Science

<table>
<tr><td>Unit: The Sun-Earth-Moon System/Exploring the Universe</td><td>Time Span: Mid August- Late September</td></tr>
<tr><td colspan="2">Standards Taught
MS-ESS1-1 Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons. (SEP: 2; DCI: ESS1.A, ESS1.B; CCC: Patterns)
MS-ESS1-2 Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. (SEP: 2; DCI: ESS1.A, ESS1.B; CCC: Systems)
MS-ESS1-3 Analyze and interpret data to determine scale properties of objects in the solar system. (SEP: 4; DCI: ESS1.B; CCC: Scale/Prop.)
MS-PS2-4 Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects. (SEP:7; DCI: PS2.B; CCC: Systems)</td></tr>
<tr><td>Differentiation</td><td>Classroom Management and Environment</td></tr>
<tr><td>Students receive a note guide to help them answer key questions throughout the lessons, extra time for assignments, notes, quizzes/tests.</td><td>The classroom has students’ desks paired up allowing them to bounce ideas off of one another and for easy partner work. Rules and procedures are basic to help keep the room free of distractions during lecture and worktimes.</td></tr>
<tr><td>What will students be doing?</td><td>Prior Knowledge Needed</td></tr>
<tr><td>To assess student understanding, they must complete:
Notes and Terms
Assignments that include questions specific to each lesson/chapter
In-class labs and research
Visual aids
Assessments
Short Essays
Projects</td><td>Prior knowledge is discussed before the beginning of each lesson as a class. Some students carry prior knowledge from past classes or their own personal research.</td></tr>
<tr><td>Key Terms</td><td>Assessments</td></tr>
<tr><td>rotation, rotation axis, orbit, revolution, solstice, equinox, phase, waxing phases, waning phases, umbra, penumbra, solar eclipse, gravity, galaxies</td><td>Mid-lesson textbook questions
Lesson reviews
Quizzes/tests over chapter notes
In-Class Labs
In-Class research questions
Short essays over in-text material</td></tr>
<tr><td>Reflection
This module introduces students to</td><td>Essential Questions:
What causes the cyclic pattern of</td></tr>
</table>

the Sun-Earth-Moon system and helps them understand how the movement and interactions of these objects affect patterns we observe from Earth. Learning about Earth's rotation, revolution, the phases of the Moon, and eclipses provides an important foundation for understanding how our planet functions within the solar system. Students also explore the larger universe, including stars, galaxies, and the tools scientists use to study space, helping them recognize Earth's place within a much larger system. Understanding the Sun-Earth-Moon system and exploring the universe helps students develop an appreciation for the connections between celestial objects and how scientific observations help us better understand the world beyond our planet.	lunar phases? ● What causes the cyclic pattern of seasons? ● What causes the cyclic pattern of eclipses? ● What role does gravity play in the formation and motion of components within galaxies and our solar system? ● What are the distinguishing properties of objects in our solar system?

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<table>
<tr><td>Unit: The Water Cycle/Weather & Climate</td><td>Time Span: Early Oct - Early Dec</td></tr>
<tr><td colspan="2">Standards Taught</td></tr>
<tr><td colspan="2">

MS-ESS2-4 Develop a model to describe the cycling of water through Earth’s systems driven by energy from the sun and the force of gravity. (SEP: 2; DCI: ESS2.C; CCC: Energy/Matter)
MS-ESS2-5 Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions. (SEP: 3; DCI: ESS2.C, ESS2.D; CCC: Cause/Effect)
MS-ESS2-6 Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. (SEP: 2; DCI: ESS2.C, ESS2.D; CCC: Systems)
6.W.7 Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.

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Evaporation, transpiration, crystallization, condensation, precipitation, water cycle, aquifers, radiation, latitude, albedo, wind, convection, polar easterlies, prevailing westerlies, trade winds, Coriolis Effect, density current,

</td><td>

Mid-lesson textbook questions
Lesson reviews
Quizzes/tests over chapter notes
In-Class Labs
In-Class research questions
Short essays over in-text material

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surface current, upwelling, weather, air masses, front, climate, rain shadows	
Reflection	**Essential Questions**
● This module introduces students to the water cycle, weather patterns, and climate while helping them understand how Earth's systems work together to shape the environment. Learning about processes such as evaporation, condensation, precipitation, and collection provides an important foundation for understanding how water moves through the planet's systems. Students also explore the factors that influence weather and climate, including temperature, air pressure, and geographic features, helping them recognize the differences between short-term weather patterns and long-term climate trends. Understanding the water cycle, weather, and climate helps students develop an appreciation for the connections between Earth's systems and how these processes impact life around the world.	● How does water cycle into and through the atmosphere? ● How does water cycle on Earth's surface? ● How does energy transfer from the Sun to Earth and the atmosphere? ● What causes air and water to flow? ● How do the interactions of air masses cause changes in weather conditions? ● What factors determine regional climates?

Science

<table>
<tr><td>Unit: Human Impact on the Environment/Earth and Human Activity</td><td>Time Span: Mid December - Early March</td></tr>
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MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. (SEP: 4; DCI: LS2.A; CCC: Cause/Effect)
MS-LS2-5 Evaluate competing design solutions for maintaining biodiversity and ecosystem preservation practices and services. (SEP: 7; DCI: LS2.C, LS4.D, ETS1.B; CCC: Stability/Change)
MS-ESS3-3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. (SEP: 6; DCI: ESS3.C, ETS1.B; CCC: Cause/Effect)
MS-ESS3-4 Construct an argument supported by evidence for how increases in human population and per- capita consumption of natural resources impact Earth’s systems. (SEP: 7; DCI: ESS3.C; CCC: Cause/Effect, Nature Science/Consequence-Actions)
MS-ESS3-5 Ask questions to clarify evidence of the factors that may have caused a change in global temperatures over the past century. (SEP: 1; DCI: ESS3.D; CCC: Stability/Change)
MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, considering relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
MS-ETS1-3 Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.</td></tr>
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● In-class labs and research ● Visual aids ● Assessments ● Short Essays ● Projects	
Key Terms	**Assessments**
natural resource, deforestation, urbanization, pollution, conservation, reforestation, reclamation, aquifer, air pollution, photochemical smog, particulate matter, acid precipitation, climate, climate change, global warming, greenhouse gases, greenhouse effect, coral bleaching, population, natural resource, carrying capacity, ecological footprint	● Mid-lesson textbook questions ● Lesson reviews ● Quizzes/tests over chapter notes ● In-Class Labs ● In-Class research questions ● Short essays over in-text material
Reflection ● This module introduces students to human impacts on the environment and helps them understand how human activities influence Earth's systems. Learning about topics such as resource use, pollution, conservation, and changes to ecosystems provides an important foundation for understanding the relationship between people and the natural world. Students also explore how communities use Earth's resources and how decisions made by individuals and societies can create both positive and negative environmental effects. Understanding human impact on the environment and Earth helps students recognize the importance of responsible choices and the role humans play in protecting and sustaining the planet for future generations.	**Essential Questions:** ● How can humans minimize their impact on land? ● How can humans monitor and minimize their impact on water? ● Why must humans minimize their impact on the atmosphere? ● How have human activities caused the rise in global temperatures and what is the environmental impact of global warming? ● How does a growing human population affect consumption of resources? ● How does resource consumption affect the environment?

Science

Science

Unit: Geologic Time/Dynamic Earth/Distribution of Earth's Resources/Natural Hazards	**Time Span:** Early March - Mid May

Standards Taught

- MS-ESS1-4 Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history. (SEP:6; DCI: ESS1.C; CCC: Scale/Prop.)
- MS-LS4-1 Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth. (SEP: 4; DCI: LS4.A; CCC: Patterns)
- MS-LS4-6 Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time. (SEP: 5; DCI: LS4.C; CCC: Cause/Effect)
- MS-ESS2-3 Analyze and interpret data on the age of the Earth, distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions. (SEP: 4; DCI: ESS2.B, ESS1.C; CCC: Patterns)
- MS-ESS2-1 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. (SEP: 2; DCI: ESS2.A; CCC: Stability/Change) MS-ESS2-2 Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. (SEP: 6; DCI: ESS2.A, ESS2.C; CCC: Scale/Prop.)
- MS-PS1-2 Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred. (SEP: 8; DCI: PS1.A, PS1.B; CCC: Patterns) MS-PS1-3 Obtain and evaluate information to describe that synthetic materials come from natural resources and impact society. (SEP: 8; DCI: PS1.A, PS1.B; CCC: Structure/Function)
- MS-PS1-5 Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved. (SEP: 2; DCI: PS1.B; CCC: Energy/Matter)
- MS-LS1-3 Construct an evidence-based argument for how the body is a system of interacting subsystems composed of groups of cells, tissues, and organs. (SEP: 7; DCI: LS1.A; CCC: Systems)
- MS-ESS3-1 Constructs a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes. (SEP: 6; DCI: ESS3.A; CCC: Cause/Effect)
- MS-PS1-4 Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed. (SEP:2; DCI: PS1.A, PS3.A; CCC: Cause/Effect)
- MS-PS2-3 Ask questions about data to determine the factors that affect the strength of electric and magnetic forces. (SEP: 1; DCI: PS2.B; CCC: Cause/Effect)
- MS-PS2-4 Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects. (SEP:7; DCI: PS2.B; CCC: Systems)
- MS-PS2-5 Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other when objects are not in contact. (SEP:3; DCI: PS2.B; CCC: Cause/Effect)
- MS-LS1-6 Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. (SEP: 6, Nature Science/Empirical Evidence; DCI: LS1.C, PS3.D; CCC:

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<tr><td colspan="2">Energy/Matter)
● MS-ESS3-2 Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. (SEP: 4; DCI: ESS3.B; CCC: Patterns)
● MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
● MS-ETS1-3 Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success
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mineral, crystallization, extrusive rock, intrusive rock, lithification, compaction, cementation, rock cycle, natural resource, ores, renewable resources, nonrenewable resources, subduction zones, soil, porosity, permeability, mining, groundwater overdraft, Richter magnitude scale, moment magnitude scale, Modified Mercalli intensity scale, liquefaction, landslide, hurricane, tornado, flood, drought	
Reflection ● This module introduces students to geologic time, Earth's changing systems, and the processes that shape the planet while helping them understand how Earth has developed over millions of years. Learning about the layers of Earth, plate tectonics, rock cycles, and other geologic processes provides an important foundation for understanding how Earth's surface continues to change. Students also explore the distribution of Earth's resources and the causes and effects of natural hazards, helping them recognize the connections between Earth's processes and human communities. Understanding geologic time, the dynamic nature of Earth, and natural hazards helps students appreciate the complexity of our planet and the importance of using resources responsibly while preparing for Earth's changing conditions.	**Essential Questions:** ● How are the analyses of the rock and fossil records used to determine relative ages? ● How do geologists correlate rock strata across regions to develop the geologic time scale and organize Earth's history? ● What evidence supports the continental drift hypothesis? ● What evidence supports the theory of tectonic plates? ● How does the movement of tectonic plates from mountains and volcanoes, and cause earthquakes? ● What geoscience processes change Earth's surface? ● How does the flow of energy and cycling of matter produce chemical and physical changes in Earth's materials? ● How do people use resources from Earth's land, ocean, atmosphere, and biosphere? ● Why are resources distributed unevenly on Earth? ● How do humans impact resource distribution and availability? ● Why are some areas more prone to earthquakes than others? ● What geologic indicators signal the eruption of a volcano? ● Why does the risk and type of severe weather vary from place to place?