Grade 5

Unit 5: Earth Interactions and Resources

New Jersey Student Learning Standards
2024 - 2025

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

Trimester	Unit Title	Recommended Instructional Days
3	Earth Interactions and Resources	38

NJSLS - Science: *TItle*	NJSLS - Science: *Performance Expectations*	Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-S within Unit
5-ESS2 Earth's Systems	**5-ESS2-1.** Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. **5-ESS2-2**. Describe and graph the amounts of saltwater and fresh water in various reservoirs to provide evidence about the distribution of water on Earth. **5-ESS3-1**. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	
FOUNDATION Disciplinary: *Core Idea*	**FOUNDATION Disciplinary: *Statement***	
ESS2.A: Earth Materials and Systems **ESS2.C: The Roles of Water in Earth's Surface Processes** **ESS3.C: Human Impacts on Earth Systems** **ETS1.B: Developing Possible Solutions**	● Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and	**<u>Essential Questions:</u>** ● How Do Earth's Systems Interact? ● What Is The Role of Water in Earth's Systems? ● How Does Resource Use Affect the Environment? ● How Can People Protect the Environment? **<u>Enduring Understanding:</u>** ● Explore interactions of Earth's systems and how humans affect those systems and the resources they contain. ● They will identify ways that humans can conserve environments and resources including the use of specific technologies.

ETS1.C: Optimizing the Design Solution	processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. (5-ESS2-1) ● Nearly all of Earth's available water is in the ocean. Most freshwater is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere. (5- ESS2-2) ● Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1) ● Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a	● Use models to describe how Earth's systems interact. ● Explore how those systems change and shape Earth's surface. ● Use Models and mathematical thinking to explore the distribution of water on Earth's surface and how the hydrosphere interacts with other earth systems. ● Obtain information to explain how human activities affect Earth's systems and its resources. ● Obtain, evaluate and communicate information about the importance of reducing,reusing and recycling and other ways people protect the environment. ● Investigate technologists and ideas used to help protect Earth's resources and environments. **Lab Activities** ● *Unit Project - My Environmental Impact* - Students will analyze data to estimate the total amount of recyclable materials they will use in their lifetimes. (SCI, TECH, MA, ELA) ● *Hands-On Activity 1 - Earth's Materials Form Systems*: Air, water, rock, and living things are components, or parts, of the Earth system. (SCI, ELA) ● *Hands-On Activity 2 - Interactions of Systems Shape Landforms*: Some landforms are the result of changes to rock caused by water. (SCI, MA) ● *Hands-On Activity 1 - Water Moves Among Earth's Systems*: Water moves among Earth's systems through natural processes. (SCI, MA) ● *Hands-On Activity 2 - Water Stores Heat:* Water can store and transport thermal energy. (SCI, MA, TECH) ● *Hands-On Activity 1 - Squeaky Clean Water*: People use technology to clean water before and after they use it. (SCI, MA) ● *Hands-On Activity 2 - Getting to a Resource:* Over time, extracting a resource requires more work for less return and causes more change. (SCI, MA) ● *Hands-On Activity 1 - Pocket Park*: n A park design that incorporates green features helps individuals and communities conserve resources and protect the environment. (SCI, MA, TECH) ● *Hands-On Activity 2 - Reusing at Home:* Reusing materials at home is a conservation practice. (SCI, ART)

	range of likely conditions. (3-5-ETS1-2) ● At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. (3-5-ETS1-2) ● Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved. (3-5-ETS1-3) ● Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. (3-5-ETS1-3)	● *You Solve It - Earth's Systems* - Students explore a simulation of an event and analyze data to obtain information about how Earth's spheres interact and are affected. (SCI, TECH, MA) **Performance Task** ● *Protecting a Sphere* - Students design a way in which people can work together to protect one of Earth's systems. (SCI, TECH, ART) **Research Task** ● *Monsoons* - Students research and report on monsoons and how they are caused by the interactions of all Earth's spheres. (SCI, ELA, TECH) **Career Education** ● Marine Biologist and Ecologist - Students explore careers in the field of marine biology by researching and proposing responses to situations threatening a reef population. Then students explore the field of ecology by researching and evaluating a wetland restoration program. ● Sustainability Specialist - Students explore an environmental career that includes planning natural resources. People in Science & Engineering: Kang Hu- Students will read about Kang Hu, an engineer from China who now lives and works in the United States. His Career includes work in desalination. **(Diversity & Inclusion)** People in Science & Engineering: Dr. Mario Molina- Students learn about Dr. Mario Molina, a chemist who studied the effects of CFC's on the environment. **(Diversity & Inclusion)**
FOUNDATION **Science and Engineering Practices:** ***Core Idea***	**FOUNDATION** **Science and Engineering Practices:** ***Statement***	
Developing and Using Models **Using Mathematics and Computational Thinking** **Obtaining, Evaluating and Communication Information**	● Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions. ○ Develop a model using an example to	**Interdisciplinary Connections: Content: ;NJSLS#:** ***ELA/Literacy*** **RI.5.7** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (5-ESS2- 1),(5-ESS2-2) **W.5.8** Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase

Engaging in Argument from Evidence	describe a scientific principle. (5-ESS2-1) ● Mathematical and computational thinking in 3–5 builds on K–2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions. ○ Describe and graph quantities such as area and volume to address scientific questions. (5-ESS2-2) ● Obtaining, evaluating, and communicating information in 3–5 builds on K–2 experiences and progresses to evaluating the merit and accuracy of ideas and methods. ○ Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem. (5-ESS3-1) ● Engaging in argument from evidence in 3-5 builds on K-2 experiences and	information in notes and finished work, and provide a list of sources. (5-ESS2-2) **SL.5.5** Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5- ESS2-1),(5-ESS2-2) ***Mathematics*** **MP.2** Reason abstractly and quantitatively. (5-ESS2-1),(5-ESS2-2) **MP.4** Model with mathematics. (5-ESS2-1),(5-ESS2-2) **5.G.A.2** Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. (5-ESS2-1)

	progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s). ○ Support an argument within evidence, data, or a model. (5-LS1-1)	
FOUNDATION **Crosscutting Concepts:** ***Core Idea***	**FOUNDATION** **Crosscutting Concepts:** ***Statement***	
Systems and System Models **Scale, Proportion, and Quantity** **Science Address Questions About the Natural and Material World**	● A system can be described in terms of its components and their interactions. (5-ESS2-1) ● Standard units are used to measure and describe physical quantities such as weight and volume. (5-ESS2-2) ● Science findings are limited to empirical evidence. (5-ESS3-1)	
Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-Competencies***	
Self-Awareness **Self-Management** **Social Awareness** **Responsible Decision-Making**	● Recognize one's feelings and thoughts ● Recognize the impact of one's feelings and thoughts on one's own behavior	

Relationship Skills	● Recognize one's personal traits, strengths, and limitations ● Recognize the importance of self-confidence in handling daily tasks and challenges ● Understand and practice strategies for managing one's own emotions, thoughts, and behaviors ● Recognize the skills needed to establish and achieve personal and educational goals ● Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals. ● Recognize and identify the thoughts, feelings, and perspectives of others ● Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds ● 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 settings ● Develop, implement, and model effective problem-solving and critical thinking skills	

	● Identify the consequences associated with one's actions in order to make constructive choices ● Evaluate personal, ethical, safety, and civic impact of decisions ● Establish and maintain healthy relationships ● Utilize positive communication and social skills to interact effectively with others ● Identify ways to resist inappropriate social pressure ● Demonstrate the ability to prevent and resolve interpersonal conflicts in constructive ways ● Identify who, when, where, or how to seek help for oneself or others when needed ●	

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:***
Formative Assessments: ● Diagnostic tests used to modify teaching and learning activities to improve student attainment (Unit Readiness Check, Lesson Quiz, Unit Test, Performance-Based Assessment)	**Benchmarks:** ● District Assessments **Summative Assessments:** ● End of unit / chapter test

Differentiated Student Access to Content: **Teaching and Learning *Resources/Materials***			
Core Resources	**Alternate Core Resources** ***IEP/504/At-Risk/ESL***	**ML Core Resources**	**Gifted & Talented Core Resources**

• Evidence Notebook • Equipment Kit • FUNomental Readers • Idea Organizer • Language Development Worksheet • Online Simulations • Into Science TE • Into Science SE • District Approved Resources	• FUNomental Readers • Multilingual Glossary	• FUNomental Readers • Multilingual Glossary • Multilingual Home Letters	• FUNomental Readers

Supplemental Resources

Technology:
- Chromebook
- SMARTBoard / Promethean Board
- District-Approved Resources

Ed Science Platforms:
- Digital Assessments
- Digital Performance Tasks
- You Solve It Simulation
- Student eBook
- Video-Based Projects
- Science Tools
- Online Glossary

Differentiated Student Access to Content:
Recommended *Strategies & Techniques*

Core Resources	**Alternate Core Resources *IEP/504/At-Risk/ESL***	**ML Core Resources**	**Gifted & Talented Core**
• Model how to identify vocabulary terms within text. Discuss how to locate	• Utilize a multi-sensory (VAKT) approach during instruction, provide alternate presentations of	• Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review,	• Create an enhanced set of introductory activities, integrate active teaching/learning

definition within the text, noting that some definitions will need to be inferred based on images as well as text.	skills by varying the method (repetition, simple explanations, additional examples, modeling, etc.), modify test content and/or format, allow students to retake tests for additional credit, provide additional times and preferential seating as needed, review, restate and repeat directions, provide study guides, and/or break assignments into segments of shorter tasks.	oral/visual directions/prompts when necessary, supplemental materials including use of an online bilingual dictionary, and modified assessment and/or rubric.	opportunities, incorporate authentic components, propose interest-based extension activities, and connect students to related talent development opportunities.

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept:** Creativity and Innovation	
	Core Ideas:	Collaboration with individuals with diverse perspectives can result in new ways of thinking and/or innovative solutions. Curiosity and a willingness to try new ideas (intellectual risk-taking) contributes to the development of creativity and innovation skills.
	Performance Expectation/s:	• 9.4.5.CI.1: Use appropriate communication technologies to collaborate with individuals with diverse perspectives about a local and/or global climate change issue and deliberate about possible solutions (e.g., W.4.6,3.MD.B.3,7.1.NM.IPERS.6). • 9.4.5.CI.2: Investigate a persistent local or global issue, such as climate change, and collaborate with individuals with diverse perspectives to improve upon current actions designed to address the issue (e.g., 6.3.5.CivicsPD.3, W.5.7). • 9.4.5.CI.3: Participate in a brainstorming session with individuals with

		diverse perspectives to expand one's thinking about a topic of curiosity (e.g., 8.2.5.ED.2, 1.5.5.CR1a). • 9.4.5.CI.4: Research the development process of a product and identify the role of failure as a part of the creative process (e.g., W.4.7, 8.2.5.ED.6).
	Career Readiness, Life Literacies, & Key Skills Practices	
	Students work in cooperative groups and will use research strategies to complete labs	

New Jersey Legislative Statutes and Administrative Code (place an "X" before each law/statute if/when present within the curriculum map)									
	Amistad Law: *N.J.S.A. 18A 52:16A-88*		Holocaust Law: *N.J.S.A. 18A:35-28*		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*