

Grade 5

Unit 4: Energy and Matter in Ecosystems

New Jersey Student Learning Standards
2022 - 2023

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

Marking Period	Unit Title	Recommended Instructional Days
2	Energy and Matter in Ecosystems	19 Days
NJSL - Science: <i>Title</i>	NJSL - Science: <i>Performance Expectations</i>	Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSL-S within Unit
5-LS2- Ecosystems: Interactions, Energy, and Dynamics	<p>5-PS3-1 Use models to describe that energy in animals’ food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.</p> <p>5-LS1-1 Support an argument that plants get the materials they need for growth chiefly from air and water.</p> <p>5-LS2-1 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p>	
FOUNDATION Disciplinary: <i>Core Idea</i>	FOUNDATION Disciplinary: <i>Statement</i>	
<p>LS2.A: Interdependent Relationships in Ecosystems</p> <p>LS2.B: Cycles of Matter and Energy Transfer in Ecosystems</p>	<ul style="list-style-type: none"> The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plant parts and animals) and therefore operate as “decomposers.” Decomposition eventually restores (recycles) some 	<p>Essential Questions:</p> <ul style="list-style-type: none"> How Do Energy and Matter Move Through Ecosystems? How Do Organisms Change Their Ecosystems? <p>Enduring Understanding:</p> <ul style="list-style-type: none"> Explore phenomena of predator-prey population interactions and native invasive species interactions Use models to develop explanations of the energy inputs and energy and matter flows within ecosystems <p>Activity Description: Lab Activities - Conduct a lab to study fungi and their role in an ecosystem. How do fungi obtain energy? Create an energy pyramid and calculate the flow of energy. (SCI, ELA, TECH, MA)</p>

	<p>materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. (5-LS2-1)</p> <ul style="list-style-type: none"> • Matter cycles between that air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gasses, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment. (5-LS2-1) 	<p>Performance Task - Review the Anchor Chart Model and create your own using different organisms. Make sure to elaborate and explain how the flow of energy moves throughout the ecosystem (SCI, TECH, ELA, ART, MA)</p> <p>Research Task - Research the role that carbon and nitrogen play in our diets. (SCI, TECH, ELA)</p> <p><u>Interview a Scientist</u> - After learning what a zoologist does by reading an interview, student groups carry out research about other science careers that involve studying the relationships among organisms in an ecosystem. Based on their research, each group conducts a mock interview of a scientist as a whole-class presentation. (pg 239 - 240)</p> <p>Research Dr. Jane Goodal who is one of the world's most well-known and well-loved zoologists and primatologists.. Dr. Goodall has prosopagnosia, or "face blindness." Prosopagnosia may not pose the same degree of challenge that a disability like deafness does, but it does affect how one interacts with others. These kinds of social interactions can be very important in the workplace and in STEM careers. (Diversity & Inclusion)</p> <p><u>U.S. Army Corps of Engineers</u> - Students will learn about the U.S. Army Corps of Engineers, a division of the W. S. Army that is dedicated to studying and protecting ecosystems, among other things. Make sure students understand what is meant by “biological, mechanical, and chemical control methods.” If possible, provide an example of each. (pg 259 - 260)</p>
<p>FOUNDATION Science and Engineering Practices: <i>Core Idea</i></p>	<p>FOUNDATION Science and Engineering Practices: <i>Statement</i></p>	<p><u>Interdisciplinary Connections: Content: ;NJSL#:</u> <i>ELA / Literacy</i></p>
<p>Developing and Using Models</p> <p>Science Models, Laws, Mechanisms, and Theories explain Natural Phenomena</p>	<ul style="list-style-type: none"> • Modeling in 3-5 builds on K-2 models and progresses to building and revising simple models and using models to represent events and design solutions. <ul style="list-style-type: none"> ○ Develop a model to describe phenomena (5-LS2-1) 	<p>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-LS2-1)</p> <p>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-LS2-1)</p> <p>Mathematics</p> <p>MP.2 Reason abstractly and quantitatively. (5-LS2-1)</p> <p>MP.4 Model with mathematics. (5-LS2-1)</p>

	<ul style="list-style-type: none"> Science explanations describe the mechanisms for natural events. (5-LS2-1) 	
<p>FOUNDATION Crosscutting Concepts: <i>Core Idea</i></p>	<p>FOUNDATION Crosscutting Concepts: <i>Statement</i></p>	
<p>Systems and System Models</p>	<ul style="list-style-type: none"> A system can be described in terms of its components and their interactions. (5-LS2-1) 	
<p>Social and Emotional Learning: <i>Competencies</i></p>	<p>Social and Emotional Learning: <i>Sub-Competencies</i></p>	
<p>Self-Awareness Self-Management Social Awareness Responsible Decision-Making Relationship Skills</p>	<ul style="list-style-type: none"> Recognize one’s feelings and thoughts Recognize the impact of one’s feelings and thoughts on one’s own behavior 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 	

	<p>methods to achieve one's goals</p> <ul style="list-style-type: none">● 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 impacts 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	
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	<p>interpersonal conflicts in constructive ways</p> <ul style="list-style-type: none"> Identify who, when, where, or how to seek help for oneself or others when needed 		
<p>Assessments (Formative) <i>To show evidence of meeting the standard/s, students will successfully engage within:</i></p>		<p>Assessments (Summative) <i>To show evidence of meeting the standard/s, students will successfully complete:</i></p>	
<p>Formative Assessments:</p> <ul style="list-style-type: none"> Diagnostic tests used to modify teaching and learning activities to improve student attainment (Unit Pretest, Lesson Check, Lesson Roundup, Unit Review, Lesson Quiz) 		<p>Benchmarks:</p> <ul style="list-style-type: none"> District Assessments <p>Summative Assessments:</p> <ul style="list-style-type: none"> End of Unit/Chapter Test 	
<p>Differentiated Student Access to Content: Teaching and Learning Resources/Materials</p>			
<p>Core Resources</p>	<p>Alternate Core Resources IEP/504/At-Risk/ESL</p>	<p>ELL Core Resources</p>	<p>Gifted & Talented Core Resources</p>
<ul style="list-style-type: none"> Lesson 1: p. 227 Lesson 2: p. 248, 254 Leveled Readers - On Level Reader 	<ul style="list-style-type: none"> Lesson 1: p. 224, 228, 230, 236 Lesson 2: p. 250, 252, 256, 260 Leveled Readers - Extra Support 	<ul style="list-style-type: none"> Lesson 1: p. 226 Lesson 2: p. 246 Leveled Readers - Extra Support 	<ul style="list-style-type: none"> Lesson 1: p. 227 Lesson 2: p. 248, 254 Leveled Readers - Enrichment
<p>Supplemental Resources</p>			
<p>Technology:</p> <ul style="list-style-type: none"> Schoology HMH Ebook Google Classroom IXL Kahoot! 			

<ul style="list-style-type: none"> ● MobyMax ● Quizlet/Quizlet Live ● Quizizz ● Mystery Science ● Newsela ● Readworks ● Crash Course Kids ● Legends of Learning ● You Solve It Simulations (Build an Ecosystem) <p>Other:</p> <ul style="list-style-type: none"> ● 			
<p>Differentiated Student Access to Content: Recommended <i>Strategies & Techniques</i></p>			
Core Resources	Alternate Core Resources <i>IEP/504/At-Risk/ESL</i>	ELL Core Resources	Gifted & Talented Core
<ul style="list-style-type: none"> ● Model how to identify vocabulary terms within text. Discuss how to locate definition within the text, noting that some definitions will need to be inferred based on images as well as text. 	<ul style="list-style-type: none"> ● 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 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. 	<ul style="list-style-type: none"> ● 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 assessment and/or rubric. 	<ul style="list-style-type: none"> ● Create an enhanced set of introductory activities, integrate active teaching/ learning 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:	<p>Collaboration with individuals with diverse perspectives can result in new ways of thinking and/or innovative solutions.</p> <p>Curiosity and a willingness to try new ideas (intellectual risk-taking) contributes to the development of creativity and innovation skills.</p>
	Performance Expectation/s:	<ul style="list-style-type: none"> ● 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: <i>N.J.S.A. 18A 52:16A-88</i>		Holocaust Law: <i>N.J.S.A. 18A:35-28</i>		LGBT and Disabilities Law: <i>N.J.S.A. 18A:35-4.35</i>	X	Diversity & Inclusion: <i>N.J.S.A. 18A:35-4.36a</i>		Standards in Action: <i>Climate Change</i>
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