that inhabit the solar system.
Explain how the three types of
spectra are generated and what they
tell astronomers about the radiating
body that produce them.
List and describe the three types of
explosive activity that occur at the
Sun's surface.
Define cosmology and describe
Edwin Hubble's most significant
discovery about the universe.
List and describe the stages in the
evolution stars.
Describe the Big Bang theory.
Explain what it tells us about the
universe.

3.7.9.B-Demonstrate the use of
appropriate instruments to study
processes.
3.7.9.C-Apply basic computer
operations and concepts.