

Long Beach Island Consolidated School District Curriculum Guide

Grade: 6	Content Area: Science
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Introduction:

Students in sixth grade integrate a range of practices to construct evidence-based explanations of compelling yet challenging phenomena centered on Engineering, Life Science, Physical Science and Earth Science concepts ranging from cells to organisms and body systems, weather and Earth’s systems, and matter. Students conduct investigations, analyze data, construct explanations and develop and use models through relevant, meaningful real-world events to support understanding of these concepts and core ideas.

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

Recommended Pacing Guide	
Unit 1: Living Things in the Biosphere	35 Days
Unit 2: Body Systems	35 Days
Unit 3: Introduction to Earth’s Systems	35 Days
Unit 4: Weather in the Atmosphere	35 Days
Unit 5: Introduction to Matter	35 Days

Unit 1: Living Things in the Biosphere	Duration: 35 days
Science Standards MS-LS1-1, MS-LS1-2, MS-LS1-3, MS-ETS1-1	
Disciplinary Core Ideas LS1.A: Structure and Function	

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- All living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular). (MS-LS1-1)
- Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell. (MS-LS1-2)
- In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions. (MS-LS1-3)

Science and Engineering Practices

SEP.2: Developing and Using Models Develop a model to describe phenomena. (MS-LS1-2)

SEP.3: Planning and Carrying Out Investigations Conduct an investigation to produce data to serve as the basis for evidence that meet the goals of an investigation. (MS-LS1-1)

SEP.7: Engaging in Argument from Evidence Use an oral and written argument supported by evidence to support or refute an explanation or a model for a phenomenon. (MS-LS1-3)

SEP.8: Obtaining, Evaluating, and Communicating Information Gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication and methods used, and describe how they are supported or not supported by evidence.

Crosscutting Concepts

CCC.3: Scale, Proportion, and Quantity Phenomena that can be observed at one scale may not be observable at another scale. (MS-LS1-1)

CCC.6: Structure and Function Complex and microscopic structures and systems can be visualized, modeled, and used to describe how their function depends on the relationships among its parts, therefore complex natural structures/systems can be analyzed to determine how they function. (MS-LS1-2)

CCC.4: Systems and System Models Systems may interact with other systems; they may have sub-systems and be a part of larger complex systems. (MS-LS1-3)

Connections to Engineering, Technology, and Applications 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. (MS-LS1-3)

Interdependence of Science, Engineering, and Technology

Engineering advances have led to important discoveries in virtually every field of science, and scientific discoveries have led to the development of entire industries and engineered systems. (MS-LS1-1)

Technology Standard(s)

8.2.8.ED.3: Develop a proposal for a solution to a real-world problem that includes a model (e.g., physical prototype, graphical/technical sketch).

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8.2.8.ED.1: Evaluate the function, value, and aesthetics of a technological product or system, from the perspective of the user and the producer.
8.2.8.ED.2: Identify the steps in the design process that could be used to solve a problem
8.2.8.ED.5: Explain the need for optimization in a design process.
8.2.8.ED.6: Analyze how trade-offs can impact the design of a product.
8.2.8.ED.7: Design a product to address a real-world problem and document the iterative design process, including decisions made as a result of specific constraints and trade-offs (e.g., annotated sketches).

Interdisciplinary Standard(s) ELA/Literacy

RI.6.8 - Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not. (MS-LS1-3)

RST.6-8.1 - Cite specific textual evidence to support analysis of science and technical texts. (MS-LS1-3)

RST.6-8.4 - Make meaning. Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas. Students write to explain why science attitudes are important when doing science and make predictions about how bias could affect scientists' work (MS-LS1-3)

SL.8.5 - Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence (MS-LS1-2)

WHST.6-8.1 - Cite specific textual evidence to support analysis of science and technical texts. (MS-LS1-3)

WHST.6-8.8 - Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

Mathematics

6.EE.C.9 - Use variables to represent two quantities, such as the number of cells that make up an organism and units representing the size or type of the organism and determine the relationship between these two variables. Use variables to help determine the ratio of the cell's surface area to its volume. (MS-LS1-1), (MS-LS1-2), (MS-LS1-3)

Enduring Understandings

Students will understand that...

Cells are the smallest unit of life that can be said to be alive.

All living things are made of cells, either one cell or many different numbers and types of cells.

Nonliving things can be composed of cells., from once-living things that have died.

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Organisms may consist of one single cell (unicellular) or many different types and numbers of cells (multicellular).

The cell functions as a whole system.

Within cells, special structures are responsible for particular functions (organelles-nucleus, chloroplasts, mitochondria, cell membrane, golgi apparatus, endoplasmic reticulum, etc.)

Within cells, the cell membrane forms the boundary that controls what enters and leaves the cell.

Engineering advances have led to important discoveries in the field of cells.

Complex and microscopic structures and systems in cells can be visualized, modeled, and used to describe how the function of the cell depends on the relationship among its parts.

A model can be used to describe the function of a cell as a whole.

A model can be used to describe how parts of cells contributed to the cell's function.

The structures of the cell wall and cell membrane are related to their function.

All plants share certain characteristics however, vascular and nonvascular plants differ.

The structure and function of roots, stems and leaves are specialized to carry out specific life functions.

Essential Questions

What evidence is there that all living things are made of cells?

Where do living things come from?

What do living things need to stay alive, grow and reproduce?

What is a cell and what is The Cell Theory?

What do the traits of cells tell you about their jobs?

How do the parts of a cell work?

How do the functions of cells support an entire organism?

What characteristics do all plants share and what do they need to live successfully on land?

How do the characteristics of nonvascular and vascular plants differ?

How do the structure and function of the roots, stems, leaves and flowers compare?

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.

Consider the environmental, social and economic impacts of decisions

Use technology to enhance productivity increase collaboration and communicate effectively

Work productively in teams while using cultural/global competence.

Career Readiness, Life Literacies, and Key Skills Standards

9.4.8.CT.2: Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option (MS ETS1-4, 6.1.8.CivicsDP.1).

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9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem (MS-ETS1-1, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).

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:
 Cells are the smallest unit of life.
 All living things are made of cells, either one or many.
 Cells that can be observed at one scale may not be observable at another scale.
 Nonliving things can be composed of cells, from once-living things that have died.
 Engineering advances have led to the important discoveries in cell theory.
 Every organelle in a cell is responsible for particular functions.
 The cell functions as a whole system.
 How viruses are engineered to solve problems.
 Careers in the field of microbiology.

Students will be able to:
 Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells. MS-LS1-1
 Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function. MS-LS1-2
 Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells. MS-LS1-3
 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. MS-ETS1-1

Assessment Evidence

Performance Tasks
 Conduct an investigation to provide evidence that supports all living things are made of cells

Other Assessments
Formative:

- Lesson quizzes, and reviews

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<p>Identify and describe evidence that explains what all living things are made of</p> <p>Conduct an investigation to provide evidence that explains what living things need to stay alive, grow and reproduce</p> <p>Conduct an investigation to provide evidence that describes characteristics of viruses, bacteria, protists and fungi</p> <p>Construct explanations that explain how viruses, bacteria, protists and fungi interact with nature and people</p> <p>Distinguish between living and nonliving things</p> <p>Observe different types of cells that can be found in the makeup of living things.</p> <p>Compare a cell to a real-life working system, using a model to describe the function of a cell as a whole (ie: a factory, amusement park, school, etc.)</p> <p>Develop and use a model to describe the parts of a cell and each corresponding function</p> <p>Compare and contrast animal and plant cells</p> <p>Design, build and test a working model of a virus.</p> <p>Conduct research of careers in microbiology.</p>	<ul style="list-style-type: none"> ● 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	
<p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> ● Savvas Realize “Elevate Science: Course 1” <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 ● Case Studies

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| <ul style="list-style-type: none">○ Virtual Labs○ Video based projects○ Performance tasks○ Engineering projects○ Student investigations○ Microbiology Career Research p.468○ Virus Engineering Design Project (p.471) with Technology Presentation● www.cellsalive.com● A Busy Factory
http://www.slcschools.org/department/s/curriculum/science/grade-7-to-8/grade-7/documents/s3-o2-lessoncell-as-a-factory-website-pdf.pdf● Cell Structure Lab (Argument Driven Inquiry)● Engineering Design Process● Engineering Design Process NASA● What is Engineering? | <ul style="list-style-type: none">● Mistakes that Worked: 40 Familiar Inventions & How they Came to Be by Charlotte Foltz Jones● STEM Lesson Essentials by JoAnne Vasquez, Cary Sneider & Michael Comer● E+S Integrating Engineering and Science in Your Classroom NSTA Press Edited by Eric Brunsell |
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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.
- Engage ELs in authentic vocabulary exploration as they try to make their thoughts

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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

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- 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 classmates

Unit 2: Body Systems

Duration: 35 days

Science Standards

MS-LS1-3, MS-LS1-8

Disciplinary Core Ideas

LS1.A: Structure and Function

- These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions. (MS-LS1-3)

LS1.D: Information Processing

- Each sense receptor responds to different inputs (electromagnetic, mechanical, chemical), transmitting them as signals that travel along nerve cells to the brain. The signals are then processed in the brain, resulting in immediate behaviors or memories (MS-LS1-8)

Science and Engineering Practices

SEP.7: Engaging in Argument from Evidence Use an oral and written argument supported by evidence to support or refute an explanation or a model for a phenomenon. (MS-LS1-3)

SEP.8: Obtaining, Evaluating, and Communicating Information Gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication and methods used, and describe how they are supported or not supported by evidence. (MS-LS1-8)

Crosscutting Concepts

CCC.2: Cause and Effect Cause and effect relationships may be used to predict phenomena in natural systems. (MS-LS1-8)

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CCC.4: Systems and System Models Systems may interact with other systems; they may have sub-systems and be a part of larger complex systems. (MS-LS1-3)

Interdependence of Science, Engineering, and Technology Engineering advances have led to important discoveries in virtually every field of science and scientific discoveries have led to the development of entire industries and engineered systems. (MS-LS1-1)

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. (MS-LS1-3)

Technology Standards

8.2.8.ITH.2: Compare how technologies have influenced society over time (MS-LS1-8)

8.2.8.ITH.3: Evaluate the impact of sustainability on the development of a designed product or system.

Interdisciplinary Standard(s) ELA/Literacy

RI.6.8 - Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not. (MS-LS1-3)

RST.6-8.1 - Cite specific textual evidence to support analysis of science and technical texts. (MS-LS1-3)

SL.8.5 - Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest. (MS-LS1-2)

WHST.6-8.8 - Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation. (MS-LS1-8)

Enduring Understandings

Students will understand that...

In multicellular organisms, the body is a system of multiple, interacting subsystems.

Subsystems are groups of cells that work together to form tissues.

Organs are groups of tissues that work together to form a particular body function.

Tissues and organs are specialized for particular body functions.

Systems may interact with other systems.

Systems may have subsystems and be part of larger complex systems.

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Interactions are limited to the circulatory, excretory, digestive, respiratory, muscular and nervous system. Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.
Sense receptors respond to different inputs (electromagnetic, mechanical, chemical).
Sense receptors transmit responses as signals that travel along nerve cells to the brain. Signals are then processed in the brain.
Brain processing results in immediate behaviors or memories.
Cause-and-effect relationships may be used to predict response to stimuli in natural systems.

Essential Questions

What are tissues and organs?
What constitutes a system?
What is the evidence that a body is actually a system of interacting subsystems composed of groups of interacting cells?
How do organisms receive and respond to information from their environment?
How have people contributed to the advancement of science and medicine?

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

9.4.8.CT.2: Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option (MS LS1-8, 6.1.8.CivicsDP.1).
9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem (MS-LS1-8, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).
9.4.8.TL.4: Synthesize and publish information about a local or global issue or event (MS LS1-8, 6.1.8.CivicsPI.3).
9.4.8.CI.4: Explore the role of creativity and innovation in career pathways and industries

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> In multicellular organisms, the body is a system of multiple, interacting subsystems. Cells form tissues, tissues form organs and organs form body systems. Tissues and organs are specialized for particular body functions. Systems may interact with other systems. Body systems include the circulatory, excretory, digestive, respiratory, muscular and nervous system. Sense receptors respond to different inputs (electromagnetic, mechanical, chemical). Sense receptors transmit responses as signals that travel along nerve cells to the brain. Signals are then processed in the brain. Brain processing results in immediate behaviors or memories.</p>	<p><i>Students will be able to:</i> Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells. MS-LS1-3 Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories. MS-LS1-8</p>
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Assessment Evidence

<p>Performance Tasks Conduct investigation to collect evidence for the interdependence of body systems during exercise Conduct short term research on human anatomy and body systems, and explain how the systems interact Gather information about nervous system pathways Hypothesize and create stimulus/response pathways Diagram essential components of body systems such as circulatory, digestive, respiratory systems and their interactions</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
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<p>Conduct research and read biographical information on the history of scientific advancements</p> <p>Conduct research on scientific careers in the field of medicine such as biomedical engineering</p>	<ul style="list-style-type: none"> ● 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	
<p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> ● Savvas Realize “Elevate Science: Course 1” <ul style="list-style-type: none"> ○ Lesson explorations ○ Hands-on activities ○ Virtual Labs ○ Video based projects ○ Performance tasks ○ Engineering projects ○ Student investigations <p>Body Systems: Student Links</p> <p>A Science Odyssey: People and Discoveries: Joseph Goldberger</p>	<p>Varied Levels of Text:</p> <ul style="list-style-type: none"> ● leveled readers ● Newsela ● Storyworks ● Super Science ● Case Studies

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[Explore Human Anatomy, Physiology, and Genetics | Innerbody](#)
[Biomedical Engineering and the Human Body - Unit - TeachEngineering](#)
[Cells and Body Systems](#)
[Body & Brain | Articles, Videos, & Interactives](#)
[| NOVA | PBS](#)

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:

- Strategic grouping
- Pre-teach concepts

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- 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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Grade: 6

Content Area: Science

- 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 classmates

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Content Area: Science

Unit 3: Introduction to Earth's Systems

Duration: 35 days

Science Standards

MS-ESS2-1, MS-ESS2-4

Disciplinary Core Ideas

ESS2.A Earth's Materials and Systems

All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms.

ESS2.C The Roles of Water in Earth's Surface Processes

Water's movements- both on the land and underground- cause weathering and erosion, which change the land's surface features and create underground formations.

Science and Engineering Practices

SEP.2:Developing and Using Models Use models to predict and or describe phenomena

Crosscutting Concepts

CCC.2: Cause and Effect Cause and effect relationships may be used to predict phenomena in natural systems.

CCC.5 Energy and Matter Recognize the role of energy in driving the cycling of matter within natural systems

CCC.7 Stability and Change Observe that stability in a system can be disturbed by sudden events or a series of gradual changes

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. (MS-LS1-3)

Technology Standard(s)

8.2.8.ITH.2: Compare how technologies have influenced society over time (MS-LS1-8)

8.2.8.ITH.3: Evaluate the impact of sustainability on the development of a designed product or system.

8.2.8.ETW.3: Analyze the design of a product that negatively impacts the environment or society and develop possible solutions to lessen its impact.

8.2.8.ETW.4: Compare the environmental effects of two alternative technologies devised to address climate change issues and use data to justify which choice is best.

Interdisciplinary Standard(s) ELA/Literacy

RST.6-8.1 - Cite specific textual evidence to support analysis of science and technical texts. (MS-ESS2-1)

RST.6-8.2 Determine the central ideas or conclusions of a text, provide an accurate summary of the text distinct from prior knowledge or opinions.(MS-ESS2-1, MS-ESS2-4)

RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g. in a flowchart, diagram, model, graph or table) (MS-ESS2-1)

RST.6-8.9 Compare and contrast the information gained from experiments, simulations, video or multimedia sources with that gained from reading a text on the same topic. (MS-ESS2-4)

RH.6-8.5 Describe how a text presents information (eg. sequentially, comparatively, causally) (MS-ESS2-4)

RH.6-8.7 Integrate visual information (e.g. in charts, graphs, photographs, videos or maps) with other information in print and digital text. (MS-ESS2-4)

WHST.6-8.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments or technical processes.(MS-ESS2-1)

MP.2 Reason abstractly and quantitatively

Enduring Understandings

Earth has four major subsystems or spheres that cycle matter and energy and shape Earth's surface; atmosphere, biosphere, hydrosphere and geosphere

The Earth system involves flows of matter and energy through different components and has two major sources of energy: heat from the sun and heat from Earth's interior

A system returns information about itself and that information results in change

There are a variety of landforms on Earth because Earth's surface is different from place to place

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The topography of the land is constantly being created and destroyed by competing constructive and destructive forces.
The geosphere, atmosphere and biosphere interact to affect Earth
Computers create topographic and other maps from aerial photography and satellite imagery to model landforms.

Essential Questions

What are the different components of the Earth system?
What are the sources of energy for the processes that affect Earth?
How can you model the cycling of matter in the Earth system?
What are the different landforms found on Earth?
What forces and energy make the different landforms?
What are the various ways to model landforms?

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

9.4.8.CT.2: Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option (MS ESS2-1, 6.1.8.CivicsDP.1).
9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem (MS-ESS2-1, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).
9.4.8.TL.4: Synthesize and publish information about a local or global issue or event (MS ESS2-1, 6.1.8.CivicsPI.3).
9.4.8.Cl.4: Explore the role of creativity and innovation in career pathways and industries

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 different components of the Earth system (subsystems/spheres)</p> <p>The sources of energy for the processes that affect Earth are heat from the sun and heat from the Earth’s interior</p> <p>How to model the cycling of and flow of matter in the Earth system including positive and negative system feedback</p> <p>The different landforms found on Earth such as mountains, coastlines and dunes.</p> <p>The forces and energy that make the different landforms</p> <p>The various ways to model landforms with topographic maps, aerial photography, satellite imagery, GPS and GIS</p> <p>The majority of Earth’s freshwater is frozen and the remaining freshwater is found underground, in lakes and rivers and the atmosphere</p> <p>The process of evaporation, condensation, and precipitation continually cycle water from Earth’s surface to the atmosphere and back again</p>	<p><i>Students will be able to:</i></p> <p>MS-ESS2-1 Develop a model to describe the cycling of Earth’s materials and the flow of energy that drives this process.</p> <p>MS-ESS2-4 Develop a model to describe the cycling of water through Earth’s systems driven by energy from the sun and the force of gravity.</p> <p>MS-ESS3-3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.</p> <p>MS-ESS3- 4, MS-ETS1-1, MS-ETS-3 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</p>
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Assessment Evidence

<p>Performance Tasks</p> <p>Analyze and interpret data to describe evidence that Earth’s landforms vary</p> <p>Construct explanations using reasoning to predict similar patterns by recognizing interactions among systems and forces affecting topography of land</p> <p>Develop and use models to demonstrate how</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
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<p>to technology is used to model Earth’s landforms Explore how maps can solve problems Analyze quantitative relationships among mountain heights Analyze and interpret data to describe evidence of locations of Earth’s freshwater Develop and use models to demonstrate water cycle processes Interpret line graphs to explain systems feedback Conduct research to plan the location of a reservoir Conduct research on careers involving Earth’s systems “Modeling a Watershed”: Model the effects of pollution on a watershed. p.214 “A Daring Bridge”: Design and build a bridge using environmental and financial constraints p.197 Define problems related to humans’ resources or impacts on living things to determine the necessary criteria and constraints for successful solutions, and use those criteria and constraints to evaluate proposed solutions. Brainstorm how we can improve technology to reduce effects on the environment?</p>	<ul style="list-style-type: none"> ● 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	
<p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> ● Savvas Realize “Elevate Science: Course 1” <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 ● Super Science ● Case Study: “The Case of the Shrinking Sea” p.209

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“Building a Reservoir”: Plan the location of a reservoir and design solutions p.203

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:

- 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:

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- 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

- 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

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- 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 4: Weather in the Atmosphere	Duration: 35 days
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Science Standards

MS-ESS2-4, MS-ESS2-5, MS-ESS2-6, MS-ESS3-2, MS-PS1-4

Disciplinary Core Ideas

ESS2.C The Roles of Water in Earth's Surface Processes

Water's movements- both on the land and underground- cause weathering and erosion, which change the land's surface features and create underground formations.

ESS2.D Weather and Climate Because these patterns are so complex, weather can only be predicted probabilistically

ESS3.B Human Impacts on Earth's Systems: Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of species.

ESS3.B Human Impacts on Earth's Systems Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise

PS1.A Structure and Properties of Matter Gasses and liquids are made of molecules or inert atoms that are moving about relative to each other

PS1.A Structure and Properties of Matter In a liquid, the molecules are constantly in contact with others, in a gas they are widely spaced except when they happen to collide. In a solid, atoms are closely spaced and may vibrate in position but do not change relative locations.

Science and Engineering Practices

SEP.2:Developing and Using Models Use models to predict and or describe phenomena

SEP.3 Planning and Carrying Out Investigations Evaluate the accuracy of data collection methods

SEP.4 Analyzing and Interpreting Data: Use graphical displays to identify temporal and spatial relationships in phenomena

Crosscutting Concepts

CCC.2: Cause and Effect Cause and effect relationships may be used to predict phenomena in natural systems.

CCC.4 Systems and System Models Recognize that models are limited because they can only represent certain parts of a system

CCC.5 Energy and Matter Recognize the role of energy in driving the cycling of matter within natural systems

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. (MS-ESS3-2)

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Technology Standards

CS: Computer Science 8.1.8.CS.1, 8.1.8.CS.2, 8.1.8.CS.4

NI: Network and Internet 8.1.8.NI.1

IC: Impacts of Computing 8.1.8.IC.1

DA: Data & Analysis 8.1.8.DA.1, 8.1.8.DA.2, 8.1.8.DA.4, 8.1.8.DA.5, 8.1.8.DA.6

AP: Algorithms & Programming 8.1.8.AP.1, 8.1.8.AP.2, 8.1.8.AP.3, 8.1.8.AP.4, 8.1.8.AP.5, 8.1.8.AP.6, 8.1.8.AP.7, 8.1.8.AP.8, 8.1.8.AP.9

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.

ED: Engineering Design 8.2.8.ED.1, 8.2.8.ED.2

ITH: Interaction of Technology and Humans 8.2.8.ITH.1,

8.2.8.ITH.2: Compare how technologies have influenced society over time (MS-ESS2-5),

8.2.8.ITH.3: Evaluate the impact of sustainability on the development of a designed product or system.

NT: Nature of Technology 8.2.8.NT.1

ETW: Effects of Technology on the Natural World 8.2.8.ETW.1, 8.8.5.ETW.3

EC: Ethics and Culture 8.2.8.EC.1

Interdisciplinary Standard(s) ELA/Literacy

RST.6-8.1 - Cite specific textual evidence to support analysis of science and technical texts. (MS-ESS2-5, MS-ESS2-6)

RST.6-8.2 Determine the central ideas or conclusions of a text, provide an accurate summary of the text distinct from prior knowledge or opinions.(MS-ESS2-5, MS-ESS2-6, MS-PS1-4)

WHST.6-8.2.d Use precise language and domain-specific language to inform or explain about the topic. (MS-ESS2-5, MS-ESS2-6)

MP.2 Reason abstractly and quantitatively

MP.4 Model with mathematics.

Enduring Understandings

The movement of water in the atmosphere influences local weather conditions
Because weather patterns are so complex, storm predictions are based on probabilities
Mapping the history of natural hazards such as floods can help forecast the locations of future events.

Essential Question(s)

What is the composition and structure of Earth's atmosphere?
How does energy from the sun affect Earth's atmosphere?

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What processes make up the water cycle?
How does energy drive the water cycle?
How does the water cycle affect weather?
How do global patterns such as the jet stream affect air masses?
How do air masses interact to form fronts?
How do the interactions of air masses result in changes in weather?
How do meteorologists use the interactions of air masses to forecast changes in weather?
How does technology aid in collecting and analyzing weather data?
How do weather maps help to model current weather and predict future weather?

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

9.4.8.CT.2: Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option (MS ESS2-1, 6.1.8.CivicsDP.1).
9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem (MS-ESS2-1, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).
9.4.8.TL.4: Synthesize and publish information about a local or global issue or event (MS ESS2-1, 6.1.8.CivicsPI.3).
9.4.8.Cl.4: Explore the role of creativity and innovation in career pathways and industries
9.4.8.Cl.1: Assess data gathered on varying perspectives on causes of climate change (e.g., crosscultural, gender-specific, generational), and determine how the data can best be used to design multiple potential solutions (MS-ESS2-1, RI.7.9, 6.SP.B.5, 7.1.NH.IPERS.6, 8.2.8.ETW.4)

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

Students will know:

- The structure and layers of Earth’s atmosphere
- The composition and characteristics of each layer in the atmosphere
- How to predict the stability and change caused by unequal heating of Earth’s atmosphere by the sun
- The process of evaporation, condensation, and precipitation continually cycle water from Earth’s surface to the atmosphere and back again
- Air masses are moved by prevailing winds and jet streams
- When air masses collide, a front forms
- Storms and changeable weather develop along fronts
- Types of fronts are dependent on characteristics of the air masses and direction in which they move

Students will be able to:

- Develop a model to describe the cycling of water through Earth’s systems driven by energy from the sun and the force of gravity. (MS-ESS2-4)
- Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions (MS-ESS2-5)
- Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates (MS-ESS 2-6)
- Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. (MS-ESS3-2)
- Develop a model that predicts and describes changes in particle motion, temperature and state of a pure substance when thermal energy is added or removed. (MS-PS1-4)

Assessment Evidence

Performance Tasks

- Identify and synthesize data to construct explanation of structure and composition of Earth’s atmosphere
- Use models and analyze information to predict the stability and change caused by unequal heating of Earth’s atmosphere by the Sun
- Analyze and interpret data to describe evidence of how air masses move
- Develop and use models to demonstrate effects of colliding air masses
- Construct explanations using reasoning to

Other Assessments

Formative:

- 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

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<p>predict similar patterns by recognizing effects of fronts on changes in weather. Develop and use models to demonstrate how meteorologists use observations, patterns and tools to predict the weather Construct explanations of technology use in weather data collection and prediction Research meteorology careers Get in the Game! Design a board game involving weather concepts.</p>	<ul style="list-style-type: none"> ● 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	
<p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> ● Savvas Realize “Elevate Science: Course 1” <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 ● Case Study: “The Case of the Runaway Hurricane” p.267 ● “Watching the Clouds Go By” Career research

Modifications and Accommodations

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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:

- 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.

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- 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

- 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

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- 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
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Curriculum modifications provide:

- Topics of interest to the student and/or relevant to how the world works
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Unit 5: Introduction to Matter

Duration: 35 days

**Science Standards
MS-PS1-1, MS-PS1-2**

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Disciplinary Core Ideas

PS1.A Structure and Properties of Matter A pure substance has characteristic physical and chemical properties that can be used to identify it.

PS1.A Structure and Properties of Matter When a chemical change takes place, the atoms or the original substances are regrouped to form different molecules.

Science and Engineering Practices

SEP.2:Developing and Using Models Use models to predict and or describe phenomena

SEP.4 Analyzing and Interpreting Data: Use graphical displays to identify temporal and spatial relationships in phenomena

Crosscutting Concepts

CCC.1 Patterns Relating patterns in atomic-level structure to a substance's visible macroscopic structure

CCC.3 Scale, Proportion, and Quantity Using models of various scales to study phenomena in systems that are too large or too small to observe

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. (MS-PS1-1)

Technology Standard(s)

8.2.8.ITH.2: Compare how technologies have influenced society over time (MS-PS1-2)

8.2.8.ITH.3: Evaluate the impact of sustainability on the development of a designed product or system. (MS-PS1-2)

8.2.8.ITH.4: Identify technologies that have been designed to reduce the negative consequences of other technologies and explain the change in impact. (MS-PS1-1)

8.2.8.ITH.5: Compare the impacts of a given technology on different societies, noting factors that may make a technology appropriate and sustainable in one society but not in another (MS-PS-1).

Interdisciplinary Standard(s) ELA/Literacy

RST.6-8.1 - Cite specific textual evidence to support analysis of science and technical texts. (MS-PS1-1)

RST.6-8.4 Determine the meaning of symbols, key terms and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

RSt.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g. in a flowchart, diagram, model, graph or table)

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WHST.6-8.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments or technical processes

WHST.6-8.2.d Use precise language and domain-specific language to inform or explain about the topic. (MS-PS1-1)

6.G.A.2 Apply the formulas $V=l \times w \times h$ and $V= b \times h$ to find volumes of rectangular prisms in the context of solving real world and mathematical problems

6.RP.A.2 Understand the concept of a unit rate a/b associated with a ratio $a:b$ with b does not equal 0, and use rate language in the context of a ratio relationship.

MP.2 Reason abstractly and quantitatively

MP.4 Model with mathematics.

Enduring Understandings

A pure substance has characteristic physical and chemical properties that can be used to identify it.

Recognizing that when a chemical change takes place the atoms of the original substances are regrouped to form different molecules

Essential Questions

How do scientists classify and measure matter?

How does matter change?

Why is it important to know the concepts related to matter?

How can understanding matter lead to advancements in technology?

How do engineers use science to develop real-world solutions to make efficient vehicles?

How do scientists apply properties of matter to solve a problem related to environmental cleanup?

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

9.4.8.CT.2: Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option (MS PS1-1, 6.1.8.CivicsDP.1).

9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem (MS-PS1-2, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).

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<p>9.4.8.TL.4: Synthesize and publish information about a local or global issue or event (MS PS1-1, 6.1.8.CivicsPI.3).</p> <p>9.4.8.CI.4: Explore the role of creativity and innovation in career pathways and industries</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>What makes up matter and examples of properties of matter How to classify matter How to measure matter How to use properties of matter to solve environmental and engineering problems</p>	<p><i>Students will be able to:</i></p> <p>Develop models to describe the atomic composition of simple molecules and extended structures (MS-PS1-1) Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred (MS-PS1-2)</p>
Assessment Evidence	
<p>Performance Tasks</p> <p>Construct and use models to explain what makes up matter. Cite evidence to classify matter Measure matter Identify and calculate properties of matter such as density as a function of mass and volume Use data to determine how matter is conserved</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

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<p>Differentiate between changes in matter and explain how they are related to changes in energy</p> <p>Design and build a working model of a maglev train</p> <p>Research museum technician careers</p>	<ul style="list-style-type: none"> ● 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	
<p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> ● Savvas Realize “Elevate Science: Course 1” <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 ● “Saving the World’s Art” p.13 ● “An Epic Disaster” p.22-23 Case Study (oil spill)

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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.
- 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.

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- 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

- Peer mediated strategies
- Cooperative learning groups
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Presentation accommodations allow a student to:

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