Swedesboro-Woolwich School District's Science Curriculum Guidance Document

GRADE 6– Unit/Module 2 Earth and Space Sciences

Mission Statement

The primary goal of the Swedesboro-Woolwich School District is to prepare each student with the real life skills needed to compete in a highly competitive global economy. This will be achieved by providing a comprehensive curriculum, the integration of technology, and the professional services of a competent and dedicated faculty, administration, and support staff.

Guiding this mission will be Federal mandates, including No Child Left Behind, the New Jersey Core Curriculum Content Standards, and local initiatives addressing the individual needs of our students as determined by the Board of Education. The diverse resources of the school district, which includes a caring PTO and active adult community, contribute to a quality school system. They serve an integral role in supporting positive learning experiences that motivate, challenge and inspire children to learn.

Unit/Module Overview

In unit 2, students will learn to:

- By the end of the second trimester, students examine the Earth's place in the universe. Then the focus will shift to Earth's systems to explain the cyclical patterns of eclipses, tides, and seasons. At the end of the trimester, students will be introduced to the role of water and how the energy from the Sun creates weather and climate on Earth. Students will take the Trimester 2 Assessment on LinkIt.

Guiding Question:

Part 1: Earth's Place in the Universe:

- How do the Earth, Sun, and Moon affect each other?
- How does gravity affect all objects in galaxies and solar systems?
- How big are objects in our solar systems compared to everyday objects?

Part 2: Earth's Systems:

- How does water change its states as it travels through the hydrologic cycle?
- How do air masses affect changes in weather?
- How does the unequal heating and the rotation of the Earth determine climates?

Standards Covered in Current Unit/Module

Related Standards and Learning Goals

Earth's Place in the Universe

- 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. [Clarification Statement: Examples of models can be physical, graphical, or conceptual.]
- MS-ESS1-2 Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. [Clarification Statement: Emphasis for the model is on gravity as the force that holds together the solar system and Milky Way galaxy and controls orbital motions within them. Examples of models can be physical (such as the analogy of distance along a football field or computer visualizations of elliptical orbits) or conceptual (such as mathematical proportions relative to the size of familiar objects such as students' school or state).] [Assessment Boundary: Assessment does not include Kepler's Laws of orbital motion or the apparent retrograde motion of the planets as viewed from Earth.]
- MS-ESS1-3 Analyze and interpret data to determine scale properties of objects in the solar system. [Clarification Statement: Emphasis is on the analysis of data from Earth-based instruments, spacebased telescopes, and spacecraft to determine similarities and differences among solar system objects. Examples of scale properties include the sizes of an object's layers (such as crust and atmosphere), surface features (such as volcanoes), and orbital radius. Examples of data include statistical information, drawings and photographs, and models.] [Assessment Boundary: Assessment does not include recalling facts about properties of the planets and other solar system bodies.]

Earth's Systems

- MS-ESS2-1 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. [Clarification Statement: Emphasis is on the processes of melting, crystallization, weathering, deformation, and sedimentation, which act together to form minerals and rocks through the cycling of Earth's materials.] [Assessment Boundary: Assessment does not include the identification and naming of minerals.]
- 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. [Clarification Statement: Emphasis is on the ways water changes its state as it moves through the multiple pathways of the hydrologic cycle. Examples of models can be conceptual or physical.] [Assessment Boundary: A quantitative understanding of the latent heats of vaporization and fusion is not assessed.]
- MS-ESS2-5 Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions. [Clarification Statement: Emphasis is on how air masses flow from regions of high pressure to low pressure, causing weather (defined by temperature, pressure, humidity, precipitation, and wind) at a fixed location to change over time, and how sudden changes in weather can result when different air masses collide. Emphasis is on how weather can be predicted within probabilistic ranges. Examples of data can be provided to students (such as weather maps, diagrams, and visualizations) or obtained through laboratory experiments (such as with condensation).] [Assessment Boundary: Assessment does not include recalling the names of cloud types or weather symbols used on weather maps or the reported diagrams from weather stations.]
- 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. [Clarification Statement: Emphasis is on how patterns vary by latitude, altitude, and geographic land distribution. Emphasis of atmospheric circulation is on the sunlight-driven latitudinal banding, the Coriolis effect, and resulting prevailing winds; emphasis of ocean circulation is on the transfer of heat by the global ocean convection cycle, which is constrained by the Coriolis effect and the outlines continents. Examples of models can be diagrams, maps and globes, or digital representations.] [Assessment Boundary: Assessment does not include the dynamics of the Coriolis effect.]

Unit/Module Weekly Learning Activities and Pacing Guide			
Topic & # Days	**NJ Standards**	**Critical Knowledge & Skills**	**Possible Resources & Activities**
Earth's Place in the Universe and 29 days/weeks	• 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. • MS-ESS1-2 Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. • MS-ESS1-3 Analyze and interpret data to determine scale properties of objects in the solar system.	**Obj. We are learning to**: • Analyze and determine scale properties of objects in the solar system • Use online simulations to understand the role of gravity in the motions within galaxies and the solar system • Identify and model Earth-Sun-Moon system • Identify and model lunar phases • Identify and model seasons • Identify and model eclipses of the sun and moon **Suggested Formative Assessment(s)**: • Sections of online workbook/worksheets • Exit tickets • Learning target tracker • Teacher feedback • Catch and Release • Think-Pair-Share • Thumb-o-meter	Texts • Earth and Space Google Slides • *The Complete Middle School Study Guide Everything You Need to Ace Science in One Big Fat Notebook* Materials • Online workbook • Worksheets • Lab materials • Google Form assessment • IXL
Earth's Systems and 29 days/weeks	• MS-ESS2-1 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. • MS-ESS2-4 Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and	**Obj. We are learning to**: • Model the water cycle • Identify and define atmosphere layer • Identify and define air masses and weather fronts • Identify and define climate **Suggested Formative Assessment(s)**: • Sections of online workbook/worksheets • Exit tickets • Learning target tracker • Teacher feedback • Catch and Release • Think-Pair-Share	Texts • Weather and Climate PDF folder • *The Complete Middle School Study Guide Everything You Need to Ace Science in One Big Fat Notebook* Materials • Online workbook • Worksheets • Lab materials • Google Form assessment • IXL

	the force of gravity. ● MS-ESS2-5 Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions. ● 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.	● Thumb-o-meter	

Link to Additional Components including Cross Curricular Connections, Accommodations, Assessments, Etc

ELA Enduring Understanding Statements