Grade 6

Trimester 2

Unit 1 Circulation of Earth's Air and Water

Unit 2 Weather and Climate

Unit 3 The Dynamic Earth

New Jersey Student Learning Standards

Established	2016-2017
Revised	2017-2018
Revised	2018-2019
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Revised	2020-2021
Revised	2022-2023
Revised	2023-2024
Revised	2024-2025

Marking Period	Unit Title	Recommended Instructional Days
Trimester 2	Unit 1 Circulation of Earth's Air and Water Unit 2 Weather and Climate Unit 3 The Dynamic Earth	**60 days**

NJSLS - Science: *Title*	NJSLS - Science: *Performance Expectations*	Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-S within Unit
Earth's Systems	**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. **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. **MS-ESS2-5** Collect data to provide evidence for how the	**Essential Question/s:** **Unit 1: Circulation of Earth's Air and Water** 1. What are the roles of gravity and energy in the water cycle? 2. How does the unequal heating of the Earth affect the atmosphere? 3. How does water move in the oceans? 4. What is the role of water in influencing weather and circulation of ocean currents? 5. How do Earth's systems interact with one another? **Unit 2: Weather and Climate** 1. How are the sun and oceans key factors that impact our climate? 2. What affects air masses? 3. What happens when air masses interact with one another?

	motions and complex interactions of air masses results in changes in weather conditions **MS-ESS2-1** Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. **MS-ESS2-2** Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. **MS-ESS2-3** Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions. **MS-ETS1-2.** Evaluate competing design solutions using a systematic process to determine how well	4. How do meteorologists use data to predict weather patterns? **<u>Unit 3: The Dynamic Earth</u>** 1. How do rocks and minerals form? 2. How do geologic processes affect the formation of rocks and minerals in the rock cycle? 3. How does the rock cycle demonstrate the movement of materials through the Earth? 4. How do weathering, erosion, and deposition shape Earth's history? 5. How does the movement of tectonic plates impact the surface of Earth? 6. What role does water play in shaping Earth's surface? 7. What evidence supports the theory of plate tectonics? **<u>Activity Description:</u>** ❖ Lesson Phenomenon ❖ Unit Opener: Can you Explain it? ❖ "Take It Further" Activities **<u>Unit 1: Circulation of Earth's Air and Water</u>** ❖ Hands on Lab: Model the Formation of the Wind ❖ Hands on Lab: Explore Density Differences in Water
Engineering Design		

<table>
<tr><td></td><td>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><td rowspan="3">❖ Hands on Lab: Make Clouds in the Classroom
❖ Virtual Lab: Ocean Currents
❖ Virtual Lab: Determining Density
❖ Virtual Lab: Composition and Structure of the Atmosphere
❖ Virtual Lab: Ocean Currents
❖ Virtual Lab: How Does Water Move Through the Water Cycle?

<u>Unit 2: Weather and Climate</u>
❖ Hands on Lab: Model an Air Mass Interaction
❖ Hands on Lab: Model Your Climate
❖ Virtual Lab: Forecasting the Weather

<u>Unit 3: The Dynamic Earth</u>
❖ Hands on Lab: Winds and Water: Agents of Change
❖ Hands on Lab: Make Your Own Mineral Crystals!
❖ Hands on Lab: Model the Movement of Continents
❖ Virtual Lab: Plate Tectonics and Landforms

Lab and engineering activities will incorporate these skills:
● Planning and Organization
● Critical Thinking
● Communication in a group
● Decision Making</td></tr>
<tr><td>FOUNDATION
Disciplinary:
Core Idea</td><td>FOUNDATION
Disciplinary:
Statement</td></tr>
<tr><td>ESS2.C The Roles of Water in Earth’s Surface Processes</td><td>Water continually cycles among land, oceans, and atmosphere via transpiration, evaporation, condensation and crystallization, and precipitation, as well as downhill flows on land.</td></tr>
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ESS2.D Weather and Climate	(MS-ESS2-4) The complex patterns of the changes and the movement of water in the atmosphere, determined by winds, landforms, and ocean temperatures and currents, are major determinants of local weather patterns. (MS-ESS2-5) Global movements of water and its changes in form are propelled by sunlight and gravity. (MS-ESS2-4) Variations in density due to variations in temperature and salinity drive a global pattern of interconnected ocean currents. (MS-ESS2-6) Weather and climate are influenced by interactions	● Reflection on activity and participation **Spotlight on scientists and their accomplishments** Example: Rhea Graham–Engineering Geologist Ruth Gates - Marine Biologist June Bacon-Bercey- Meteorologist Clyde Wahrhaftig - Geologist Gladys West- GPS Mathematician Specialist **Human Impacts on Earth** *Human activity is a factor that influences the absorption of the Sun's energy. *Human activity can affect the Earth's systems. **Interdisciplinary Connection: Content: (NJSLS#)** **Connections to Mathematics:** ● Write, read, and evaluate expressions in which letters stand for numbers. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For*

	involving sunlight, the ocean, atmosphere, ice, landforms, and living things. These interactions vary with latitude, altitude, and local and regional geography, all of which can affect oceanic and atmospheric flow patterns. (MS-ESS2-6) Because these patterns are so complex, weather can only be predicted probabilistically. (MS-ESS2-5) The ocean exerts a major influence on weather and climate by absorbing energy from the sun, releasing it over time, and globally redistributing it through ocean currents. (MS-ESS2-6)	*example, use the formulas $V = s^3$ and $A = 6 s^2$ to find the volume and surface area of a cube with sides of length s = 1/2*. (**6.EE.A.2.C**) ● Reason abstractly and quantitatively. **(MP.2)** ● Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. **(6.EE.B.6)** ● Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. **(6.NS.C.5)** ● Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers
ESS1.C The History of Planet Earth	Tectonic processes continually generate new ocean seafloor at	

ESS2.A Earth's Materials and Systems **ESS2.B Plate Tectonics and**	ridges and destroy old seafloor at trenches. (HS.ESS1.C GBE) (secondary to MS-ESS2-3) All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms. (MS-ESS2-1) The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future. (MS-ESS2-2) Maps of ancient land and water	in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.**(7.EE.B.3)** ● Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. **(7.EE.B.4.a)** **<u>Connections to Language Arts:</u>** ● Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6-8 texts and topics*. **(RST.6-8.4)** ● Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest. **(SL.8.5)** ● Use precise language and domain-specific

Large-Scale System Interactions	patterns, based on investigations of rocks and fossils, make clear how Earth's plates have moved great distances, collided, and spread apart. (MS-ESS2-3)	vocabulary to inform about or explain the topic. **(WHST.6-8.2.D)** ● Cite specific textual evidence to support analysis of science and technical texts. (**RST.6-8.1)** ● Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic. (**RST.6-8.9)** ● Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. **(RI.6.1)** ● Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. **(WHST.6-8.2)** ● Draw evidence from informational texts to support analysis, reflection, and research. **(WHST.6-8.9)**
FOUNDATION **Science and Engineering Practices:** ***Core Idea***	**FOUNDATION** **Science and Engineering Practices:** ***Statement***	
Planning and Carrying Out Investigations	Planning and carrying out investigations to answer questions or test solutions to problems in 6–8 builds on K–5 experiences and progresses to include investigations that use multiple variables and provide evidence to support explanations or design solutions.	
Developing and Using Models	Modeling in 6–8 builds on K–5 and progresses to developing, using and revising models to describe, test, and predict more abstract phenomena design systems.	
Analyzing and Interpreting	Analyzing data in 6–8 builds on	

Data	K–5 and progresses to extending quantitative analysis to investigations, distinguishing between correlation and causation, and basic statistical techniques of data and error analysis.	
Constructing Explanations and Designing Solutions	Constructing explanations and designing solutions in 6–8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific ideas, principles, and theories.	
Engaging in Argument from Evidence	Engaging in argument from evidence in 6–8 builds on K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed worlds.	
Obtaining, Evaluating, and	Obtaining, evaluating, and	

Communicating Information	communicating information in 6–8 builds on K–5 and progresses to evaluating the merit and validity of ideas and methods.	
FOUNDATION **Crosscutting Concepts:** ***Core Idea***	**FOUNDATION** **Crosscutting Concepts:** ***Statement***	
Systems and System Models	Models can be used to represent systems and their interactions—such as inputs, processes and outputs—and energy, matter, and information flows within systems. (MS-ESS2-6)	
Cause and Effect	Cause and effect relationships may be used to predict phenomena in natural or designed systems. (MS-ESS2-5)	
Energy and Matter	Within a natural or designed system, the transfer of energy drives the motion and/or cycling of matter. (MS-ESS2-4)	
Patterns	Patterns in rates of change and	

Scale, Proportion and Quantity	other numerical relationships can provide information about natural systems. (MS-ESS2-3) Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small. (MS-ESS2-2)	
Stability and Change	Explanations of stability and change in natural or designed systems can be constructed by examining the changes over time and processes at different scales, including the atomic scale. (MS-ESS2-1)	
Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-Competencies***	
Responsible Decision-Making	• Develop, implement, and model effective	

Relationship Skills Self-Management Social Awareness Social Awareness Social Awareness	problem-solving and critical thinking skills ● Utilize positive communication and social skills to interact effectively with others ● Recognize the skills needed to establish and and achieve personal and educational goals ● Demonstrate an understanding of the need for mutual respect when viewpoints differ. ● Demonstrate an awareness of the expectations for social interactions in a variety of ways. ● Recognize the importance of self-confidence in handling daily tasks and challenges	
Assessments (Formative) ***To show evidence of meeting the standard/s, students will successfully engage within:***		**Assessments (Summative)** ***To show evidence of meeting the standard/s, students will successfully complete:***
<u>Formative Assessments:</u>		**<u>Benchmarks:</u>** ● District Assessment

• Diagnostic tests used to modify teaching and learning activities to improve student attainment	**Summative Assessments:** • End of unit/chapter tests/lesson quizzes

Differentiated Student Access to Content:
Teaching and Learning *Resources/Materials*

Core Resources	**Alternate Core Resources** ***IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core Resources**
• **Interactive Worktext** • **Equipment Kits** • **Online Simulations** • **Lab Safety Handbook**	• Multilingual Glossary • Online Science Tools (Scientific Calculator, Graphing)	• Multilingual Glossary • Online Science Tools (Scientific Calculator, Graphing)	• Online Simulations • Virtual Labs • Webquests • Video-Based Projects • Take It Further • You Solve It! • Unit Performance Tasks • Unit Projects • Online Science Tools (Scientific Calculator, Graphing)

Supplemental Resources

Technology: 8.1.8.A.1, 8.1.8.A. 2, 8.1.8.A.3, 8.1.8.A. 4, 8.1.8.A. 5

Other: Career Education

- CRP4 Communicate clearly and effectively and with reason.
- CRP6 Demonstrate creativity and innovation
- CRP7 Employ valid and reliable research strategies
- CRP11 Use technology to enhance productivity

Differentiated Student Access to Content:
Recommended Strategies & Techniques

Core Resources	**Alternate Core Resources** ***IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core Resources**
• **Large group instruction** • **Small group instruction** • **Think Pair Share** • **Peer editing** • **Cooperative group work** • **Multimedia presentations** • **Choice Boards/Learning Menus** • **Manipulatives**	• Utilize a multi-sensory (VAKT) approach during instruction, provide alternate presentations of skills by varying the method (repetition, simple explanations, additional examples, modeling, etc.), modify test content and/or format, allow students to retake test for additional credit, provide additional times and preferential seating as needed, review, restate and repeat directions, provide study	• Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review, oral/visual directions/prompts when necessary, supplemental materials including use of an online bilingual dictionary, and modified	• Create an enhanced set of introductory activities, integrate active teaching/learning opportunities, incorporate authentic components, propose interest-based extension activities, and connect student to related talent development opportunities.

	guides, and/or break assignments into segments of shorter tasks.	assessment and/or rubric.	

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept: 1.Career Awareness and Planning, 2.Creativity and Innovation, 3.Critical Thinking and Problem Solving, 4.Global and Cultural Awareness 5. Digital Citizenship 6. Information and Media Literacy 7. Technology Literacy**	
	Core Ideas:	**1. There are a variety of resources available to help navigate the career planning process.** **2. Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking.** **3. Multiple solutions often exist to solve a problem.** **4. Awareness of and appreciation for cultural differences is critical to avoid barriers to productive and positive interaction.** **5. Detailed examples exist to illustrate crediting others when incorporating their digital artifacts in one's own work.** **6. Digital tools make it possible to analyze and interpret data, including text, images, and sound. These tools allow for broad concepts and data to be more effectively communicated.** **7. Some digital tools are appropriate for gathering, organizing, analyzing, and presenting information, while other types of digital tools are appropriate for creating text, visualizations, models, and communicating with others**
	Performance Expectation/s:	**1. 9.2.8.CAP.12: Assess personal strengths, talents, values, and interests to appropriate jobs and careers to maximize career potential.**

		2. 9.4.8.CI.1: Assess data gathered on varying perspectives on causes of climate change (e.g., cross cultural, gender-specific, generational), and determine how the data can best be used to design multiple potential solutions (e.g., RI.7.9, 6.SP.B.5, 7.1.NH.IPERS.6, 8.2.8.ETW.4). 3. 9.4.8.CT.1: Evaluate diverse solutions proposed by a variety of individuals, organizations, and/or agencies to a local or global problem, such as climate change, and use critical thinking skills to predict which one(s) are likely to be effective (e.g., MS-ETS1-2). 4. 9.4.8.GCA.2: Demonstrate openness to diverse ideas and perspectives through active discussions to achieve a group goal. 5. 9.4.8.DC.1: Analyze the resource citations in online materials for proper use. 5. 9.4.8.DC.2: Provide appropriate citation and attribution elements when creating media products (e.g., W.6.8). 6. 9.4.8.IML.4: Ask insightful questions to organize different types of data and create meaningful visualizations. 7. 9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4). 7. 9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).
	Career Readiness, Life Literacies, & Key Skills Practices	
	• Act as a responsible and contributing community member and employee. • Demonstrate creativity and innovation. • Utilize critical thinking to make sense of problems and persevere in solving them. • Consider the environmental, social and economic impacts of decisions. • Use technology to enhance productivity, increase collaboration and communicate effectively. • Work productively in teams while using cultural/global competence.	

New Jersey Legislative Statutes and Administrative Code (place an "X" before each law/statute if/when present within the curriculum map)									
X	Amistad Law: *N.J.S.A. 18A 52:16A-88*		Holocaust Law: *N.J.S.A. 18A:35-28*	X	LGBT and Disabilities Law: *N.J.S.A. 18A:35-4.35*	X	Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*	X	Standards in Action: *Climate Change*