East Newark Public School

Science Curriculum
Grade 5

Revised 2022

Equity Statement:

East Newark Public School District does not discriminate on the basis of race, color, creed, religion, sex, ancestry, or national origin. The East Newark Board of Education ensures that all students enrolled in the schools of this district shall be afforded equal educational opportunities in strict accordance with the law. No student shall be denied access to or benefit from any educational program or activity on the basis of the student's race, color, creed, religion, national origin, ancestry, age, marital status, affectional or sexual orientation, gender, gender identity or expression, socioeconomic status, or disability. The Board directs the Superintendent to allocate faculty, administrators, support staff members, curriculum materials, and instructional equipment supplies among classes of this district in a manner that ensures equivalency of educational opportunity throughout this district. The school district's curricula will eliminate discrimination, promote mutual acceptance and respect among students, and enable students to interact effectively with others, regardless of race, color, creed, religion, national origin, ancestry, age, marital status, affectional or sexual orientation, gender, gender identity or expression, socioeconomic status, or disability.

Course Description:

The East Newark Public School fifth grade science program is designed to introduce and develop a foundation in science through five major units of study. Students will gain an understanding of many important areas of Life, Earth, and Physical Sciences, and will utilize and understand scientific processes. All courses are designed to prepare students for The New Jersey Student Learning Assessment in Science, their school science courses, and for solving simple scientific problems and issues in their everyday lives.

The material is presented at a moderate pace and can be adjusted for various levels taught. Lessons are based on discussions and student- driven activities. Hands-on activities are meant to show connections to real-life science applications, and to promote critical thinking and problem solving skills. Students who are placed in this course based on ESL placement will also receive appropriate accommodations based upon their ESL level. Students receiving Special Education services will receive modifications and accommodations to information and assessments as indicated in their Individual Education Plan.

Course Modifications:
The course instructor will determine, with the assistance of administrators, teacher assistants/aides, educational specialists, and/or special education teachers, what modifications will be made for his/her students. Such examples of modifications can include, but not be limited to:

- Extended time as needed
- Modification of tests and quizzes
- Preferential seating
- Alternative/Formative assessment (projects)
- Effective teacher questioning (ranging from simple recall to higher order critical thinking questions)
- Supplemental materials
- Cooperative learning
- Teacher tutoring
- Peer tutoring
- Differentiated Instruction

Best Practices:

Best practices come from research-based, effective methodologies in presenting material in a manner to engage all students in the learning process. Thorough planning and collaborative discussions about instructional practices are part of the ongoing practice of teachers. Student activities and practices that reflect effective methodology include, but are not limited to, providing students with:

- Regular opportunities to investigate topics in depth
- The ability to exercise choice and responsibility by choosing their own topics
- Opportunities for active participation in the classroom and the community
- Exploration of open-ended questions that challenge their thinking
- Opportunities for reading, writing, observing, discussing, and debating ideas
- Activities that include independent inquiry and cooperative learning
- Assessment of student learning that promotes lifelong responsible citizenship rather than the sole memorization of facts
- Strategies and tools to read and comprehend informational text

Grade 5 Scope and Sequence:

Unit	Estimated Pacing
Introduction to Science	4 weeks
Structure and Properties of Matter	6 weeks
Matter and Energy in Organisms and Ecosystems	5 weeks
Earth's Systems	10 weeks
Space Systems: Stars and the Solar System	5 weeks

Marking Period	Unit Title	Recommended Instructional Days
1	Introduction to Science	4 weeks

NJSLS - Science: *TItle*	NJSLS - Science: *Performance Expectations*	Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-S within Unit
Engineering Design	• **3-5-ETS1-1:** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. • **3-5-ETS1-2**: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. • **3-5-ETS1-3:** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	**Essential Question/s:** 1. What unit should be used to measure height? 2. Am I square? 3. How does the Gateway Arch stay standing? **Activity Description**: • Article analysis • Vocabulary activities • Video/photo analysis • Discuss: What problems can occur if you measure things inaccurately or don't gather enough data? How can you apply this to your relationships with friends? • Phenomenon investigation: What unit should be used to measure height? • Measurement practice • Estimation Lab • Metric Conversion Ladder activity • Phenomenon investigation: Am I square? • Crosscutting Concepts Flip Chart • Phenomenon investigation: How does the Gateway Arch stay standing? • Students will plan a design for an arch, create their arch, test their arch, improve their designs, and then communicate their results. **Interdisciplinary Connections: Content: ;NJSLS#:** ELA/Literacy - • RI.5.1 - Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
FOUNDATION Disciplinary: *Core Idea*	**FOUNDATION Disciplinary: *Statement***	
ETS1.A: Defining and Delimiting Engineering Problems	• Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.	

ETS1.B: Developing Possible Solutions	• 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 range of likely conditions. • 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. • Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved.	• 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. • RI.5.9 - Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. • W.5.7 - Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. • W.5.8 - Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. • W.5.9 - Draw evidence from literary or informational texts to support analysis, reflection, and research. Mathematics - • MP.2 - Reason abstractly and quantitatively. • MP.4 - Model with mathematics. • MP.5 - Use appropriate tools strategically. • 3-5.OA - Operations and Algebraic Thinking Technology - • 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.
ETS1.C: Optimizing the Design Solution	• Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.	
FOUNDATION **Science and Engineering Practices:** ***Core Idea***	**FOUNDATION** **Science and Engineering Practices:** ***Statement***	
Asking Questions and Defining Problems	Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost.	
Planning and Carrying Out Investigations	Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.	
Constructing Explanations and Designing Solutions	Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem.	
FOUNDATION **Crosscutting Concepts:** ***Core Idea***	**FOUNDATION** **Crosscutting Concepts:** ***Statement***	

Influence of Science, Engineering, and Technology on Society and the Natural World	• People's needs and wants change over time, as do their demands for new and improved technologies. • Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.	
Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-Competencies***	
• Self-Awareness • Self-Management • Responsible Decision Making • Social Awareness • Relationship Skills • Motivation	• Emotional Awareness • Internal Regulation • Behavior Control • Goal Pursuance • Appreciating Social and Environment Diversity • Adaptive Behavior • Communication • Social Engagement • Constructive Thinking • Consequence Evaluation • Respect for Self and Others • Enthusiasm • Initiative • Resilience	
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> • Participation in class discussions/debates • Exit tickets • Quizzes • In-class assignments/activities • Presentations • Group assignments • IXL results		**<u>Benchmarks:</u>** • Writing promps • CER activities **<u>Summative Assessments:</u>** • Unit test • Unit project • Lab activities
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
• Science Studies Weekly - Grade Five • Teacher created reading guides and presentations	• Modified/leveled readings from Science Studies Weekly - Grade Five • Teacher created reading guides and presentations	• Translated and modified readings from Science Studies Weekly - Grade Five • Translated teacher created reading guides and presentations	• Science Studies Weekly - Grade Five • Teacher created reading guides and presentations

Supplemental Resources

- Chromebooks
- SmartBoard
- IXL
- Teacher Online Resources
- Newsela.com
- Quizlet
- Kahoot
- Applicable educational videos

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

Core Resources	Alternate Core Resources *IEP/504/At-Risk/ESL*	ELL Core Resources	Gifted & Talented Core
• Encourage creative expression and thinking by allowing students to choose how to approach a problem or assignment. • Jigsaws • Think-Pair-Share • Boost engagement with material by providing opportunities for differentiation, group work, and alternative assignments/assessments where appropriate • Provide feedback utilizing a growth mindset and praise what is done correctly based upon effort, attitude and strategy.	• Provide graphic organizers for additional support or encourage students to create digital multimedia to showcase knowledge. • Use prompts and model directions • Provide opportunities to model talk during read alouds, and scaffold talk during whole class and small group discussions • Extended time for revisions or opportunity to identify and develop areas of personal interest	• Utilize visual supports and graphic organizers • Use prompts and model directions • Provide opportunities to model talk during read alouds, and scaffold talk during whole class and small group discussions • Device used for translation purposes • Provide additional wait time for student responses to questions to allow students the ability to undergo the process of translation between languages, composition of response and attempted response.	• Encourage students to explore concepts in depth and encourage independent studies or investigations. • Modeling or independent student-led research • Use of higher leveled text and/or writing assignments • Utilize differentiation in the areas of acceleration, enrichment, and grouping

	Disciplinary Concept:

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	***Core Ideas:***	The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills.
	Performance Expectation/s:	• **9.4.5.CT.1:** Identify and gather relevant data that will aid in the problem-solving process. • **9.4.5.CT.2:** Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem. • **9.4.5.CT.3:** Describe how digital tools and technology may be used to solve problems. • **9.4.5.CT.4:** Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.
	Career Readiness, Life Literacies, & Key Skills Practices	
	• Act as a responsible and contributing community members and employee. • Attend to financial well-being. • Consider the environmental, social and economic impacts of decisions. • Demonstrate creativity and innovation. • Utilize critical thinking to make sense of problems and persevere in solving them. • Model integrity, ethical leadership and effective management • Plan education and career paths aligned to personal goals. • Use technology to enhance productivity increase collaboration and communicate effectively. • Work productively in teams while using cultural/global competence.	

Marking Period	**Unit Title**	**Recommended Instructional Days**
1	Structure and Properties of Matter	6 weeks

NJSLS - Science: ***TItle***	**NJSLS - Science:** ***Performance Expectations***	**Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-S within Unit**
Matter and Its Interactions	• **5-PS1-1:** Develop a model to describe that matter is made of particles too small to see. • **5-PS1-2:** Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.	**Essential Question/s:** 1. Why does paper move when you blow on it? 2. How important is an atom? 3. Does the amount of matter change when matter changes state? 4. What is Matter? 5. How does water dissolve other substances? 6. What happens to the mass of an object when it dissolves? 7. How does a solar oven use reflection to cook food?

	● **5-PS1-3:** Make observations and measurements to identify materials based on their properties. ● **5-PS1-4:** Conduct an investigation to determine whether the mixing of two or more substances results in new substances.	8. How do forensic scientists identify unknown substances? 9. Why are there so many holes in the road in springtime? **<u>Activity Description</u>**: ● Article analysis ● Vocabulary activities ● Video/photo analysis ● Weekly Phenomenon Investigation: Why does paper move when you blow on it? ● Investigation: How does glue work? ● Balloon Scenario: Divide the students into pairs. Give each pair one balloon. Have students measure the mass of the uninflated balloon using a scale. Ask them to record the information in their interactive notebooks. Then, have the pairs blow their balloons up. Ask them to measure and record the second mass in their interactive notebooks. ● Predictions activity ● Democritus's Experiment ● Changing Physical Properties activities ● Writing prompt: Write and illustrate a story of a water molecule transitioning between the phases of matter as it travels through the water cycle. ● Weekly Phenomenon Investigation: Does the amount of matter change when matter changes state? ● Graphic Organizer: Solid, Liquid, or Gas ● Students will draw and label arrows with the names of the phase changes in the water cycle. ● Weekly Phenomenon Investigation: What happens to the mass of an object when it dissolves? ● Creating Mixtures activity ● Tell students that their goal is to determine if the law of conservation of mass is true. To do so, they will run two tests, create graphs, and look for patterns. ● Weekly Phenomenon Investigation: How does a solar oven use reflection to cook food? ● Discuss: How do you feel after you spend time in the sun? What can you do to protect yourself from the sun's rays? ● Chromatography, Hardness, Reflection, and Magnets investigations ● Project: Create a solar oven ● Discuss: How does thinking like a scientist help you? ● Create a brochure about how scientists use the properties of matter to discover unknown substances.
Engineering Design	● **3-5-ETS1-1:** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. ● **3-5-ETS1-2:** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. ● **3-5-ETS1-3:** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	
FOUNDATION **Disciplinary:** ***Core Idea***	**FOUNDATION** **Disciplinary:** ***Statement***	
PS1.A: Structure and Properties of Matter	● Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects. ● The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish. ● Measurements of a variety of properties can be used to identify materials. (Boundary: At this grade level, mass and weight are not distinguished, and	

	no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.)	● Weekly Phenomenon Investigation: How do forensic scientists identify unknown substances? ● Thermal Conductivity demonstration: Place hot water in three types of bowls: metal, plastic, and ceramic. Have students predict which bowl will feel the hottest to the touch. ● Solubility Investigation ● Activity: Use the properties of matter to investigate unknown substances ● Weekly Phenomenon Investigation: Why are there so many holes in the road in springtime? ● Discuss: Potholes can be repaired. What can you do to repair something you may have done that impacted another person negatively? What can you do to help everyone feel included? What can you do if you see someone being unkind to another person? ● Cause and Effect graphic organizer ● Engineering Design: Repairing Potholes ● Writing prompt: Write a letter to the mayor of your town telling them about the new substance that you found to fix the potholes in your city. **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. ● W.5.7 - Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. ● W.5.8 - Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. ● W.5.9 - Draw evidence from literary or informational texts to support analysis, reflection, and research. Mathematics - ● MP.2 - Reason abstractly and quantitatively. ● MP.4 - Model with mathematics. ● MP.5 - Use appropriate tools strategically. ● 5.NBT.A.1 - Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in
PS1.B: Chemical Reactions	● No matter what reaction or change in properties occurs, the total weight of the substances does not change. (Boundary: Mass and weight are not distinguished at this grade level.)	
ETS1.A: Defining and Delimiting Engineering Problems	● Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.	
ETS1.B: Developing Possible Solutions	● 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 range of likely conditions. ● 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. ● Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved.	
ETS1.C: Optimizing the Design Solution	● Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.	
FOUNDATION **Science and Engineering Practices:** ***Core Idea***	**FOUNDATION** **Science and Engineering Practices:** ***Statement***	

Developing and Using Models	Use models to describe phenomena.	the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. ● 5.NF.B.7 - Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. ● 5.MD.A.1 - Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real-world problems. ● 5.MD.C.3 - Recognize volume as an attribute of solid figures and understand concepts of volume measurement. ● 5.MD.C.4 - Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. Technology - ● 8.2.5.ED.1: Explain the functions of a system and its subsystems. ● 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.
Using Mathematics and Computational Thinking	Measure and graph quantities such as weight to address scientific and engineering questions and problems.	
Planning and Carrying Out Investigations	● Make observations and measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon. ● Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.	
Asking Questions and Defining Problems	Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost.	
Constructing Explanations and Designing Solutions	Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem.	
FOUNDATION **Crosscutting Concepts:** ***Core Idea***	**FOUNDATION** **Crosscutting Concepts:** ***Statement***	
Scale, Proportion, and Quantity	● Natural objects exist from the very small to the immensely large. ● Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume.	
Influence of Science, Engineering, and Technology on Society and the Natural World	● People's needs and wants change over time, as do their demands for new and improved technologies. ● Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.	
Science assumes consistent patterns in natural systems.	Science assumes consistent patterns in natural systems.	

Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-Competencies***	
• Self-Awareness • Self-Management • Responsible Decision Making • Social Awareness • Relationship Skills • Motivation	• Emotional Awareness • Internal Regulation • Behavior Control • Goal Pursuance • Appreciating Social and Environment Diversity • Adaptive Behavior • Communication • Social Engagement • Constructive Thinking • Consequence Evaluation • Respect for Self and Others • Enthusiasm • Initiative • Resilience	

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> • Participation in class discussions/debates • Exit tickets • Quizzes • In-class assignments/activities • Presentations • Group assignments • IXL results	**<u>Benchmarks:</u>** • Writing promps • CER activities **<u>Summative Assessments:</u>** • Unit test • Unit project • Lab activities

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**
• Science Studies Weekly - Grade Five • Teacher created reading guides and presentations	• Modified/leveled readings from Science Studies Weekly - Grade Five • Teacher created reading guides and presentations	• Translated and modified readings from Science Studies Weekly - Grade Five • Translated teacher created reading guides and presentations	• Science Studies Weekly - Grade Five • Teacher created reading guides and presentations

Supplemental Resources
• Chromebooks • SmartBoard • IXL • Teacher Online Resources • Newsela.com • Quizlet • Kahoot • Applicable educational videos

Differentiated Student Access to Content: Recommended *Strategies & Techniques*			
Core Resources	**Alternate Core Resources** *IEP/504/At-Risk/ESL*	**ELL Core Resources**	**Gifted & Talented Core**
• Encourage creative expression and thinking by allowing students to choose how to approach a problem or assignment. • Jigsaws • Think-Pair-Share • Boost engagement with material by providing opportunities for differentiation, group work, and alternative assignments/assessments where appropriate • Provide feedback utilizing a growth mindset and praise what is done correctly based upon effort, attitude and strategy.	• Provide graphic organizers for additional support or encourage students to create digital multimedia to showcase knowledge. • Use prompts and model directions • Provide opportunities to model talk during read alouds, and scaffold talk during whole class and small group discussions • Extended time for revisions or opportunity to identify and develop areas of personal interest	• Utilize visual supports and graphic organizers • Use prompts and model directions • Provide opportunities to model talk during read alouds, and scaffold talk during whole class and small group discussions • Device used for translation purposes • Provide additional wait time for student responses to questions to allow students the ability to undergo the process of translation between languages, composition of response and attempted response.	• Encourage students to explore concepts in depth and encourage independent studies or investigations. • Modeling or independent student-led research • Use of higher leveled text and/or writing assignments • Utilize differentiation in the areas of acceleration, enrichment, and grouping

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept:**	
	Core Ideas:	The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills.
	Performance Expectation/s:	• **9.4.5.CT.1:** Identify and gather relevant data that will aid in the problem-solving process. • **9.4.5.CT.2:** Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem. • **9.4.5.CT.3:** Describe how digital tools and technology may be used to solve problems.

		• **9.4.5.CT.4:** Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.
	Career Readiness, Life Literacies, & Key Skills Practices	
	• Act as a responsible and contributing community member and employee. • Attend to financial well-being. • Consider the environmental, social and economic impacts of decisions. • Demonstrate creativity and innovation. • Utilize critical thinking to make sense of problems and persevere in solving them. • Model integrity, ethical leadership and effective management • Plan education and career paths aligned to personal goals. • Use technology to enhance productivity increase collaboration and communicate effectively. • Work productively in teams while using cultural/global competence.	

Marking Period	**Unit Title**	**Recommended Instructional Days**
2	Matter and Energy in Organisms and Ecosystems	5 weeks

NJSLS - Science: ***TItle***	**NJSLS - Science:** ***Performance Expectations***	**Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-S within Unit**
Energy	**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.	**Essential Question/s:** 1. Why do animals have to eat? 2. How do peach trees make peaches taste sweet? 3. Do plants breathe? 4. What do plants eat? 5. Do plants eat dirt? 6. What makes an organism invasive? 7. How do we help trees grow? **Activity Description**: • Article analysis • Vocabulary activities • Video/photo analysis • Weekly Phenomenon Investigation: Why do animals have to eat?
From Molecules to Organisms: Structures and Processes	**5-LS1-1:** Support an argument that plants get the materials they need for growth chiefly from air and water.	
Ecosystems: Interactions, Energy, and Dynamics	**5-LS2-1:** Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	
FOUNDATION Disciplinary: ***Core Idea***	**FOUNDATION Disciplinary:** ***Statement***	

PS3.D: Energy in Chemical Processes and Everyday Life	The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water).	● Writing prompt: Starting with the sun, describe how matter cycles through ecosystems. ● Writing prompt: Describe a food chain. ● Discuss: What are the basic needs of all living things? ● Graphic organizer: Consumer, Producers, Decomposers ● Decomposer research assignment ● Draw a picture of your favorite ecosystem. Include all of the organisms in that ecosystem. Then draw arrows between them to create a food web. ● Weekly Phenomenon Investigation: How do peach trees make peaches taste sweet? ● Discuss: What things help you grow strong and healthy? What things might stop you from growing strong and healthy? ● Photosynthesis video; Have students discuss what they see happening with a partner. Play the video a few more times, then ask students to draw what is happening in their interactive notebooks. ● Have students make a T-chart in their interactive notebooks. Instruct them to write "photo" on one side and "synthesis" on the other side. Then, ask students to write the definition of and draw a picture to represent each part. ● Make a poster that includes a drawing and explanation of how trees make sugar. ● Weekly Phenomenon Investigation: What do plants eat? ● Discuss: What do you like to eat? What are some of your favorite healthy foods? What things can you do to take care of your physical well-being? What things are not good for your physical well-being? ● Jan Baptist van Helmont Experiment investigation ● Growing Plants in Tubes Experiment - analyze data, create bar graphs, complete charts, calculate change in weights, make observations about the graphs, and answer concluding questions. ● Writing prompt: Write a letter to a scientist sharing the data and conclusions from the "Growing Plants in Tubes" experiment. ● Weekly Phenomenon Investigation: What makes an organism invasive? ● Discuss: What can you do to respect others' space? How can you show others that you respect them? What are some examples of respectful words? What are some examples of respectful actions? Have you ever invaded someone's privacy? How did that make them feel? When interacting online, how can you protect your privacy and the privacy of others? ● Invasion activity - Show students a series of images from D-Day. For each image, ask students: What does it look like is happening in
LS1.C: Organization for Matter and Energy Flow in Organisms	● Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. ● Plants acquire their material for growth chiefly from air and water.	
LS2.A: Interdependent Relationships in Ecosystems	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 plants parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some 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.	
LS2.B: Cycles of Matter and Energy Transfer in Ecosystems	Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment.	
FOUNDATION **Science and Engineering Practices:** ***Core Idea***	**FOUNDATION** **Science and Engineering Practices:** ***Statement***	
Developing and Using Models	Use models to describe phenomena.	
Engaging in Argument from Evidence	Support an argument with evidence, data, or a model.	

Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena	Science explanations describe the mechanisms for natural events.
FOUNDATION **Crosscutting Concepts:** ***Core Idea***	**FOUNDATION** **Crosscutting Concepts:** ***Statement***
Energy and Matter	● Energy can be transferred in various ways and between objects. ● Matter is transported into, out of, and within systems.
Systems and System Models	A system can be described in terms of its components and their interactions.
Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-Competencies***
● Self-Awareness ● Self-Management ● Responsible Decision Making ● Social Awareness ● Relationship Skills ● Motivation	● Emotional Awareness ● Internal Regulation ● Behavior Control ● Goal Pursuance ● Appreciating Social and Environment Diversity ● Adaptive Behavior ● Communication ● Social Engagement ● Constructive Thinking ● Consequence Evaluation ● Respect for Self and Others ● Enthusiasm ● Initiative ● Resilience

this image? Explain that these images show an example of an invasion. Ask students: What questions do you have about D-Day or World War II? Generate a list on the board. Divide students into groups or allow them to work individually to research and find the answer to one question. Give each group or student time to present their answer to the class.

- Project: Conduct research to find an invasive species to write about. Then create a "Wanted" poster about the invasive species. Students will need to include a drawing of a model food web or chain representing the effects that their invasive species had on the ecosystems they moved to.
- Writing: Create a list of things that can happen to an ecosystem when a species invades.
- Weekly Phenomenon Investigation: How do we help trees grow?
- Think-Pair-Share: What do air, cotton T-shirt, pencil, and a diamond ring have in common?
- Carbon Cycle Simulation: Create four signs labeled "Atmosphere," "Plants," "Animals," and "Decomposers." Hang them up in the four corners of the room. Give each student a ping pong ball, a golf ball, or a cut-out paper circle. Tell students that the ball or circle represents a carbon atom. Instruct them to carry their carbon atom to the appropriate spots. Have students draw and/or write the steps of their journey as carbon atoms in their interactive notebooks.
- Writing: You are a carbon atom. Write a story or make a poster that describes your journey through the carbon cycle.
- Project: Ecosystem diorama.

Interdisciplinary Connections: Content: ;NJSLS#:

ELA/Literacy -

- RI.5.1 - Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
- 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.
- 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.
- RI.5.9 - Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.
- W.5.1 - Write opinion pieces on topics or texts, supporting a point of view with reasons and information.

		• 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. Mathematics - • MP.2 - Reason abstractly and quantitatively. • MP.4 - Model with mathematics. • MP.5 - Use appropriate tools strategically. • 5.MD.A.1 - Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. Technology - • 8.2.5.ED.1: Explain the functions of a system and its subsystems. • 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.

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: • Participation in class discussions/debates • Exit tickets • Quizzes • In-class assignments/activities • Presentations • Group assignments • IXL results	**Benchmarks:** • Writing promps • CER activities **Summative Assessments:** • Unit test • Unit project • Lab activities

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**
• Science Studies Weekly - Grade Five • Teacher created reading guides and presentations	• Modified/leveled readings from Science Studies Weekly - Grade Five • Teacher created reading guides and presentations	• Translated and modified readings from Science Studies Weekly - Grade Five • Translated teacher created reading guides and presentations	• Science Studies Weekly - Grade Five • Teacher created reading guides and presentations

Supplemental Resources
• Chromebooks • SmartBoard • IXL • Teacher Online Resources • Newsela.com • Quizlet • Kahoot • Applicable educational videos

Differentiated Student Access to Content: Recommended *Strategies & Techniques*			
Core Resources	**Alternate Core Resources** *IEP/504/At-Risk/ESL*	**ELL Core Resources**	**Gifted & Talented Core**
• Encourage creative expression and thinking by allowing students to choose how to approach a problem or assignment. • Jigsaws • Think-Pair-Share • Boost engagement with material by providing opportunities for differentiation, group work, and alternative assignments/assessments where appropriate • Provide feedback utilizing a growth mindset and praise what is done correctly based upon effort, attitude and strategy.	• Provide graphic organizers for additional support or encourage students to create digital multimedia to showcase knowledge. • Use prompts and model directions • Provide opportunities to model talk during read alouds, and scaffold talk during whole class and small group discussions • Extended time for revisions or opportunity to identify and develop areas of personal interest	• Utilize visual supports and graphic organizers • Use prompts and model directions • Provide opportunities to model talk during read alouds, and scaffold talk during whole class and small group discussions • Device used for translation purposes • Provide additional wait time for student responses to questions to allow students the ability to undergo the process of translation between languages, composition of response and attempted response.	• Encourage students to explore concepts in depth and encourage independent studies or investigations. • Modeling or independent student-led research • Use of higher leveled text and/or writing assignments • Utilize differentiation in the areas of acceleration, enrichment, and grouping

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept:**	
	Core Ideas:	The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills.
	Performance Expectation/s:	• **9.4.5.CT.1:** Identify and gather relevant data that will aid in the problem-solving process. • **9.4.5.CT.2:** Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem. • **9.4.5.CT.3:** Describe how digital tools and technology may be used to solve problems.

		• **9.4.5.CT.4:** Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.
	Career Readiness, Life Literacies, & Key Skills Practices	
	• Act as a responsible and contributing community members and employee. • Attend to financial well-being. • Consider the environmental, social and economic impacts of decisions. • Demonstrate creativity and innovation. • Utilize critical thinking to make sense of problems and persevere in solving them. • Model integrity, ethical leadership and effective management • Plan education and career paths aligned to personal goals. • Use technology to enhance productivity increase collaboration and communicate effectively. • Work productively in teams while using cultural/global competence.	

Marking Period	**Unit Title**	**Recommended Instructional Days**
3	Earth's Systems	10 weeks

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	• **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.	**Essential Question/s:** 1. How can we help the hydrosphere? 2. How does the shape of the geosphere affect where it rains? 3. What are clouds? 4. What is a microburst? 5. How can a wolf change a river? 6. What is a Biome? 7. Where does our water come from? 8. What effect do dams have on the biosphere, geosphere, and hydrosphere? 9. How do you build a dam? 10. Why are there cities in deserts? 11. Do melting glaciers affect the salinity of the ocean? 12. How does pollution hurt birds and fish in the ocean? 13. What happens in an oil spill?
Earth and Human Activity	• **5-ESS3-1:** Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	
Engineering Design	• **3-5-ETS1-1:** Define a simple design problem reflecting a need or a want that	

	includes specified criteria for success and constraints on materials, time, or cost. ● **3-5-ETS1-2:** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. ● **3-5-ETS1-3:** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	14. What is a watershed? 15. Where does garbage go? 16. Can you create a usable product out of trash? **Activity Description**: ● Article analysis ● Vocabulary activities ● Video/photo analysis ● Four Spheres activities - Write down the name of an event and explain how it affects each of Earth's four spheres (hydrosphere, geosphere, atmosphere, and biosphere). Describe how each sphere interacts with the others in terms of the event. ● Weekly Phenomenon Investigation: How can we help the hydrosphere? ● Discuss: What effects do you have on your environment? How do the hydrosphere, biosphere, geosphere, and atmosphere impact your life? ● Graphic Organizer: Earth's Spheres ● Graphic Organizer: Water Cycle ● Convection Current La ● Erosion lab: Create a simulated landform and see how water (rain or flooding) can erode and reshape the land. ● Acid Rain Lab ● Analyzing a System Graphic Organizer: Choose a system you would like to analyze. Write the name of the system in the center ● circle. Read through the different steps in the graphic, then fill in each space as it relates to your chosen system. ● Writing prompt: Come up with a plan to prevent acid rain. Write a letter to a government official about your plan. ● Weekly Phenomenon Investigation: How does the shape of the geosphere affect where it rains? ● Discuss: How does the geosphere impact daily life in your community? ● Draw and label a diagram that shows how a cloud forms. ● Rain Shadow Effect Model: Students will read and sort cards based on whether they affect the hydrosphere, geosphere, atmosphere, or biosphere. Students will color the cards that affect the hydrosphere blue, the biosphere green, the geosphere brown, and the atmosphere yellow. Have them attach each card to a toothpick with tape. Then, ask students to use pieces of modeling clay to attach the cards to their model in the correct places.
FOUNDATION Disciplinary: *Core Idea*	**FOUNDATION Disciplinary: *Statement***	
ESS2.A: Earth Materials and Systems	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 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.	
ESS2.C: The Roles of Water in Earth's Surface Processes	Nearly all of Earth's available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere.	
ESS3.C: Human Impacts on Earth Systems	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.	
ETS1.A: Defining and Delimiting Engineering Problems	Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed	

	solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.	● Writing prompt: Write a letter to your teacher explaining why scientists make models. ● Weekly Phenomenon Investigation: What is a microburst? ● Discuss: Do you like to be in temperatures that cause evaporation or freezing? What patterns do you see in people's behaviors? How does the atmosphere affect you and the climate in your area? ● Writing prompt: Explain how the mesosphere layer in the atmosphere affects and protects the biosphere. ● Compare and contrast tornado and hurricane damage with microburst damage. ● Lodgepole Pine Lab: Develop a model to show how the force acting on the trees caused the trees to fall. ● Weekly Phenomenon Investigation: How can a wolf change a river? ● Discuss: What is your favorite plant? What is your favorite animal? If you could choose what your own biome looked like, what would it include? How do you impact your biome? ● Biome Research: Assign students to groups. Let each group pick one biome and do further research. Have them create a poster or presentation. They should include plants and animals found in the biome they chose. ● Draw what Yellowstone looked like after wolves were removed and what it looked like when the wolves came back. ● Writing prompt: Write a letter to the ranchers and farmers who are concerned about bringing wolves back to Yellowstone. What information can you present that will help them understand why predators are important to an ecosystem? ● Weekly Phenomenon Investigation: What effect do dams have on the biosphere, geosphere, and hydrosphere? ● Discuss: In what other areas can making a plan beforehand help you? What can you do if your plan fails? What can you do if you make a mistake? ● Engineering Design: Create a Dam ● Writing: Do you think that the United States should continue to build dams? Write an opinion paper using evidence from this week's articles. ● Weekly Phenomenon Investigation: Why are there cities in deserts? ● Discuss: How does distribution of water affect well-being on a global scale? How does distribution of water affect well-being in your community? How is desalination a creative solution to a problem? How can you use it as an example in solving a problem that you are facing right now?
ETS1.B: Developing Possible Solutions	● 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 range of likely conditions. ● 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. ● Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved.	
ETS1.C: Optimizing the Design Solution	Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.	
FOUNDATION **Science and Engineering Practices:** ***Core Idea***	**FOUNDATION** **Science and Engineering Practices:** ***Statement***	
Developing and Using Models	Develop a model using an example to describe a scientific principle.	
Using Mathematics and Computational Thinking	Describe and graph quantities such as area and volume to address scientific questions.	
Obtaining, Evaluating, and Communicating Information	Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem.	
Asking Questions and Defining Problems	Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost.	

Planning and Carrying Out Investigations	Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.	● Map activity - Assign each student an ancient civilization from North America, South America, or the Middle East. Tell students to research the boundaries of their ancient civilization and draw them on the map of their graphic organizer. Have students predict where the major water sources (rivers, lakes, springs, etc.) were in relation to their assigned civilizations. Ask students to draw the water sources on the map of their graphic organizers. Discuss the following: How close were your predictions? If there is no modern water source, hypothesize what happened to the water. If there is a modern water source, hypothesize why the civilization no longer exists. ● Water Filter Lab ● Sorting Renewable and Nonrenewable Resources activity ● How Much Water? Investigation ● Writing: Explain why some cities can be found in deserts. ● Weekly Phenomenon Investigation: Do melting glaciers affect the salinity of the ocean? ● Water Conservation Plan ● Writing: Write an opinion paper about whether it is important to protect fresh water or not. ● Weekly Phenomenon Investigation: How does pollution hurt birds and fish in the ocean? ● Create an Oil Spill Clean-up Model ● Writing: Write a reflection on what oils spills are and how they impact the Earth. ● Weekly Phenomenon Investigation: What is a watershed? ● Discuss: Why are trees important to your well-being? What can happen in communities where there is not enough access to food or clean water? What can you do to help your community protect the Earth? Why is it important to protect the Earth? What can happen in communities where there are not enough resources to support the people who live in them? ● Deforestation research: Research how deforestation impacts three areas (people, plants, and animals) in your assigned country. ● Overfishing Simulation ● Weekly Phenomenon Investigation: Can you create a usable product out of trash? ● Discuss: What are some ways that you protect the environment? What can you do in your home to conserve energy? How do you feel about the environment and your role in protecting it? ● Graphic Organizer: Landfills - Biosphere, Hydrosphere, Atmosphere
Constructing Explanations and Designing Solutions	Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem.	
FOUNDATION **Crosscutting Concepts:** ***Core Idea***	**FOUNDATION** **Crosscutting Concepts:** ***Statement***	
Systems and System Models	A system can be described in terms of its components and their interactions.	
Scale, Proportion, and Quantity	Standard units are used to measure and describe physical quantities such as weight and volume.	
Science Addresses Questions About the Natural and Material World	Science findings are limited to questions that can be answered with empirical evidence.	
Influence of Science, Engineering, and Technology on Society and the Natural World	● People's needs and wants change over time, as do their demands for new and improved technologies. ● Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.	
Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-Competencies***	
● Self-Awareness ● Self-Management ● Responsible Decision Making ● Social Awareness ● Relationship Skills ● Motivation	● Emotional Awareness ● Internal Regulation ● Behavior Control ● Goal Pursuance ● Appreciating Social and Environment Diversity ● Adaptive Behavior ● Communication ● Social Engagement	

	● Constructive Thinking ● Consequence Evaluation ● Respect for Self and Others ● Enthusiasm ● Initiative ● Resilience	**Interdisciplinary Connections: Content: ;NJSLS#:** ELA/Literacy - ● RI.5.1 - Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. ● 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. ● RI.5.9 - Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. ● W.5.7 - Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. ● W.5.8 - Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. ● W.5.9 - Draw evidence from literary or informational texts to support analysis, reflection, and research. ● 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. Mathematics - ● MP.2 - Reason abstractly and quantitatively. ● MP.4 - Model with mathematics. ● MP.5 - Use appropriate tools strategically. ● 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. Technology - ● 8.2.5.ED.1: Explain the functions of a system and its subsystems. ● 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models. ● 8.2.5.ITH.3: Analyze the effectiveness of a new product or system and identify the positive and/or negative consequences resulting from its use.
Assessments (Formative)		**Assessments (Summative)**

To show evidence of meeting the standard/s, students will successfully engage within:	*To show evidence of meeting the standard/s, students will successfully complete:*
Formative Assessments: ● Participation in class discussions/debates ● Exit tickets ● Quizzes ● In-class assignments/activities ● Presentations ● Group assignments ● IXL results	**Benchmarks:** ● Writing promps ● CER activities **Summative Assessments:** ● Unit test ● Unit project ● Lab activities

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**
● Science Studies Weekly - Grade Five ● Teacher created reading guides and presentations	● Modified/leveled readings from Science Studies Weekly - Grade Five ● Teacher created reading guides and presentations	● Translated and modified readings from Science Studies Weekly - Grade Five ● Translated teacher created reading guides and presentations	● Science Studies Weekly - Grade Five ● Teacher created reading guides and presentations

Supplemental Resources

● Chromebooks
● SmartBoard
● IXL
● Teacher Online Resources
● Newsela.com
● Quizlet
● Kahoot
● Applicable educational videos

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

Core Resources	**Alternate Core Resources** *IEP/504/At-Risk/ESL*	**ELL Core Resources**	**Gifted & Talented Core**
● Encourage creative expression and thinking by allowing students to choose	● Provide graphic organizers for additional support or encourage students to create digital multimedia	● Utilize visual supports and graphic organizers ● Use prompts and model directions	● Encourage students to explore concepts in depth and encourage

how to approach a problem or assignment. ● Jigsaws ● Think-Pair-Share ● Boost engagement with material by providing opportunities for differentiation, group work, and alternative assignments/assessments where appropriate ● Provide feedback utilizing a growth mindset and praise what is done correctly based upon effort, attitude and strategy.	to showcase knowledge. ● Use prompts and model directions ● Provide opportunities to model talk during read alouds, and scaffold talk during whole class and small group discussions ● Extended time for revisions or opportunity to identify and develop areas of personal interest	● Provide opportunities to model talk during read alouds, and scaffold talk during whole class and small group discussions ● Device used for translation purposes ● Provide additional wait time for student responses to questions to allow students the ability to undergo the process of translation between languages, composition of response and attempted response.	independent studies or investigations. ● Modeling or independent student-led research ● Use of higher leveled text and/or writing assignments ● Utilize differentiation in the areas of acceleration, enrichment, and grouping

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept:**	
	Core Ideas:	The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills.
	Performance Expectation/s:	● **9.4.5.CT.1:** Identify and gather relevant data that will aid in the problem-solving process. ● **9.4.5.CT.2:** Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem. ● **9.4.5.CT.3:** Describe how digital tools and technology may be used to solve problems. ● **9.4.5.CT.4:** Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.
	Career Readiness, Life Literacies, & Key Skills Practices	
	● Act as a responsible and contributing community members and employee. ● Attend to financial well-being. ● Consider the environmental, social and economic impacts of decisions. ● Demonstrate creativity and innovation. ● Utilize critical thinking to make sense of problems and persevere in solving them. ● Model integrity, ethical leadership and effective management ● Plan education and career paths aligned to personal goals. ● Use technology to enhance productivity increase collaboration and communicate effectively. ● Work productively in teams while using cultural/global competence.	

Marking Period	Unit Title	Recommended Instructional Days
4	Space Systems: Stars and the Solar System	8 weeks

NJSLS - Science: *TItle*	NJSLS - Science: *Performance Expectations*	Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-S within Unit
Matter and Its Interactions	• **5-PS1-1:** Develop a model to describe that matter is made of particles too small to be seen.	**<u>Essential Question/s:</u>** 1. Why do objects fall down? 2. Can you cry in space? 3. How did a rover land safely on Mars? 4. What is the Sun? 5. If the sun is a star, why is it so bright? 6. Why do shadows seem to move? 7. Why is it warmer in the summer? 8. Why can you see the moon during the day? 9. What is polar night? **<u>Activity Description</u>**: • Article analysis • Vocabulary activities • Video/photo analysis • Weekly Phenomenon Investigation: Why do objects fall down? • Mass and Weight Investigation • Discuss: How does gravity affect your well-being? What would you do if there was no gravity? What is something you want to be known for, the way Isaac Newton is known for his work with gravity? • Writing: Write and illustrate the story of Isaac Newton and the apple tree. How did this idea lead to the discovery of gravity? • Weekly Phenomenon Investigation: Can you cry in space? • Draw and label models of gravity on Earth and in space. • Writing: Explain why astronauts can still eat in space, where there is very little gravity. • Weekly Phenomenon Investigation: How did a rover land safely on Mars? • Using the engineering design process, design a prototype of a parachute that will allow for the safe landing of a rover from a six-foot drop.
Motion and Stability: Forces and Interactions	• **5-PS2-1:** Support an argument that the gravitational force exerted by Earth on objects is directed down.	
Earth's Place in the Universe	• **5-ESS1-1:** Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from the Earth. • **5-ESS1-2:** Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	
Engineering Design	• **3-5-ETS1-1:** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. • **3-5-ETS1-2:** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. • **3-5-ETS1-3:** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	

FOUNDATION Disciplinary: ***Core Idea***	**FOUNDATION Disciplinary:** ***Statement***	
PS1.A: Structure and Properties of Matter	Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects.	● Weekly Phenomenon Investigation: If the sun is a star, why is it so bright? ● Star Brightness Chart -Use an image of the night sky to count stars and classify them by brightness. ● Flashlight Investigation ● Writing: Why does the sun appear larger and brighter than other stars? ● Weekly Phenomenon Investigation: Why do shadows seem to move? ● Using data, look at changes in shadows over one day and one year. Analyze how the position of the sun affects the length of a shadow. ● Create an obelisk and use it to tell time. ● Writing: Describe how the movement of the shadow created by an obelisk can be used to show the passage of time. ● Weekly Phenomenon Investigation: Why is it warmer in the summer? ● Discuss: Why do you think stories about constellations were told? ● Track sunrise and sunset times on graphs and investigate the pattern that creates day and night. ● Create your own constellation. Include an origin story. ● Weekly Phenomenon Investigation: Why can you see the moon during the day? ● Discuss: How do you change in a month's time? What have you learned during the last month? What do you want to learn during the next month? ● Students will learn about the pattern that creates the phases of the moon and make a model showing the positions of the sun, Earth, and moon that establish this pattern. Students will track the moon for 28 days to represent this pattern visually. ● Moon Crater Activity - use objects to create craters; measure and then record the results using a data chart. ● Writing: Write a story that explains why the appearance of the moon changes. ● Weekly Phenomenon Investigation: What is polar night? ● Discuss: What is your favorite season? How do you feel when you think of each season? How do you feel when the seasons change? What can you do to cope positively with changes? ● Writing: What is the best season where you live? Defend your opinion. ● Sun stories - Read folktales about the sun. After reading, write your own folktale. ● Tracking the Sun data analysis
PS2.B: Types of Interactions	The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center.	
ESS1.A: The Universe and its Stars	The sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth.	
ESS1.B: Earth and the Solar System	The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the sun, moon, and stars at different times of the day, month, and year.	
ETS1.A: Defining and Delimiting Engineering Problems	Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.	
ETS1.B: Developing Possible Solutions	● 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 range of likely conditions. ● 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. ● Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved.	**Interdisciplinary Connections: Content: ;NJSLS#:** ELA/Literacy - ● RI.5.1 - 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. ● 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. ● RI.5.9 - Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. ● W.5.7 - Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. ● W.5.8 - Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. ● W.5.9 - Draw evidence from literary or informational texts to support analysis, reflection, and research. Mathematics - ● MP.2 - Reason abstractly and quantitatively. ● MP.4 - Model with mathematics. ● MP.5 - Use appropriate tools strategically. ● 5.NBT.A.1 - Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. ● 5.NF.B.7 - Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. ● 5.MD.C.3 - Recognize volume as an attribute of solid figures and understand concepts of volume measurement. ● 5.MD.C.4 - Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
ETS1.C: Optimizing the Design Solution	Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.	
FOUNDATION **Science and Engineering Practices:** ***Core Idea***	**FOUNDATION** **Science and Engineering Practices:** ***Statement***	
Developing and Using Models	Use models to describe phenomena.	
Engaging in Argument from Evidence	Support an argument with evidence, data, or a model.	
Analyzing and Interpreting Data	Represent data in graphical displays (bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships.	
Asking Questions and Defining Problems	Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost.	
Planning and Carrying Out Investigations	Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.	
Constructing Explanations and Designing Solutions	Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem.	

FOUNDATION **Crosscutting Concepts:** ***Core Idea***	**FOUNDATION** **Crosscutting Concepts:** ***Statement***	
Scale, Proportion, and Quantity	Natural objects exist from the very small to the immensely large.	
Cause and Effect	Cause and effect relationships are routinely identified and used to explain change.	
Patterns	Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena.	
Influence of Science, Engineering, and Technology on Society and the Natural World	● People's needs and wants change over time, as do their demands for new and improved technologies. ● Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.	
Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-Competencies***	
● Self-Awareness ● Self-Management ● Responsible Decision Making ● Social Awareness ● Relationship Skills ● Motivation	● Emotional Awareness ● Internal Regulation ● Behavior Control ● Goal Pursuance ● Appreciating Social and Environment Diversity ● Adaptive Behavior ● Communication ● Social Engagement ● Constructive Thinking ● Consequence Evaluation ● Respect for Self and Others ● Enthusiasm ● Initiative ● Resilience	
Assessments (Formative)		**Assessments (Summative)**

To show evidence of meeting the standard/s, students will successfully engage within:	*To show evidence of meeting the standard/s, students will successfully complete:*
Formative Assessments: ● Participation in class discussions/debates ● Exit tickets ● Quizzes ● In-class assignments/activities ● Presentations ● Group assignments ● IXL results	**Benchmarks:** ● Writing promps ● CER activities **Summative Assessments:** ● Unit test ● Unit project ● Lab activities

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**
● Science Studies Weekly - Grade Five ● Teacher created reading guides and presentations	● Modified/leveled readings from Science Studies Weekly - Grade Five ● Teacher created reading guides and presentations	● Translated and modified readings from Science Studies Weekly - Grade Five ● Translated teacher created reading guides and presentations	● Science Studies Weekly - Grade Five ● Teacher created reading guides and presentations

Supplemental Resources

● Chromebooks
● SmartBoard
● IXL
● Teacher Online Resources
● Newsela.com
● Quizlet
● Kahoot
● Applicable educational videos

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

Core Resources	**Alternate Core Resources** *IEP/504/At-Risk/ESL*	**ELL Core Resources**	**Gifted & Talented Core**
● Encourage creative expression and thinking by allowing students to choose	● Provide graphic organizers for additional support or encourage students to create digital multimedia	● Utilize visual supports and graphic organizers ● Use prompts and model directions	● Encourage students to explore concepts in depth and encourage

how to approach a problem or assignment. ● Jigsaws ● Think-Pair-Share ● Boost engagement with material by providing opportunities for differentiation, group work, and alternative assignments/assessments where appropriate ● Provide feedback utilizing a growth mindset and praise what is done correctly based upon effort, attitude and strategy.	to showcase knowledge. ● Use prompts and model directions ● Provide opportunities to model talk during read alouds, and scaffold talk during whole class and small group discussions ● Extended time for revisions or opportunity to identify and develop areas of personal interest	● Provide opportunities to model talk during read alouds, and scaffold talk during whole class and small group discussions ● Device used for translation purposes ● Provide additional wait time for student responses to questions to allow students the ability to undergo the process of translation between languages, composition of response and attempted response.	independent studies or investigations. ● Modeling or independent student-led research ● Use of higher leveled text and/or writing assignments ● Utilize differentiation in the areas of acceleration, enrichment, and grouping

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept:**	
	Core Ideas:	The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills.
	Performance Expectation/s:	● **9.4.5.CT.1:** Identify and gather relevant data that will aid in the problem-solving process. ● **9.4.5.CT.2:** Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem. ● **9.4.5.CT.3:** Describe how digital tools and technology may be used to solve problems. ● **9.4.5.CT.4:** Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.
	Career Readiness, Life Literacies, & Key Skills Practices	
	● Act as a responsible and contributing community members and employee. ● Attend to financial well-being. ● Consider the environmental, social and economic impacts of decisions. ● Demonstrate creativity and innovation. ● Utilize critical thinking to make sense of problems and persevere in solving them. ● Model integrity, ethical leadership and effective management ● Plan education and career paths aligned to personal goals. ● 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)									
	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*		Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*	x	Standards in Action: *Climate Change*