

Long Beach Island Consolidated School District Curriculum Guide

Grade: 4	Content Area: Science
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Introduction

In fourth grade science, students develop understanding of concepts related to Earth's system processes such as weathering and erosion, impacts of natural hazards, structure and function of organisms, waves, transfer of energy and forces. Throughout the units, students use science and engineering practices such as developing and using models, planning and carrying out investigations, constructing explanations, and designing solutions. Crosscutting concepts such as cause and effect, systems and system models, structure and function, interdependence of science, engineering, and technology, and influence of science, engineering, and technology on society and the natural world are also integrated throughout the units. Students are expected to use these practices and crosscutting concepts to demonstrate their understanding of the science ideas.

Grade 4: Science
Original Adoption: October 23, 2018
Revised on: March 18, 2019
Revised by: C. McBride
Revised on: August 16, 2022
Revised by: C. McBride

Recommended Pacing Guide	
Unit 1: Energy and Motion	20 Days
Unit 2: Human Uses of Energy	20 Days
Unit 3: Waves and Information	20 Days
Unit 4: Earth's Resources	10 Days
Unit 5: Earth's Natural Hazards	10 Days
Unit 6: Structures and Function	20 Days
Unit 7: Human Body	20 Days

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Unit 1: Energy and Motion	Duration: 20 days
Science Standards 4-PS3-1, 4-PS3-2, 4-PS3-3	
Disciplinary Core Ideas PS3.A: Definitions of Energy The faster a given object is moving, the more energy it possesses. PS3.A: Definitions of Energy Energy can be moved from place to place by moving objects or through sound, light, or electric currents. (4-PS3-2, 4-PS3-3) PS3.B: Conservation of Energy and Energy Transfer Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light. The currents may have been produced to begin with by transforming the energy of motion into electrical energy. (4-PS3-2, 4-PS3-4) 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. (3-5-ETS1-1)	
Science and Engineering Practices SEP.6 Constructing Explanations and Designing Solutions Use evidence to construct an explanation.	
Crosscutting Concepts CCC.2 Cause and Effect Cause and Effect relationships are routinely identified and used to explain change. CCC.5 Energy and Matter Energy and matter can be transferred in various ways and between objects.	
Connections to Nature of Science Science is a Human Endeavor Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.	
Computer Science and Design Thinking Standards CS: Computer Science 8.1.5.CS.1, 8.1.5.CS.2 NI: Network and Internet 8.1.5.NI.1, 8.1.5.NI.2 IC: Impacts of Computing 8.1.5.IC.1 DA: Data & Analysis 8.1.5.DA.1, 8.1.5.DA.2 AP: Algorithms & Programming 8.1.5.AP.1 8.2 Design Thinking: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.	

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ED: Engineering Design 8.2.5.ED.1, 8.2.5.ED.2
ITH: Interaction of Technology and Humans 8.2.5.ITH.1, 8.2.5.ITH.2
NT: Nature of Technology 8.2.5.NT.1, 8.2.5.NT.2
ETW: Effects of Technology on the Natural World 8.2.5.ETW.1, 8.2.5.ETW.2, 8.2.3.ETW.3
EC: Ethics & Culture 8.2.5.EC.1

Interdisciplinary Standard(s) ELA/Literacy

RI.4.3 Explain events, procedures, ideas or concepts in a historical, scientific or technical text including what happened and why, based on specific information in the text.

Enduring Understandings

Energy can be moved from place to place by moving objects or through sound, light, or electric currents.

Essential Questions

How can energy be moved from place to place?
How is energy involved in collisions between objects?
What is the difference between a conductor and an insulator?
How do currents flow in electric circuits?

Career Readiness, Life Literacies, and Key Skills Practices

The following skills are encouraged and taught:
Demonstrate creativity and innovation.
Utilize critical thinking to make sense of problems and persevere in solving them.
Use technology to enhance productivity increase collaboration and communicate effectively
Work productively in teams while using cultural/global competence.

Career Readiness, Life Literacies, and Key Skills Standards

9.4.5.TL.3: Format a document using a word processing application to enhance text, change page formatting, and include appropriate images, graphics, or symbols. (3-5-ETS1-1)

LGBT and Disabilities Law N.J.S.A 18A:35-4.35 Instruction on the political, economic, and social integration of persons with disabilities and lesbian, gay, bisexual, and transgender people, in an appropriate place in the curriculum

Amistad Law: N.J.S.A 18A:52:16A-88-4.35 Instruction regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of secondary school students.

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Holocaust Law N.J.S.A 18A:35-28
 Instruction on the Holocaust and genocides in an appropriate place in the curriculum with an emphasis on the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.

Student Learning Goals/Objectives	
<p><i>Students will know:</i> Energy and forms of energy Changes in energy during collisions Examples of energy being transferred Examples of conductors and insulators How electric currents flow in circuits</p>	<p><i>Students will be able to:</i> 4-PS3-2- Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. [Assessment Boundary: Assessment does not include quantitative measurements of energy.] 4-PS3-3- Ask questions and predict outcomes about the changes in energy that occur when objects collide. [Clarification Statement: Emphasis is on the change in the energy due to the change in speed, not on the forces, as objects interact.] [Assessment Boundary: Assessment does not include quantitative measurements of energy]</p>
Assessment Evidence	
<p>Performance Tasks Explain what energy is and describe forms of energy. Explain how speed and energy are related. Explain how energy changes when objects collide Explain what affects energy transfer Create a document to explain energy transfer</p>	<p>Other Assessments Formative:</p> <ul style="list-style-type: none"> ● Lesson quizzes, and reviews ● Student investigations and models ● Language Arts writing activities ● Graphic Organizers & Guided Note Taking ● Directed Reading ● Cooperative Group Learning ● Homework ● Journal Entries ● Exit Tickets ● Polls/ Surveys with self evaluation component ● Jigsaw ● Think, Pair, Share

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	<ul style="list-style-type: none"> ● Quizzes <p>Alternative:</p> <ul style="list-style-type: none"> ● Modified tests and quizzes ● Group work ● Peer assessments ● Labs ● Projects ● Portfolio Assessments <p>Summative</p> <ul style="list-style-type: none"> ● Unit Test/Topic Test ● Unit Project ● Performance Assessment/Tasks ● Engineering projects <p>Benchmark Assessments:</p> <ul style="list-style-type: none"> ● Unit pre-test ● Beginning of the year, mid year, and end of the year SGO
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Core Instructional & Supplemental Materials
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<p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> ● Savvas Realize “Elevate Science” <ul style="list-style-type: none"> ○ Lesson explorations ○ Hands-on activities ○ Virtual Labs ○ Video based projects ○ Performance tasks ○ Engineering projects ○ Student investigations 	<p>Varied Levels of Text:</p> <ul style="list-style-type: none"> ● leveled readers ● Newsela ● Storyworks ● Drummond, A. (2015). <i>Energy island: How one community harnessed the wind and changed their world</i> ● Mayer, L. (2013). <i>Newton and me</i> ● Bradley, K. (2002). <i>Energy makes things happen.</i> ● Koehler, L. (2015). <i>The little snowplow</i> ● Waring, G. (2009). <i>Oscar and the cricket: A book about moving and rolling</i> ● Llewellyn, C. (2004). <i>And everyone shouted: “Pull!”: A first look at forces and motion.</i> ● Berger, M. (1989). <i>Switch on, switch off</i>
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- Stille, D. (2004). *Temperature: Heating up and cooling down*
- Young, C. (2011). *Ten birds*
- Kamkwamba, W & Mealer, B. (2012). *The boy who harnessed the wind.*
- Mason, P. *Roller coaster! Motion and acceleration. (2007).*
- Frazee, M. *Roller coaster. (2003).*

Modifications and Accommodations

English Language Learners:

- Provide pictures and well labeled models
- Speak slowly and gesture when necessary
- Pre-teach vocabulary words
- Extended time on assessments
- Small group for assessment
- Review Vocabulary
- Allow for alternate responses during activities and assessments
- Literacy and language support strategies including discourse
- Use a poster, slide, or picture to support student listening in science such as GLAD pictorial input chart
- Preview science texts with students, discussing salient text features such as tables, graphs, and photographs before they read it.
- Provide summaries and include native language texts.
- Provide sentence stems for all students to use, especially to support complex verbal practices like argumentation, explanation, and communication.
- Engage ELs in authentic vocabulary exploration as they try to make their thoughts meaningful to others through writing. Provide dictionaries or [Google Translate](#). Look beyond grammar and spelling to understand student ideas.
- Home culture connections

Special Education/504 Plans/Students with Disabilities:

- Follow specific IEP/504 accommodations and modifications
- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- Allow alternate assignments and assessments
- Differentiated Instruction

Students at Risk of Failure:

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- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- Incorporate social/emotional discussions
- Encourage and monitor positive peer collaboration
- Provide academic resources for both home and school use
- Provide incentives to increase motivation and collaboration

Economically Disadvantaged:

- Provide clear, achievable expectations, do not lower academic requirements for them.
- Build a safe and nurturing atmosphere
- Be flexible with assignments
- Offer several alternatives from which all students can choose.
- Allow students to finish assignments independently, or give them the opportunity to complete tasks at their own pace.
- Use real-world examples and create mental models for abstract idea
- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Maintain expectations while offering choice and soliciting input
- Connect concepts to students' sense of "place" as physical, historical, and sociocultural dimensions
- Ask questions that elicit students' funds of knowledge
- Use cultural artifacts that are meaningful
- Use project-based learning as a form of connected science
- Provide resources for science instruction

Culturally Diverse:

- Involve families in student learning
- Provide social/emotional support
- Respect cultural traditions
- Build in more group work to encourage interaction with peers
- Show photos, videos, and definitions when possible for culturally unique vocabulary
- Teach study skills
- Provide students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Support verbal explanations with non verbal cues: Gestures/ facial expressions Props, realia, manipulatives, concrete materials Visuals, graphs, pictures, maps
- Provide positive praise to increase motivation
- Provide real world connections and emphasize the value of education
- Communicate high expectations for the success of all students
- Use cultural artifacts that are meaningful relevant
- Integrate community involvement
- Include role models and mentors of similar racial or ethnic backgrounds

Gifted and Talented

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- Peer mediated strategies
- Cooperative learning groups
- Differentiated instruction

Presentation accommodations allow a student to:

- Vary the method of presentation: lecture, small groups, large group, demonstration, individual experimentation
- Explore real world connections
- Use technology tools to enhance content

Response accommodations allow a student to:

- Turn and Talk
- Reward risk taking while encouraging students to think “outside of the box”

Setting accommodations allow a student to:

- Use flexible seating
- Have choice in seating/grouping

Timing accommodations allow a student to:

- Have flexible pacing in terms of content, assignments, and assessments
- Explore extended activities

Scheduling accommodations allow a student to:

- Establish a timeline for completing a project
- Have rigorous Pacing

Organization skills accommodations allow a student to:

- Model executive functioning
- Utilize independent skills practices

Assignment modifications allow a student to:

- Complete enrichment tasks
- Write longer passages on essays and open ended responses including academic vocabulary
- Answer higher order thinking questions
- Cite text evidence
- Create alternate projects or assignments, student developed rubrics, student choice when completing a project or alternate labs

Curriculum modifications provide:

- Topics of interest to the student and/or relevant to how the world works
- Students access to supplemental reading materials matched to individual student lexiles
- Opportunities for open-ended, self-directed activities
- Opportunities to get graded or assessed using a different standard than the one for others

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Unit 2: Human Uses of Energy	Duration: 20 days
Science Standards 4-ESS3-1, 4-PS3-4, 3-5 ETS1-1	
Disciplinary Core Ideas ESS3.A Natural Resources Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. Some resources are renewable over time and others are not. PS3.D Energy in Chemical Processes and Everyday Life The expression “produce energy” typically refers to the conversion of stored energy into a desired form for practical use.	
Science and Engineering Practices SEP.1 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. SEP.6 Constructing Explanations and Designing Solutions Apply scientific ideas to solve design problems. SEP.8 Obtaining, Evaluating, and Communicating Information Obtain and combine information from books and reliable media to explain phenomena.	
Crosscutting Concepts CCC.2 Cause and Effect Cause and Effect relationships are routinely identified and used to explain change. CCC.5 Energy and Matter Energy and matter can be transferred in various ways and between objects.	
Connections to Nature of Science Science is a Human Endeavor Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.	
Computer Science and Design Thinking Standards 8.2.5.ETW.1: Describe how resources such as material, energy, information, time, tools, people, and capital are used in products or systems. 8.2.5.ETW.2: Describe ways that various technologies are used to reduce improper use of resources. 8.2.5.ETW.4: Explain the impact that resources, such as energy and materials used to develop technology, have on the environment. 8.2.5.ETW.5: Identify the impact of a specific technology on the environment and determine what can be done to increase positive effects and to reduce any negative effects, such as climate change.(4-ESS3-1, 4-PS3-4)	

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8.2.5.ITH.1: Explain how societal needs and wants influence the development and function of a product and a system.

8.2.2.ETW.2: Identify the natural resources needed to create a product. (4-ESS3-1)

8.2.2.ETW.3: Describe or model the system used for recycling technology.

8.2.2.ETW.4: Explain how the disposal of or reusing a product affects the local and global environment.

Interdisciplinary Standards ELA/Literacy

W.4.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

Enduring Understandings

What natural resources are and how they are converted into energy and fuel.

How electrical power is generated from chemical energy.

How people extract and use natural resources.

The difference between renewable and nonrenewable resources.

How wind and solar energy can be used to produce energy.

How the use of different natural resources affects the local and global environments

How technology can improve the environmental effects of using a given resource.

Essential Questions

What are natural resources, where are they found and how are they converted into energy and fuel?

How is electrical energy generated?

What is the difference between renewable and nonrenewable energy?

How can we use sunlight to produce motion?

How can natural resource use affect the local and global environments?

How can technology improve the environmental effects of using a particular energy source?

Career Readiness, Life Literacies, and Key Skills Practices

The following skills are encouraged and taught:

Demonstrate creativity and innovation.

Utilize critical thinking to make sense of problems and persevere in solving them.

Use technology to enhance productivity increase collaboration and communicate effectively

Work productively in teams while using cultural/global competence.

Career Readiness, Life Literacies, and Key Skills Standards

9.4.5.Cl.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 (4-ESS3-1, W.4.6, 3.MD.B.3,7.1.NM.IPERS.6)

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LGBT and Disabilities Law N.J.S.A 18A:35-4.35 Instruction on the political, economic, and social integration of persons with disabilities and lesbian, gay, bisexual, and transgender people, in an appropriate place in the curriculum

Amistad Law: N.J.S.A 18A:52:16A-88-4.35 Instruction regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of secondary school students.

Holocaust Law N.J.S.A 18A:35-28
Instruction on the Holocaust and genocides in an appropriate place in the curriculum with an emphasis on the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.

Student Learning Goals/Objectives

Students will know:

Causes of electrical system failures (cause and effect, systems and system models) in simple electrical systems they design and make for one another and also about failures—including those caused by natural hazards.

The electrical grid and what might cause problems with energy transfer (cause and effect).

How to write arguments based on evidence and on criteria that define problems for solutions about energy transfer.

Use a digital model to investigate various electrical systems, to build an understanding of what energy is, and to gather evidence about which devices have electrical energy as an input.

How to gather evidence to construct written arguments for a solution of where the energy comes from and identify causes for system failure.

How to use a battery to produce motion.

Renewable versus nonrenewable energy

Students will be able to:

4-ESS3-1

Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

4-PS3-4 Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

3-5ETS1-1 Define a simple design problem reflecting a need or want that includes specified criteria for success and constraints on materials, time or cost.

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<p>How to use solar panels to make a motor work</p> <p>What resources are needed to make a product</p> <p>Research natural resources and create digital presentation</p>	
Assessment Evidence	
<p>Performance Tasks</p> <p>Use a battery to produce motion: Design a simple solar-powered electrical system, and develop solutions to make a motor or fan spin.</p> <p>Investigate how the parts of electrical systems interact and function together. Explain how a windmill captures wind energy. Students read the book “Sunlight and Showers” to obtain information about how a team of engineering students define a problem and develop and optimize solutions (cause and effect), using the sun as an energy source for a solar water heater (energy and matter).</p> <p>Research the benefits of renewable resources for reducing impacts of climate change.</p> <p>Research impact of energy production on Earth’s ecosystems and atmosphere</p> <p>Research resources needed to make a product.</p>	<p>Other Assessments</p> <p>Formative:</p> <ul style="list-style-type: none"> ● Lesson quizzes, and reviews ● Student investigations and models ● Language Arts writing activities ● Graphic Organizers & Guided Note Taking ● Directed Reading ● Cooperative Group Learning ● Homework ● Journal Entries ● Exit Tickets ● Polls/ Surveys with self evaluation component ● Jigsaw ● Think, Pair, Share ● Quizzes <p>Alternative:</p> <ul style="list-style-type: none"> ● Modified tests and quizzes ● Group work ● Peer assessments ● Labs ● Projects ● Portfolio Assessments <p>Summative</p> <ul style="list-style-type: none"> ● Unit Test/Topic Test ● Unit Project ● Performance Assessment/Tasks ● Engineering projects <p>Benchmark Assessments:</p> <ul style="list-style-type: none"> ● Unit pre-test ● Beginning of the year, mid year, and end of the year SGO

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Core Instructional & Supplemental Materials

Suggested Activities/Resources:

- Savvas Realize “Elevate Science”
 - Lesson explorations
 - Hands-on activities
 - Virtual Labs
 - Video based projects
 - Performance tasks
 - Engineering projects
 - Student investigations
- Phet interactive simulations: Energy, energy transfer, circuits
- Building simple circuits to light a bulb or power a motor with a battery
- Energy Conversions Simulation
- Energy Conversions sorting tool
- Wind Generator [Wind Generator | STEM Resource Finder](#)
- Thermal Energy Transfer [Thermal Energy Transfer | PBS LearningMedia](#)
- Engineering Lesson: Motion, Mass, and Acceleration [Downhill Race: Mechanics and Motion Science Activity | Exploratorium Teacher Institute Project](#)
- Engineering Lesson: Understanding Potential and Kinetic Energy using Marbles <http://www.scilinks.org>
- Solar, Wind, Hydroelectric, Nuclear, Geothermal, Biofuels, Biomass, and Fossil Fuels [Support Materials | Environmental Literacy & Inquiry](#)
- Energy and Work [Energy and Work - Science Games and Videos for Kids](#)

Varied Levels of Text:

- leveled readers
- Newsela
- Storyworks
- “The Boy Who Harnessed the Wind” by William Kamkwamba and Bryan Mealer
- “Energy Island: How One Community Harnessed the Wind and Changed Their World” by Alan Drummond
- “Sunlight and Showers”

Modifications and Accommodations

English Language Learners:

- Provide pictures and well labeled models
- Speak slowly and gesture when necessary
- Pre-teach vocabulary words
- Extended time on assessments

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- Small group for assessment
- Review Vocabulary
- Allow for alternate responses during activities and assessments
- Literacy and language support strategies including discourse
- Use a poster, slide, or picture to support student listening in science such as GLAD pictorial input chart
- Preview science texts with students, discussing salient text features such as tables, graphs, and photographs before they read it.
- Provide summaries and include native language texts.
- Provide sentence stems for all students to use, especially to support complex verbal practices like argumentation, explanation, and communication.
- Engage ELs in authentic vocabulary exploration as they try to make their thoughts meaningful to others through writing. Provide dictionaries or [Google Translate](#). Look beyond grammar and spelling to understand student ideas.
- Home culture connections

Special Education/504 Plans/Students with Disabilities:

- Follow specific IEP/504 accommodations and modifications
- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- Allow alternate assignments and assessments
- Differentiated Instruction

Students at Risk of Failure:

- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- Incorporate social/emotional discussions
- Encourage and monitor positive peer collaboration
- Provide academic resources for both home and school use
- Provide incentives to increase motivation and collaboration

Economically Disadvantaged:

- Provide clear, achievable expectations, do not lower academic requirements for them.
- Build a safe and nurturing atmosphere
- Be flexible with assignments
- Offer several alternatives from which all students can choose.
- Allow students to finish assignments independently, or give them the opportunity to complete tasks at their own pace.
- Use real-world examples and create mental models for abstract idea
- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Maintain expectations while offering choice and soliciting input
- Connect concepts to students' sense of "place" as physical, historical, and sociocultural dimensions
- Ask questions that elicit students' funds of knowledge

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- Use cultural artifacts that are meaningful
- Use project-based learning as a form of connected science
- Provide resources for science instruction

Culturally Diverse:

- Involve families in student learning
- Provide social/emotional support
- Respect cultural traditions
- Build in more group work to encourage interaction with peers
- Show photos, videos, and definitions when possible for culturally unique vocabulary
- Teach study skills
- Provide students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Support verbal explanations with non verbal cues: Gestures/ facial expressions Props, realia, manipulatives, concrete materials Visuals, graphs, pictures, maps
- Provide positive praise to increase motivation
- Provide real world connections and emphasize the value of education
- Communicate high expectations for the success of all students
- Use cultural artifacts that are meaningful relevant
- Integrate community involvement
- Include role models and mentors of similar racial or ethnic backgrounds

Gifted and Talented

- Peer mediated strategies
- Cooperative learning groups
- Differentiated instruction

Presentation accommodations allow a student to:

- Vary the method of presentation: lecture, small groups, large group, demonstration, individual experimentation
- Explore real world connections
- Use technology tools to enhance content

Response accommodations allow a student to:

- Turn and Talk
- Reward risk taking while encouraging students to think “outside of the box”

Setting accommodations allow a student to:

- Use flexible seating
- Have choice in seating/grouping

Timing accommodations allow a student to:

- Have flexible pacing in terms of content, assignments, and assessments
- Explore extended activities

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<p><i>Scheduling accommodations allow a student to:</i></p> <ul style="list-style-type: none"> ● Establish a timeline for completing a project ● Have rigorous Pacing <p><i>Organization skills accommodations allow a student to:</i></p> <ul style="list-style-type: none"> ● Model executive functioning ● Utilize independent skills practices <p><i>Assignment modifications allow a student to:</i></p> <ul style="list-style-type: none"> ● Complete enrichment tasks ● Write longer passages on essays and open ended responses including academic vocabulary ● Answer higher order thinking questions ● Cite text evidence ● Create alternate projects or assignments, student developed rubrics, student choice when completing a project or alternate labs <p><i>Curriculum modifications provide:</i></p> <ul style="list-style-type: none"> ● Topics of interest to the student and/or relevant to how the world works ● Students access to supplemental reading materials matched to individual student lexiles ● Opportunities for open-ended, self-directed activities ● Opportunities to get graded or assessed using a different standard than the one for others
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Unit 3: Waves and Information	Duration: 20 days
Science Standards 4-PS4-1, 4-PS4-2, 4-PS4-3, 3-5 ETS1-1	
<p>Disciplinary Core Ideas</p> <p>PS4.A Wave Properties Waves, which are regular patterns of motion, can be made in water by disturbing the surface. When waves move across the surface of deep water, the water does up and down in place; there is no net motion in the direction of the wave except when the water meets a beach. Waves of the same type can differ in amplitude (height of the wave) and wavelength (spacing between wave peaks).</p> <p>PS4.B Electromagnetic Radiation An object can be seen when light reflected from its surface enters the eyes.</p> <p>PS4.C Information Technologies and Instrumentation Digitized information can be transmitted over long distances without significant degradation. High-tech devices, such as computers or cell phones, can receive and decode information- convert it from digitized form to voice- and vice versa.</p>	
<p>Science and Engineering Practices</p> <p>SEP.2:Developing and Using Models Develop a model using an analogy, example, or abstract representation to describe a scientific principle.</p>	

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SEP.6 Constructing Explanations and Designing Solutions Use evidence to construct or support an explanation or design a solution to a problem.

Crosscutting Concepts

CCC.2 Cause and Effect Cause and Effect relationships are routinely identified.

CCC.1 Patterns Similarities and differences in patterns can be used to sort and classify natural phenomena

Connections to Nature of Science Science is a Human Endeavor

Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.

Computer Science and Design Thinking Standards

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.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.

Interdisciplinary Standards ELA/Literacy

RI.4.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

4.G.A.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse) and perpendicular and parallel lines. Identify these two-dimensional figures.

Enduring Understandings

Properties of waves.

How waves can cause objects to move

Science findings are based on recognizing patterns.

Similarities and differences in patterns can be used to sort and classify natural phenomena

Waves can be made in water by disturbing the surface.

When waves move across the surface of deep water, the water does up and down in place; there is no net motion in the direction of the waves except when the water meets a beach.

Waves can differ in amplitude and wavelength.

Knowledge of relevant science concepts and research findings is important in engineering.

Engineers improve existing technologies to meet societal demands

Digitized information can be transmitted over long distances. High-tech devices can receive and decode information

Different solutions need to be tested in order to determine which of them best solves the problem based on the criteria and constraints

Essential Questions

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What are the basic properties of waves?
 How can waves move objects?
 How can we model wave patterns?
 How does the eye see color?
 How can information be transmitted over long distances?
 How can we design a solution to transmit instructions?

Career Readiness, Life Literacies, and Key Skills Practices

The following skills are encouraged and taught:
 Demonstrate creativity and innovation.
 Utilize critical thinking to make sense of problems and persevere in solving them.
 Use technology to enhance productivity increase collaboration and communicate effectively
 Work productively in teams while using cultural/global competence.

Career Readiness, Life Literacies, and Key Skills Standards

9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process (2.1.5.EH.4, 4-PS4-3, 3-5 ETS1-2, 6.3.5.CivicsPD.2).
 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 (4-PS4-3, 3-5 ETS1-2, 6.1.5.CivicsCM.3)

LGBT and Disabilities Law N.J.S.A 18A:35-4.35 Instruction on the political, economic, and social integration of persons with disabilities and lesbian, gay, bisexual, and transgender people, in an appropriate place in the curriculum

Amistad Law: N.J.S.A 18A:52:16A-88-4.35 Instruction regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of secondary school students.

Holocaust Law N.J.S.A 18A:35-28
 Instruction on the Holocaust and genocides in an appropriate place in the curriculum with an emphasis on the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.

Student Learning Goals/Objectives	
<p><i>Students will know:</i> How to develop a model of waves using a diagram, model, analogy or abstract example</p>	<p><i>Students will be able to:</i> 4-PS4-1 Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move. 4-PS4-2 Develop a model to describe that</p>

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<p>How to model waves to describe the patterns that describe wave movement such as amplitude and wavelength</p> <p>How to send messages with sound or light</p> <p>How information from waves can be translated</p> <p>How to design a solution for transferring information</p> <p>How your eye sees color</p>	<p>light reflecting from objects and entering the eye allows objects to be seen</p> <p>4-PS4-3 Generate and compare multiple solutions that use patterns to transfer information.</p>
Assessment Evidence	
<p>Performance Tasks</p> <p>Investigate how waves carry energy</p> <p>Develop a model to waves to investigate and explain wave patterns</p> <p>Collaborate to solve a problem using a solutions that use patterns to transfer or communicating information</p> <p>Generate and compare multiple solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem</p>	<p>Other Assessments</p> <p>Formative:</p> <ul style="list-style-type: none"> ● Lesson quizzes, and reviews ● Student investigations and models ● Language Arts writing activities ● Graphic Organizers & Guided Notes ● Directed Reading ● Cooperative Group Learning ● Homework ● Journal Entries ● Exit Tickets ● Polls/ Surveys/ Evaluation ● Jigsaw ● Think, Pair, Share ● Quizzes <p>Alternative:</p> <ul style="list-style-type: none"> ● Modified tests and quizzes ● Group work ● Peer assessments ● Labs ● Projects ● Portfolio Assessments <p>Summative</p> <ul style="list-style-type: none"> ● Unit Test/Topic Test ● Unit Project ● Performance Assessment/Tasks ● Engineering projects <p>Benchmark Assessments:</p> <ul style="list-style-type: none"> ● Unit pre-test ● Beginning of the year, mid year, and end of the year SGO

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Core Instructional & Supplemental Materials

Suggested Activities/Resources:

- Savvas Realize “Elevate Science”
 - Lesson explorations
 - Hands-on activities
 - Virtual Labs
 - Video based projects
 - Performance tasks
 - Engineering projects
 - Student investigations
- Morse Code
<http://morsecode.scphillips.com/translator.html>
- Research communication through drumming
https://en.wikipedia.org/wiki/Drums_in_communication
- Binary Code to transmit information
https://en.wikipedia.org/wiki/Binary_number
- Investigating Waves investigations
- Investigating Sound investigations
- Sound Waves simulation Phet interactive simulation
- Code Communicator tool
- Sound Waves Diagramming tool
- Sound Waves Sorting Tool
- [Brainpop](#)
- [Betterlesson](#)
- [Live Binders PS4A.1](#)
- Physics: Waves Introduction
<https://www.youtube.com/watch?v=RVyHkV3wlyk>
- Anton Paar eLearning: What are Waves?
<https://www.youtube.com/watch?v=cSqLXVmtVkc>
- 4th Grade Real World Science: Sound
<https://www.youtube.com/watch?v=nQcjcMI2d94>
- <http://betterlesson.com/user/58104/68223/169863/jillian-gates/curriculum>

Varied Levels of Text:

- leveled readers
- Newsela
- Storyworks
- *Sound on the Move*
- *Seeing Sound*
- *The Scientist Who Cracked the Dolphin Code*
- *Patterns in Communication*
- [Reading Comprehension passage with questions](#)
- [Reading Comprehension k12 reader](#)
- [What Are Sound Waves?](#)
- [The Next Wave by Elizabeth Rusch](#)
- Wordless book- *Wave* by Elizabeth Rusch
- [What is a Wave? Reading comprehension](#)
- Pfeffer, W. (1999). *Sounds all around*
- Polacco, P. (1997). *Thunder cake*
- Johnson, R. (2014). *How does sound change? Light and sound waves close up*
- Waring, G. (2009). *Oscar and the bat: A book about sounds.*
- Berne, J. (2016). *On a beam of light: A story of Albert Einstein*
- Boyd, L. (2014). *Flashlight.*
- Seuss, D. (2001). *The eye book*
- Ziefert, H. (2014). *Does an owl wear eyeglasses?*
- Anders, T. (1999). *Chip the little computer; Chip, el pequeno computador*
- Rozier, L. (2015) *Jackrabbit McCabe and the electric telegraph*
- Asare, M. (2001) *Sosu’s call.*

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<ul style="list-style-type: none">• A Whole Unit of lessons on Waves http://betterlesson.com/user/327311/68227/169023/mary-ellen-kanthack/curriculum• A Whole Unit of lessons on Waves http://betterlesson.com/user/323177/68221/165914/melissa-romano/curriculum• What are waves (great informational resource) BBC Bitesize: Waves http://www.bbc.co.uk/schools/gcsebitesize/science/add_ocr_pre_2011/wave_model/whatarewavesrev1.shtml• Physics for Kids: Waves (great information resource) http://www.ducksters.com/science/physics/waves.php• Physics for Kids: Properties of Waves (great informational resource) http://www.ducksters.com/science/physics/properties_of_waves.php• Make Some Waves Lesson https://www.teachengineering.org/view_activity.php?url=collection/cub/_activities/cub_soundandlight/cub_soundandlight_lesson1_activity1.xml	
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Modifications and Accommodations

English Language Learners:

- Provide pictures and well labeled models
- Speak slowly and gesture when necessary
- Pre-teach vocabulary words
- Extended time on assessments
- Small group for assessment
- Review Vocabulary
- Allow for alternate responses during activities and assessments
- Literacy and language support strategies including discourse
- Use a poster, slide, or picture to support student listening in science such as GLAD pictorial input chart
- Preview science texts with students, discussing salient text features such as tables, graphs, and photographs before they read it.
- Provide summaries and include native language texts.
- Provide sentence stems for all students to use, especially to support complex verbal practices like argumentation, explanation, and communication.

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- Engage ELs in authentic vocabulary exploration as they try to make their thoughts meaningful to others through writing. Provide dictionaries or [Google Translate](#). Look beyond grammar and spelling to understand student ideas.

- Home culture connections

Special Education/504 Plans/Students with Disabilities:

- Follow specific IEP/504 accommodations and modifications
- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- Allow alternate assignments and assessments
- Differentiated Instruction

Students at Risk of Failure:

- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- Incorporate social/emotional discussions
- Encourage and monitor positive peer collaboration
- Provide academic resources for both home and school use
- Provide incentives to increase motivation and collaboration

Economically Disadvantaged:

- Provide clear, achievable expectations, do not lower academic requirements for them.
- Build a safe and nurturing atmosphere
- Be flexible with assignments
- Offer several alternatives from which all students can choose.
- Allow students to finish assignments independently, or give them the opportunity to complete tasks at their own pace.
- Use real-world examples and create mental models for abstract idea
- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Maintain expectations while offering choice and soliciting input
- Connect concepts to students' sense of "place" as physical, historical, and sociocultural dimensions
- Ask questions that elicit students' funds of knowledge
- Use cultural artifacts that are meaningful
- Use project-based learning as a form of connected science
- Provide resources for science instruction

Culturally Diverse:

- Involve families in student learning
- Provide social/emotional support
- Respect cultural traditions
- Build in more group work to encourage interaction with peers
- Show photos, videos, and definitions when possible for culturally unique vocabulary
- Teach study skills

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- Provide students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Support verbal explanations with non verbal cues: Gestures/ facial expressions Props, realia, manipulatives, concrete materials Visuals, graphs, pictures, maps
- Provide positive praise to increase motivation
- Provide real world connections and emphasize the value of education
- Communicate high expectations for the success of all students
- Use cultural artifacts that are meaningful relevant
- Integrate community involvement
- Include role models and mentors of similar racial or ethnic backgrounds

Gifted and Talented

- Peer mediated strategies
- Cooperative learning groups
- Differentiated instruction

Presentation accommodations allow a student to:

- Vary the method of presentation: lecture, small groups, large group, demonstration, individual experimentation
- Explore real world connections
- Use technology tools to enhance content

Response accommodations allow a student to:

- Turn and Talk
- Reward risk taking while encouraging students to think “outside of the box”

Setting accommodations allow a student to:

- Use flexible seating
- Have choice in seating/grouping

Timing accommodations allow a student to:

- Have flexible pacing in terms of content, assignments, and assessments
- Explore extended activities

Scheduling accommodations allow a student to:

- Establish a timeline for completing a project
- Have rigorous Pacing

Organization skills accommodations allow a student to:

- Model executive functioning
- Utilize independent skills practices

Assignment modifications allow a student to:

- Complete enrichment tasks
- Write longer passages on essays and open ended responses including academic

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vocabulary

- Answer higher order thinking questions
- Cite text evidence
- Create alternate projects or assignments, student developed rubrics, student choice when completing a project or alternate labs

Curriculum modifications provide:

- Topics of interest to the student and/or relevant to how the world works
- Students access to supplemental reading materials matched to individual student lexiles
- Opportunities for open-ended, self-directed activities
- Opportunities to get graded or assessed using a different standard than the one for others

Unit 4: Earth's Features

Duration: 20 days

Science Standards

4-ESS2-1, 4-ESS2-2, 3-5 ETS1-1

Disciplinary Core Ideas

ESS2.B Plate Tectonics and Large Scale System Interactions The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns. Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans. Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans. Major mountain chains form inside continents or near their edges. Maps can help locate the different land and water features of Earth.

ESS2.A Earth Materials and Systems Rainfall helps to shape the land and affects the types of living things found in a region. Water, wind, ice, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around.

Science and Engineering Practices

SEP.3 Planning and Carrying Out Investigations Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon.

SEP.4 Analyzing and Interpreting Data Analyze and interpret data to make sense of phenomena using logical reasoning

Crosscutting Concepts

CCC.1 Patterns Patterns can be used as evidence to support an explanation

CCC.2 Cause and Effect Cause and effect relationships are routinely identified, test, and used to explain change

Connections to Nature of Science Science is a Human Endeavor

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Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.

Computer Science and Design Thinking Standards

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.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.

Interdisciplinary Standards ELA/Literacy

RI.4.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

MP.5 Use appropriate tools strategically.

Enduring Understandings

Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around.

Rainfall helps to shape the land and affects the types of living things found in a region.

Living things affect the physical characteristics of their regions

Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes

Cause-and-effect relationships are routinely identified, tested, and used to explain change.

Science assumes consistent patterns in natural systems

Patterns can be used as evidence to support explanations

Fossils provide evidence of changes in Earth over time.

Essential Questions

What factors affect Earth's surface features over time?

How does rainfall shape the Earth's surface?

How can patterns be used as evidence to support an explanation?

How can fossils provide evidence of changes in Earth over time?

Career Readiness, Life Literacies, and Key Skills Practices

The following skills are encouraged and taught:

Demonstrate creativity and innovation.

Utilize critical thinking to make sense of problems and persevere in solving them.

Use technology to enhance productivity increase collaboration and communicate effectively

Work productively in teams while using cultural/global competence.

Career Readiness, Life Literacies, and Key Skills Standards

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<p>9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process (2.1.5.EH.4, 4-PS4-3, 3-5 ETS1-2, 6.3.5.CivicsPD.2).</p> <p>9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.</p> <p>9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global (4-PS4-3, 3-5 ETS1-2, 6.1.5.CivicsCM.3)</p> <p>9.4.5.TL.4: Compare and contrast artifacts produced individually to those developed collaboratively (4-ESS2-1, 1.5.5.CR3a).</p> <p>9.4.5.TL.5: Collaborate digitally to produce an artifact (4-ESS2-1).</p>
<p>LGBT and Disabilities Law N.J.S.A 18A:35-4.35 Instruction on the political, economic, and social integration of persons with disabilities and lesbian, gay, bisexual, and transgender people, in an appropriate place in the curriculum</p> <p>Amistad Law: N.J.S.A 18A:52:16A-88-4.35 Instruction regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of secondary school students.</p> <p>Holocaust Law N.J.S.A 18A:35-28 Instruction on the Holocaust and genocides in an appropriate place in the curriculum with an emphasis on the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.</p>

Student Learning Goals/Objectives	
<p><i>Students will know:</i></p> <p>How to identify and compare Earth’s features</p> <p>How to identify patterns in Earth’s surface features (where are certain landforms)</p> <p>Characteristics and types of rocks</p> <p>How rocks form and change</p> <p>Cause-and-effect relationships are routinely identified, tested, and used to explain change.</p> <p>Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around.</p> <p>Rainfall helps to shape the land and affects the types of living things found in a region.</p> <p>Living things affect the physical characteristics of their regions</p>	<p><i>Students will be able to:</i></p> <p>4-ESS2-2 Analyze and interpret data from maps to describe patterns of Earth’s features.</p> <p>4-ESS2-1 Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.</p>
Assessment Evidence	
Performance Tasks	Other Assessments

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<p>Analyze data from maps to describe Earth's features</p> <p>Describe how rocks form</p> <p>Identify properties of minerals</p> <p>Construct models of landforms</p> <p>Plan investigations to demonstrate weathering</p> <p>Create multimedia presentation to show how Earth's landforms are affected by weathering and erosion</p> <p>Identify patterns in fossil formations</p> <p>Construct models to understand effect of natural events on rock layers</p> <p>Use fossil evidence to support explanations of changes in Earth over time</p> <p>Create Google Earth project about landforms</p>	<p>Formative:</p> <ul style="list-style-type: none"> ● Lesson quizzes, and reviews ● Student investigations and models ● Language Arts writing activities ● Graphic Organizers & Guided Notes ● Directed Reading ● Cooperative Group Learning ● Homework ● Journal Entries ● Exit Tickets ● Polls/ Surveys/ Evaluation ● Jigsaw ● Think, Pair, Share ● Quizzes <p>Alternative:</p> <ul style="list-style-type: none"> ● Modified tests and quizzes ● Group work ● Peer assessments ● Labs ● Projects ● Portfolio Assessments <p>Summative</p> <ul style="list-style-type: none"> ● Unit Test/Topic Test ● Unit Project ● Performance Assessment/Tasks ● Engineering projects <p>Benchmark Assessments:</p> <ul style="list-style-type: none"> ● Unit pre-test ● Beginning of the year, mid year, and end of the year SGO
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Core Instructional & Supplemental Materials	
<p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> ● Savvas Realize "Elevate Science" <ul style="list-style-type: none"> ○ Lesson explorations ○ Hands-on activities ○ Virtual Labs ○ Video based projects 	<p>Varied Levels of Text:</p> <ul style="list-style-type: none"> ● leveled readers ● Newsela ● Storyworks ● Career Connections p.195 (Geologist)

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<ul style="list-style-type: none">○ Performance tasks○ Engineering projects○ Student investigations <p>Glaciers, Water and Wind, Oh My! - Activity - TeachEngineering Bill Nye Erosion - SchoolTube - Safe video sharing and management for K12</p> <p>Multimedia presentation about weathering and erosion</p>	<ul style="list-style-type: none">● Kalman, B. (2009). <i>What shapes the land?</i>● Koontz, R. (2006). <i>Erosion: Changing Earth's surface.</i>● McKinney, B. (1998). <i>A drop around the world</i>● Vieira, J. (1997). <i>Grand Canyon: A trail through time.</i>● Baylor, B. (1984). <i>If you are a hunter of fossils</i>● Brotzge, J. (2009). <i>My pet rock, Greg Granite.</i>

Modifications and Accommodations

English Language Learners:

- Provide pictures and well labeled models
- Speak slowly and gesture when necessary
- Pre-teach vocabulary words
- Extended time on assessments
- Small group for assessment
- Review Vocabulary
- Allow for alternate responses during activities and assessments
- Literacy and language support strategies including discourse
- Use a poster, slide, or picture to support student listening in science such as GLAD pictorial input chart
- Preview science texts with students, discussing salient text features such as tables, graphs, and photographs before they read it.
- Provide summaries and include native language texts.
- Provide sentence stems for all students to use, especially to support complex verbal practices like argumentation, explanation, and communication.
- Engage ELs in authentic vocabulary exploration as they try to make their thoughts meaningful to others through writing. Provide dictionaries or [Google Translate](#). Look beyond grammar and spelling to understand student ideas.
- Home culture connections

Special Education/504 Plans/Students with Disabilities:

- Follow specific IEP/504 accommodations and modifications
- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus

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- Allow alternate assignments and assessments
- Differentiated Instruction

Students at Risk of Failure:

- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- Incorporate social/emotional discussions
- Encourage and monitor positive peer collaboration
- Provide academic resources for both home and school use
- Provide incentives to increase motivation and collaboration

Economically Disadvantaged:

- Provide clear, achievable expectations, do not lower academic requirements for them.
- Build a safe and nurturing atmosphere
- Be flexible with assignments
- Offer several alternatives from which all students can choose.
- Allow students to finish assignments independently, or give them the opportunity to complete tasks at their own pace.
- Use real-world examples and create mental models for abstract idea
- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Maintain expectations while offering choice and soliciting input
- Connect concepts to students' sense of "place" as physical, historical, and sociocultural dimensions
- Ask questions that elicit students' funds of knowledge
- Use cultural artifacts that are meaningful
- Use project-based learning as a form of connected science
- Provide resources for science instruction

Culturally Diverse:

- Involve families in student learning
- Provide social/emotional support
- Respect cultural traditions
- Build in more group work to encourage interaction with peers
- Show photos, videos, and definitions when possible for culturally unique vocabulary
- Teach study skills
- Provide students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Support verbal explanations with non verbal cues: Gestures/ facial expressions Props, realia, manipulatives, concrete materials Visuals, graphs, pictures, maps
- Provide positive praise to increase motivation
- Provide real world connections and emphasize the value of education
- Communicate high expectations for the success of all students
- Use cultural artifacts that are meaningful relevant
- Integrate community involvement

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- Include role models and mentors of similar racial or ethnic backgrounds

Gifted and Talented

- Peer mediated strategies
- Cooperative learning groups
- Differentiated instruction

Presentation accommodations allow a student to:

- Vary the method of presentation: lecture, small groups, large group, demonstration, individual experimentation
- Explore real world connections
- Use technology tools to enhance content

Response accommodations allow a student to:

- Turn and Talk
- Reward risk taking while encouraging students to think “outside of the box”

Setting accommodations allow a student to:

- Use flexible seating
- Have choice in seating/grouping

Timing accommodations allow a student to:

- Have flexible pacing in terms of content, assignments, and assessments
- Explore extended activities

Scheduling accommodations allow a student to:

- Establish a timeline for completing a project
- Have rigorous Pacing

Organization skills accommodations allow a student to:

- Model executive functioning
- Utilize independent skills practices

Assignment modifications allow a student to:

- Complete enrichment tasks
- Write longer passages on essays and open ended responses including academic vocabulary
- Answer higher order thinking questions
- Cite text evidence
- Create alternate projects or assignments, student developed rubrics, student choice when completing a project or alternate labs

Curriculum modifications provide:

- Topics of interest to the student and/or relevant to how the world works
- Students access to supplemental reading materials matched to individual student lexiles
- Opportunities for open-ended, self-directed activities
- Opportunities to get graded or assessed using a different standard than the one for others

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Unit 5: Earth's Natural Hazards	Duration: 20 days
Science Standards 4-ESS3-2, 3-5-ETS1-2	
Disciplinary Core Ideas ESS3.B Natural Hazards A variety of hazards result from natural processes. Humans cannot eliminate the hazards but can take steps to reduce their impacts.	
Science and Engineering Practices SEP.2 Developing and using models Use a model to test cause and effect relationships or interactions concerning the function of a natural or designed system SEP.6 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 solution	
Crosscutting Concepts CCC.2 Cause and Effect Cause and effect relationships are routinely identified, test, and used to explain change	
Connections to Nature of Science Science is a Human Endeavor Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.	
Computer Science and Design Thinking Standards 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.ED.3: Follow step by step directions to assemble a product or solve a problem, using	

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appropriate tools to accomplish the task.

Interdisciplinary Standards ELA/Literacy

RI.4.5 Describe the overall structure of events, ideas, concepts or information in a text, or part of a text.

MP.4. Model with mathematics.

Enduring Understandings

Cause and effect relationships are routinely identified, tested, and used to explain change.

Engineers improve existing technologies or develop new ones to increase benefits, decrease known risks, and meet societal demands.

A variety of hazards result from natural processes (e.g., earthquakes, floods, tsunamis, volcanic eruptions).

Humans cannot eliminate the hazards, but they can take steps to reduce their impacts.

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
communicating with peers about proposed solutions to a problem 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.

Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints

Essential Questions

How can we identify and test cause and effect relationships to explain change?

How can we generate solutions to problems while meeting criteria and constraints?

How can we generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans?

Career Readiness, Life Literacies, and Key Skills Practices

The following skills are encouraged and taught:

Demonstrate creativity and innovation.

Utilize critical thinking to make sense of problems and persevere in solving them.

Use technology to enhance productivity increase collaboration and communicate effectively

Work productively in teams while using cultural/global competence.

Career Readiness, Life Literacies, and Key Skills Standards

9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process
(2.1.5.EH.4,4-ESS3-2, 3-5 ETS1-2, 6.3.5.CivicsPD.2).

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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 (4-ESS3-2, 3-5 ETS1-2, 6.1.5.CivicsCM.3)

LGBT and Disabilities Law N.J.S.A 18A:35-4.35 Instruction on the political, economic, and social integration of persons with disabilities and lesbian, gay, bisexual, and transgender people, in an appropriate place in the curriculum

Amistad Law: N.J.S.A 18A:52:16A-88-4.35 Instruction regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of secondary school students.

Holocaust Law N.J.S.A 18A:35-28
 Instruction on the Holocaust and genocides in an appropriate place in the curriculum with an emphasis on the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.

Student Learning Goals/Objectives	
<p><i>Students will know:</i> How natural hazards impact people. How to generate a solution for reducing impacts from natural hazards. How to explain a solution to a problem using evidence.</p>	<p><i>Students will be able to:</i> 4-ESS3-2 Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans. 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</p>
Assessment Evidence	
<p>Performance Tasks Build a model to observe effects of natural hazards such as tsunamis. Describe solutions to reduce impacts from natural hazards Design an earthquake-resistant building or improve monitoring of volcanic activity. Identify areas on Earth of greatest risk from natural hazards Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in</p>	<p>Other Assessments Formative:</p> <ul style="list-style-type: none"> ● Lesson quizzes, and reviews ● Student investigations and models ● Language Arts writing activities ● Graphic Organizers & Guided Notes ● Directed Reading ● Cooperative Group Learning ● Homework ● Journal Entries ● Exit Tickets

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<p>which variables are controlled and the number of trials considered. 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</p>	<ul style="list-style-type: none"> ● Polls/ Surveys/ Evaluation ● Jigsaw ● Think, Pair, Share ● Quizzes <p>Alternative:</p> <ul style="list-style-type: none"> ● Modified tests and quizzes ● Group work ● Peer assessments ● Labs ● Projects ● Portfolio Assessments <p>Summative</p> <ul style="list-style-type: none"> ● Unit Test/Topic Test ● Unit Project ● Performance Assessment/Tasks ● Engineering projects <p>Benchmark Assessments:</p> <ul style="list-style-type: none"> ● Unit pre-test ● Beginning of the year, mid year, and end of the year SGO
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Core Instructional & Supplemental Materials	
<p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> ● Savvas Realize “Elevate Science” <ul style="list-style-type: none"> ○ Lesson explorations ○ Hands-on activities ○ Virtual Labs ○ Video based projects ○ Performance tasks ○ Engineering projects ○ Student investigations 	<p>Varied Levels of Text:</p> <ul style="list-style-type: none"> ● leveled readers ● Newsela ● Storyworks ● Mystery Science lessons ● Stallone, L. (1992). <i>The flood that came to Grandma’s house.</i> ● Lyon, G. (1990). <i>Come a tide.</i>

Modifications and Accommodations
<p>English Language Learners:</p> <ul style="list-style-type: none"> ● Provide pictures and well labeled models ● Speak slowly and gesture when necessary

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- Pre-teach vocabulary words
- Extended time on assessments
- Small group for assessment
- Review Vocabulary
- Allow for alternate responses during activities and assessments
- Literacy and language support strategies including discourse
- Use a poster, slide, or picture to support student listening in science such as GLAD pictorial input chart
- Preview science texts with students, discussing salient text features such as tables, graphs, and photographs before they read it.
- Provide summaries and include native language texts.
- Provide sentence stems for all students to use, especially to support complex verbal practices like argumentation, explanation, and communication.
- Engage ELs in authentic vocabulary exploration as they try to make their thoughts meaningful to others through writing. Provide dictionaries or [Google Translate](#). Look beyond grammar and spelling to understand student ideas.
- Home culture connections

Special Education/504 Plans/Students with Disabilities:

- Follow specific IEP/504 accommodations and modifications
- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- Allow alternate assignments and assessments
- Differentiated Instruction

Students at Risk of Failure:

- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- Incorporate social/emotional discussions
- Encourage and monitor positive peer collaboration
- Provide academic resources for both home and school use
- Provide incentives to increase motivation and collaboration

Economically Disadvantaged:

- Provide clear, achievable expectations, do not lower academic requirements for them.
- Build a safe and nurturing atmosphere
- Be flexible with assignments
- Offer several alternatives from which all students can choose.
- Allow students to finish assignments independently, or give them the opportunity to complete tasks at their own pace.
- Use real-world examples and create mental models for abstract idea
- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Maintain expectations while offering choice and soliciting input

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- Connect concepts to students' sense of "place" as physical, historical, and sociocultural dimensions
- Ask questions that elicit students' funds of knowledge
- Use cultural artifacts that are meaningful
- Use project-based learning as a form of connected science
- Provide resources for science instruction

Culturally Diverse:

- Involve families in student learning
- Provide social/emotional support
- Respect cultural traditions
- Build in more group work to encourage interaction with peers
- Show photos, videos, and definitions when possible for culturally unique vocabulary
- Teach study skills
- Provide students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Support verbal explanations with non verbal cues: Gestures/ facial expressions Props, realia, manipulatives, concrete materials Visuals, graphs, pictures, maps
- Provide positive praise to increase motivation
- Provide real world connections and emphasize the value of education
- Communicate high expectations for the success of all students
- Use cultural artifacts that are meaningful relevant
- Integrate community involvement
- Include role models and mentors of similar racial or ethnic backgrounds

Gifted and Talented

- Peer mediated strategies
- Cooperative learning groups
- Differentiated instruction

Presentation accommodations allow a student to:

- Vary the method of presentation: lecture, small groups, large group, demonstration, individual experimentation
- Explore real world connections
- Use technology tools to enhance content

Response accommodations allow a student to:

- Turn and Talk
- Reward risk taking while encouraging students to think "outside of the box"

Setting accommodations allow a student to:

- Use flexible seating
- Have choice in seating/grouping

Timing accommodations allow a student to:

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<ul style="list-style-type: none"> ● Have flexible pacing in terms of content, assignments, and assessments ● Explore extended activities <p><i>Scheduling accommodations allow a student to:</i></p> <ul style="list-style-type: none"> ● Establish a timeline for completing a project ● Have rigorous Pacing <p><i>Organization skills accommodations allow a student to:</i></p> <ul style="list-style-type: none"> ● Model executive functioning ● Utilize independent skills practices <p><i>Assignment modifications allow a student to:</i></p> <ul style="list-style-type: none"> ● Complete enrichment tasks ● Write longer passages on essays and open ended responses including academic vocabulary ● Answer higher order thinking questions ● Cite text evidence ● Create alternate projects or assignments, student developed rubrics, student choice when completing a project or alternate labs <p><i>Curriculum modifications provide:</i></p> <ul style="list-style-type: none"> ● Topics of interest to the student and/or relevant to how the world works ● Students access to supplemental reading materials matched to individual student lexiles ● Opportunities for open-ended, self-directed activities ● Opportunities to get graded or assessed using a different standard than the one for others
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Unit 6: Structures and Functions	Duration: 20 days
Science Standards 4-LS1-1, 4-LS1-2	
Disciplinary Core Ideas LS1.A Structure and Function Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior and reproduction.	
Science and Engineering Practices SEP.7 Engaging in Argument from Evidence Construct an argument with evidence, data, and/or a model	
Crosscutting Concepts CCC.4 System and System Models A system can be described in terms of its components and their interactions.	

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Connections to Nature of Science Science is a Human Endeavor

Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.

Computer Science and Design Thinking Standards

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.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.

Interdisciplinary Standards ELA/Literacy

RI.4.5 Describe the overall structure of events, ideas, concepts or information in a text, or part of a text.

Enduring Understandings

A system can be described in terms of its components and their interactions.

Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction

Models can be used to describe structure and function of systems

Essential Questions

What is a system?

What internal and external structures do plants and animals have to help them survive?

How can we use models to explain functions of systems?

How do animals use their senses to get information about their environment?

How does light allow an animal to see something?

How do an animal's structures allow it to see its prey?

How do animals know how to react when they get information about their environment?

Why do different animals need different amounts of light to see well?

Career Readiness, Life Literacies, and Key Skills Practices

The following skills are encouraged and taught:

Demonstrate creativity and innovation.

Utilize critical thinking to make sense of problems and persevere in solving them.

Use technology to enhance productivity increase collaboration and communicate effectively

Work productively in teams while using cultural/global competence.

Career Readiness, Life Literacies, and Key Skills Standards

9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process (2.1.5.EH.4,4-ESS3-2, 3-5 ETS1-2, 6.3.5.CivicsPD.2).

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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 (4-ESS3-2, 3-5 ETS1-2, 6.1.5.CivicsCM.3)

LGBT and Disabilities Law N.J.S.A 18A:35-4.35 Instruction on the political, economic, and social integration of persons with disabilities and lesbian, gay, bisexual, and transgender people, in an appropriate place in the curriculum

Amistad Law: N.J.S.A 18A:52:16A-88-4.35 Instruction regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of secondary school students.

Holocaust Law N.J.S.A 18A:35-28
 Instruction on the Holocaust and genocides in an appropriate place in the curriculum with an emphasis on the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.

Student Learning Goals/Objectives	
<p><i>Students will know:</i></p> <ul style="list-style-type: none"> How to describe a system in terms of its components and their interactions. How to describe internal and external structures that plants and animals have to help them survive How to construct an argument with evidence, data, and/or a model. How to construct an argument to support the claim that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction How to use the engineering design process to design a model of an animal eye to accurately reflect the structures of an animal's eye and explain the function of the eye How animals use their senses to get information about their environment How an animal's structures allow it to see its prey How animals know how to react when they get information about their environment 	<p><i>Students will be able to:</i></p> <ul style="list-style-type: none"> 4-LS1-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior and reproduction 4-LS1-2 Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways 3-5 ETS-1 Define a simple design problem reflecting a need or a want that includes specific criteria for success and constraints on materials, time and cost

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Assessment Evidence	
<p>Performance Tasks Construct arguments to describe functions of plant and animal structures using evidence Use the engineering design process to design a model of an animal eye to accurately reflect the structures of an animal’s eye and explain the function of the eye</p>	<p>Other Assessments</p> <p>Formative:</p> <ul style="list-style-type: none"> ● Lesson quizzes, and reviews ● Student investigations and models ● Language Arts writing activities ● Graphic Organizers & Guided Notes ● Directed Reading ● Cooperative Group Learning ● Homework ● Journal Entries ● Exit Tickets ● Polls/ Surveys/ Evaluation ● Jigsaw ● Think, Pair, Share ● Quizzes <p>Alternative:</p> <ul style="list-style-type: none"> ● Modified tests and quizzes ● Group work ● Peer assessments ● Labs ● Projects ● Portfolio Assessments <p>Summative</p> <ul style="list-style-type: none"> ● Unit Test/Topic Test ● Unit Project ● Performance Assessment/Tasks ● Engineering projects <p>Benchmark Assessments:</p> <ul style="list-style-type: none"> ● Unit pre-test ● Beginning of the year, mid year, and end of the year SGO

Core Instructional & Supplemental Materials	
<p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> ● Savvas Realize “Elevate Science” <ul style="list-style-type: none"> ○ Lesson explorations ○ Hands-on activities 	<p>Varied Levels of Text:</p> <ul style="list-style-type: none"> ● leveled readers ● Newsela ● Storyworks

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<ul style="list-style-type: none">○ Virtual Labs○ Video based projects○ Performance tasks○ Engineering projects○ Student investigations	<ul style="list-style-type: none">● Mystery Science lessons● Hickman, P. (1998). <i>Animal senses: How animals see, hear, taste, smell and feel</i>● Hall, K. (2005). <i>Animal sight</i>.● Davies, N. (2004). <i>Bat loves the night</i>.● Stojic, M. (2009). <i>Rain</i>.● Markle, S. (2013). <i>What if you had animal teeth?</i>● Jenkins, S. (2008). <i>What do you do with a tail like this?</i>● Stewart, M. (2014). <i>Feathers: Not just for flying</i>

Modifications and Accommodations

English Language Learners:

- Provide pictures and well labeled models
- Speak slowly and gesture when necessary
- Pre-teach vocabulary words
- Extended time on assessments
- Small group for assessment
- Review Vocabulary
- Allow for alternate responses during activities and assessments
- Literacy and language support strategies including discourse
- Use a poster, slide, or picture to support student listening in science such as GLAD pictorial input chart
- Preview science texts with students, discussing salient text features such as tables, graphs, and photographs before they read it.
- Provide summaries and include native language texts.
- Provide sentence stems for all students to use, especially to support complex verbal practices like argumentation, explanation, and communication.
- Engage ELs in authentic vocabulary exploration as they try to make their thoughts meaningful to others through writing. Provide dictionaries or [Google Translate](#). Look beyond grammar and spelling to understand student ideas.
- Home culture connections

Special Education/504 Plans/Students with Disabilities:

- Follow specific IEP/504 accommodations and modifications
- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- Allow alternate assignments and assessments

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- Differentiated Instruction

Students at Risk of Failure:

- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- Incorporate social/emotional discussions
- Encourage and monitor positive peer collaboration
- Provide academic resources for both home and school use
- Provide incentives to increase motivation and collaboration

Economically Disadvantaged:

- Provide clear, achievable expectations, do not lower academic requirements for them.
- Build a safe and nurturing atmosphere
- Be flexible with assignments
- Offer several alternatives from which all students can choose.
- Allow students to finish assignments independently, or give them the opportunity to complete tasks at their own pace.
- Use real-world examples and create mental models for abstract idea
- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Maintain expectations while offering choice and soliciting input
- Connect concepts to students' sense of "place" as physical, historical, and sociocultural dimensions
- Ask questions that elicit students' funds of knowledge
- Use cultural artifacts that are meaningful
- Use project-based learning as a form of connected science
- Provide resources for science instruction

Culturally Diverse:

- Involve families in student learning
- Provide social/emotional support
- Respect cultural traditions
- Build in more group work to encourage interaction with peers
- Show photos, videos, and definitions when possible for culturally unique vocabulary
- Teach study skills
- Provide students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Support verbal explanations with non verbal cues: Gestures/ facial expressions Props, realia, manipulatives, concrete materials Visuals, graphs, pictures, maps
- Provide positive praise to increase motivation
- Provide real world connections and emphasize the value of education
- Communicate high expectations for the success of all students
- Use cultural artifacts that are meaningful relevant
- Integrate community involvement
- Include role models and mentors of similar racial or ethnic backgrounds

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Gifted and Talented

- Peer mediated strategies
- Cooperative learning groups
- Differentiated instruction

Presentation accommodations allow a student to:

- Vary the method of presentation: lecture, small groups, large group, demonstration, individual experimentation
- Explore real world connections
- Use technology tools to enhance content

Response accommodations allow a student to:

- Turn and Talk
- Reward risk taking while encouraging students to think “outside of the box”

Setting accommodations allow a student to:

- Use flexible seating
- Have choice in seating/grouping

Timing accommodations allow a student to:

- Have flexible pacing in terms of content, assignments, and assessments
- Explore extended activities

Scheduling accommodations allow a student to:

- Establish a timeline for completing a project
- Have rigorous Pacing

Organization skills accommodations allow a student to:

- Model executive functioning
- Utilize independent skills practices

Assignment modifications allow a student to:

- Complete enrichment tasks
- Write longer passages on essays and open ended responses including academic vocabulary
- Answer higher order thinking questions
- Cite text evidence
- Create alternate projects or assignments, student developed rubrics, student choice when completing a project or alternate labs

Curriculum modifications provide:

- Topics of interest to the student and/or relevant to how the world works
- Students access to supplemental reading materials matched to individual student lexiles
- Opportunities for open-ended, self-directed activities
- Opportunities to get graded or assessed using a different standard than the one for others

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Unit 7: Human Body Systems	Duration: 20 days
Science Standards 4-LS1-1, 4-LS1-2	
Disciplinary Core Ideas LS1.A Structure and Function Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior and reproduction. LS1.D Information Processing Different sense receptors are specialized for particular kinds of information which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions.	
Science and Engineering Practices SEP.2 Developing and Using Models Use a model to test interactions concerning the functioning of a natural system SEP.6. Constructing Explanations and Designing Solutions Use evidence to construct or support an explanation or design a solution to a problem. SEP.7 Engaging in Argument from Evidence Construct an argument with evidence, data, and/or a model	
Crosscutting Concepts CCC.4 System and System Models A system can be described in terms of its components and their interactions.	
Connections to Nature of Science Science is a Human Endeavor Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.	
Computer Science and Design Thinking Standards 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.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.	

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Interdisciplinary Standards ELA/Literacy

RI.4.3 Explain events, procedures, ideas or concepts in a historical, scientific or technical text including what happened and why, based on specific information in the text.

Enduring Understandings

A system can be described in terms of its components and their interactions.
How body parts work together to perform tasks.
How models can be used to describe functions of systems.

Essential Questions

What is a system?
Which body parts work together to perform a task?
What are the functions of the human body systems?
How does the circulatory system interact with the respiratory system?
How does the skeletal system interact with the muscular system to allow movement?
What technology and medical careers involve understanding the function of the human body?

Career Readiness, Life Literacies, and Key Skills Practices

The following skills are encouraged and taught:
Demonstrate creativity and innovation.
Utilize critical thinking to make sense of problems and persevere in solving them.
Use technology to enhance productivity increase collaboration and communicate effectively
Work productively in teams while using cultural/global competence.

Career Readiness, Life Literacies, and Key Skills Standards

9.1.2.CAP.1: Make a list of different types of jobs and describe the skills associated with each job

LGBT and Disabilities Law N.J.S.A 18A:35-4.35 Instruction on the political, economic, and social integration of persons with disabilities and lesbian, gay, bisexual, and transgender people, in an appropriate place in the curriculum

Amistad Law: N.J.S.A 18A:52:16A-88-4.35 Instruction regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of secondary school students.

Holocaust Law N.J.S.A 18A:35-28

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Instruction on the Holocaust and genocides in an appropriate place in the curriculum with an emphasis on the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.

Student Learning Goals/Objectives

<p><i>Students will know:</i></p> <p>The function of the human body systems The interactions of the human body systems How to use a model to collect evidence to explain the function of the brain and sensory organs Use a model to test interactions concerning the functioning of a natural system. Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways</p>	<p><i>Students will be able to:</i></p> <p>4-LS1-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior and reproduction. 4-LS1-2 Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways. 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.</p>
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Assessment Evidence

<p>Performance Tasks</p> <p>Explore body systems and their organization Investigate functions of body systems Plan and carry out fair tests to investigate and collect evidence for interactions of human body systems Identify sensory organs and describe functions Make a human body road map Research career of medical imaging technician</p>	<p>Other Assessments</p> <p>Formative:</p> <ul style="list-style-type: none"> ● Lesson quizzes, and reviews ● Student investigations and models ● Language Arts writing activities ● Graphic Organizers & Guided Notes ● Directed Reading ● Cooperative Group Learning ● Homework ● Journal Entries ● Exit Tickets ● Polls/ Surveys/ Evaluation ● Jigsaw ● Think, Pair, Share ● Quizzes <p>Alternative:</p> <ul style="list-style-type: none"> ● Modified tests and quizzes ● Group work ● Peer assessments ● Labs
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	<ul style="list-style-type: none"> ● Projects ● Portfolio Assessments <p>Summative</p> <ul style="list-style-type: none"> ● Unit Test/Topic Test ● Unit Project ● Performance Assessment/Tasks ● Engineering projects <p>Benchmark Assessments:</p> <ul style="list-style-type: none"> ● Unit pre-test ● SGO
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Core Instructional & Supplemental Materials	
<p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> ● Savvas Realize “Elevate Science” <ul style="list-style-type: none"> ○ Lesson explorations ○ Hands-on activities ○ Virtual Labs ○ Video based projects ○ Performance tasks ○ Engineering projects ○ Student investigations 	<p>Varied Levels of Text:</p> <ul style="list-style-type: none"> ● leveled readers ● Newsela ● Storyworks ● Career Connection p.377

Modifications and Accommodations
<p>English Language Learners:</p> <ul style="list-style-type: none"> ● Provide pictures and well labeled models ● Speak slowly and gesture when necessary ● Pre-teach vocabulary words ● Extended time on assessments ● Small group for assessment ● Review Vocabulary ● Allow for alternate responses during activities and assessments ● Literacy and language support strategies including discourse ● Use a poster, slide, or picture to support student listening in science such as GLAD pictorial input chart ● Preview science texts with students, discussing salient text features such as tables, graphs, and photographs before they read it. ● Provide summaries and include native language texts. ● Provide sentence stems for all students to use, especially to support complex

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verbal practices like argumentation, explanation, and communication.

- Engage ELs in authentic vocabulary exploration as they try to make their thoughts meaningful to others through writing. Provide dictionaries or [Google Translate](#). Look beyond grammar and spelling to understand student ideas.
- Home culture connections

Special Education/504 Plans/Students with Disabilities:

- Follow specific IEP/504 accommodations and modifications
- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- Allow alternate assignments and assessments
- Differentiated Instruction

Students at Risk of Failure:

- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- Incorporate social/emotional discussions
- Encourage and monitor positive peer collaboration
- Provide academic resources for both home and school use
- Provide incentives to increase motivation and collaboration

Economically Disadvantaged:

- Provide clear, achievable expectations, do not lower academic requirements for them.
- Build a safe and nurturing atmosphere
- Be flexible with assignments
- Offer several alternatives from which all students can choose.
- Allow students to finish assignments independently, or give them the opportunity to complete tasks at their own pace.
- Use real-world examples and create mental models for abstract idea
- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Maintain expectations while offering choice and soliciting input
- Connect concepts to students' sense of "place" as physical, historical, and sociocultural dimensions
- Ask questions that elicit students' funds of knowledge
- Use cultural artifacts that are meaningful
- Use project-based learning as a form of connected science
- Provide resources for science instruction

Culturally Diverse:

- Involve families in student learning
- Provide social/emotional support
- Respect cultural traditions
- Build in more group work to encourage interaction with peers
- Show photos, videos, and definitions when possible for culturally unique vocabulary
- Teach study skills

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- Provide students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Support verbal explanations with non verbal cues: Gestures/ facial expressions Props, realia, manipulatives, concrete materials Visuals, graphs, pictures, maps
- Provide positive praise to increase motivation
- Provide real world connections and emphasize the value of education
- Communicate high expectations for the success of all students
- Use cultural artifacts that are meaningful relevant
- Integrate community involvement
- Include role models and mentors of similar racial or ethnic backgrounds

Gifted and Talented

- Peer mediated strategies
- Cooperative learning groups
- Differentiated instruction

Presentation accommodations allow a student to:

- Vary the method of presentation: lecture, small groups, large group, demonstration, individual experimentation
- Explore real world connections
- Use technology tools to enhance content

Response accommodations allow a student to:

- Turn and Talk
- Reward risk taking while encouraging students to think “outside of the box”

Setting accommodations allow a student to:

- Use flexible seating
- Have choice in seating/grouping

Timing accommodations allow a student to:

- Have flexible pacing in terms of content, assignments, and assessments
- Explore extended activities

Scheduling accommodations allow a student to:

- Establish a timeline for completing a project
- Have rigorous Pacing

Organization skills accommodations allow a student to:

- Model executive functioning
- Utilize independent skills practices

Assignment modifications allow a student to:

- Complete enrichment tasks
- Write longer passages on essays and open ended responses including academic

Long Beach Island Consolidated School District Curriculum Guide

Grade: 4

Content Area: Science

vocabulary

- Answer higher order thinking questions
- Cite text evidence
- Create alternate projects or assignments, student developed rubrics, student choice when completing a project or alternate labs

Curriculum modifications provide:

- Topics of interest to the student and/or relevant to how the world works
- Students access to supplemental reading materials matched to individual student lexiles
- Opportunities for open-ended, self-directed activities
- Opportunities to get graded or assessed using a different standard than the one for others