PISCATAWAY
TOWNSHIP SCHOOLS

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Science 3

Content Area: Science
Grade Span: 3
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COURSE OVERVIEW

Description

The performance expectations in third grade help students formulate answers to questions such as: “What is typical weather in different parts of the world and during different times of the year? How can the impact of weather-related hazards be reduced? How do organisms vary in their traits? How are plants, animals, and environments of the past similar or different from current plants, animals, and environments? What happens to organisms when their environment changes? How do equal and unequal forces on an object affect the object? How can magnets be used?” Students are able to organize and use data to describe typical weather conditions expected during a particular season. By applying their understanding of weather-related hazards, students are able to make a claim about the merit of a design solution that reduces the impacts of such hazards. An understanding that organisms have different inherited traits, and that the environment can also affect the traits that an organism develops, is acquired by students at this level. In addition, students are able to construct an explanation using evidence for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. Students are expected to develop an understanding of types of organisms that lived long ago and also about the nature of their environments. Students are able to determine the effects of balanced and unbalanced forces on the motion of an object and the cause-and-effect relationships of electric or magnetic interactions between two objects not in contact with each other. They are then able to apply their understanding of magnetic interactions to define a simple design problem that can be solved with magnets. Every instructional unit is anchored by a unique phenomenon that is drives student discovery.

Goals

This course aims to: ● develop student ability in asking questions and developing problems that are investigable ● develop student use of models as scientific explanation ● enable students to plan and conduct investigations ● develop student ability to analyze and interpret data ● advance student ability to construct explanations and design solutions clearly and effectively based on arguments from evidence ● allow students to obtain, evaluate, and communicate information ● allow students opportunities to demonstrate understanding of the core ideas within this course ● engage students in engineering practices including design and evaluation

Scope and Sequence

Unit	Topic	Length
1: Stormy Skies	Weather and Climate	17-20 days
2: Invisible Forces	Forces, Motion, and Magnets	18-20 days
3: Animals Through Time	Animal Survival and Heredity	20-22 days
4: Power of Flowers	Plant Life Cycle and Heredity	15-17 days

Resources

Mystery Science resources and materials

UNIT 1: STORMY SKIES

Summary and Rationale

This unit develops the idea that by paying careful attention to clouds, wind, and other weather clues around us, we can predict the daily weather and make sense of why places on Earth look and feel the way they do. The crosscutting concepts of patterns, cause and effect, and the influence of engineering, technology, and science on society and the natural world are called out as organizing concepts for these disciplinary core ideas. Students demonstrate grade- appropriate proficiency in asking questions and defining problems, analyzing and interpreting data, engaging in argument from evidence, and obtaining, evaluating, and communicating information. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Recommended Pacing

17-20 days

State Standards (Performance Expectations)

3-ESS2-1: Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	
Clarification Statement	Examples of data could include average temperature, precipitation, and wind direction.
Boundary Statement	Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change.
3-ESS2-2: Obtain and combine information to describe climates in different regions of the world.	
3-ESS3-1: Make a claim about the merit of a design solution that reduces the impacts of climate change and/or a weather-related hazard. *Integrates Engineering Design Performance Expectations*	
Clarification Statement	Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.
3-5-ETS1-1: Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	
3-5-ETS1-2: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	
3-5-ETS1-3: Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	

Instructional Focus

Unit Enduring Understandings (Crosscutting Concepts)

- **Patterns:** Patterns of change can be used to make predictions. (3-ESS2-1), (3-ESS2-2)
- **Cause and Effect:** Cause and effect relationships are routinely identified, tested, and used to explain change. (3-ESS3-1)
- **The Nature of Science:** Science affects everyday life. (3-ESS3-1)
- **Engineering, Technology, and Applications of Science:**
  - Engineers improve existing technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones). (3-ESS3-1); (3-5-ETS1-2)
  - People's needs and wants change over time, as do their demands for new and improved technologies. (3-5-ETS1-1)

Unit Essential Questions

- Where do clouds come from?
- Wow can we predict when it's going to storm?
- Why are some places always so hot?
- How can you keep a house from blowing away in a windstorm?

Objectives

Students will know (DCIs):

- **Weather and Climate**
  - Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next.
  - Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years.
- **Natural Hazards**
  - A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts.

Students will be able to (Science and Engineering Practices):

- Represent data in tables and various graphical displays (bar graphs and pictographs) to reveal patterns that indicate relationships. (3-ESS2-1)
- Obtain and combine information from books and other reliable media to explain phenomena. (3-ESS2-2)
- Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem. (3-ESS3-1)

Resources

Mystery Science Unit: Stormy Skies resources and materials

Interdisciplinary Connections

Connections to NJSLS - English Language Arts

• RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-ESS2-2), (3-ESS3-1)

• RI.3.9 Compare and contrast the most important points and key details presented in two texts on the same topic. (3-ESS2-2)

• W.3.7 Conduct short research projects that build knowledge about a topic. (3-ESS3-1)

• W.3.8 Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. (3-ESS2-2)

Connections to NJSLS - Mathematics

• MP.2 Reason abstractly and quantitatively. (3-ESS2-1), (3-ESS2-2), (3-ESS3-1)

• MP.4 Model with mathematics. (3-ESS2-1), (3-ESS2-2), (3-ESS3-1)

• MP.5 Use appropriate tools strategically. (3-ESS2-1)

• 3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. (3-ESS2-1)

• 3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in bar graphs. (3-ESS2-1)

UNIT 2: INVISIBLE FORCES

Summary and Rationale

This introductory forces unit will give students a new understanding of the invisible pushes and pulls that operate in the world around them. They will realize that understanding forces will let them do surprising things – from building a sturdy bridge from paper to using the pull of a rubber band to send a cardboard "hopper" flying. What students learn in this unit will connect to the world around them, leading them to think about such things as the force of friction as they slide down a playground slide or the invisible force that makes magnets cling to the refrigerator. The crosscutting concepts of patterns and cause and effect are identified as organizing concepts for these disciplinary core ideas. In the third-grade performance expectations, students are expected to demonstrate grade-appropriate proficiency by planning and carrying out investigations. Students are expected to use these practices to demonstrate understanding of the core ideas.

Recommended Pacing

18-20 days

State Standards (Performance Expectations)

3-PS2-1: Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.	
Clarification Statement	Examples could include an unbalanced force on one side of a ball can make it start moving; and, balanced forces pushing on a box from both sides will not produce any motion at all. Qualitative and conceptual, but not quantitative addition of forces, are used at this level.
Boundary Statement	Assessment is limited to one variable at a time: number, size, or direction of forces. Assessment does not include quantitative force size, only qualitative and relative. Assessment is limited to gravity being addressed as a force that pulls objects down.
3-PS2-2: Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.	
Clarification Statement	Examples of motion with a predictable pattern could include a child swinging in a swing, a ball rolling back and forth in a bowl, and two children on a see-saw.
Boundary Statement	Assessment does not include technical terms such as period and frequency.
3-PS2-3: Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.	
Clarification Statement	Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paperclips, and the force exerted by one magnet versus the force exerted by two magnets. Examples of cause-and-effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force.
Boundary Statement	Assessment is limited to forces produced by objects that can be manipulated by students, and electrical interactions are limited to static electricity.

3-PS2-4: Define a simple design problem that can be solved by applying scientific ideas about magnets. *Integrates Engineering Design Performance Expectations*	
Clarification Statement	Examples of problems could include constructing a latch to keep a door shut and creating a device to keep two moving objects from touching each other.
3-5-ETS1-1: Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	
3-5-ETS1-2: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	
3-5-ETS1-3: Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	

Instructional Focus

Unit Enduring Understandings (Crosscutting Concepts)

- **Patterns:** Patterns of change can be used to make predictions. (3-PS2-2)
- **Cause and Effect:** Cause and effect relationships are routinely identified, tested, and used to explain change. (3-PS2-1); (3-PS2-3)
- **The Nature of Science:**
  - Science findings are based on recognizing patterns. (3-PS2-2)
  - Science investigations use a variety of methods, tools, and techniques. (3-PS2-1)
- **Engineering, Technology, and Applications of Science:**
  - Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process. (3-PS2-4)
  - People's needs and wants change over time, as do their demands for new and improved technologies. (3-5-ETS1-1)
  - Engineers improve existing technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones). (3-5-ETS1-2)

Unit Essential Questions

- How could you win a tug-of-war against a bunch of adults?
- What makes bridges so strong?
- How can you go faster down a slide?
- What can magnets do?
- How could you unlock a door using a magnet?

Objectives

Students will know (DCIs):

- **Forces and Motion**
  - Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion. (Boundary: Qualitative and conceptual, but not quantitative addition of forces are used at this level.)
  - The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it. (Boundary: Technical terms, such as magnitude, velocity, momentum, and vector quantity, are not introduced at this level, but the concept that some quantities need both size and direction to be described is developed.)
- **Type of Interactions**

- Objects in contact exert forces on each other.
- Electric, and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.

Students will be able to (Science and Engineering Practices):

- Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. (3-PS2-1)
- Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution. (3-PS2-2)
- Ask questions that can be investigated based on patterns such as cause and effect relationships. (3-PS2-3)
- Define a simple problem that can be solved through the development of a new or improved object or tool. (3-PS2-4)

Resources

Mystery Science Unit: Invisible Forces resources and materials

Interdisciplinary Connections

Connections to NJSLS - English Language Arts

• RI.3.1 Ask and answer questions, and make relevant connections to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-PS2-1), (3-PS2-3)

• RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-PS2-3)

• RI.3.8 Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence) to support specific points the author makes in a text. (3-PS2-3)

• W.3.7 Conduct short research projects that build knowledge about a topic. (3-PS2-1), (3-PS2-2)

• W.3.8 Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. (3-PS2-1), (3-PS2-2)

• SL.3.3 Ask and answer questions about information from a speaker, offering appropriate elaboration and detail. (3-PS2-3)

Connections to NJSLS - Mathematics

• MP.2 Reason abstractly and quantitatively. (3-PS2-1)

• MP.5 Use appropriate tools strategically. (3-PS2-1)

• 3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. (3-PS2-1)

UNIT 3: ANIMALS THROUGH TIME

Summary and Rationale

In this unit students will develop an appreciation for how animals and the places they live (their habitats) are not constant – they have changed over time. Fossils give us a window to the animals and habitats of the past. Selective breeding shows us not only how some animals of the past became domesticated, but allows us to imagine how they might look in the future. The crosscutting concepts of patterns, cause and effect, scale, proportion, and quantity, and systems and system models are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in analyzing and interpreting data, constructing explanations, and designing solutions. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Recommended Pacing

20-22 days

State Standards

3-LS2-1: Construct an argument that some animals form groups that help members survive.	
3-LS3-1: Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.	
Clarification Statement	Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans.
Boundary Statement	Assessment does not include genetic mechanisms of inheritance and prediction of traits. Assessment is limited to non-human examples.
3-LS3-2: Use evidence to support the explanation that traits can be influenced by the environment.	
Clarification Statement	Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and, a pet dog that is given too much food and little exercise may become overweight.
3-LS4-1: Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.	
Clarification Statement	Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms.
Boundary Statement	Assessment does not include identification of specific fossils or present plants and animals. Assessment is limited to major fossil types and relative ages.
3-LS4-2: Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.	
Clarification Statement	Examples of cause-and-effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.
3-LS4-3: Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	

Clarification Statement	Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.
3-LS4-4: Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change. *Integrates Engineering Design Performance Expectations*	
Clarification Statement	Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.
Boundary Statement	Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.
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.	

Instructional Focus

Unit Enduring Understandings (Crosscutting Concepts)

- **Patterns:** Similarities and differences in patterns can be used to sort and classify natural phenomena. (3-LS3-1)
- **Cause and Effect:** Cause and effect relationships are routinely identified and used to explain change. (3-LS2-1), (3-LS3-2), (3-LS4-2), (3-LS4-3)
- **Scale, Proportion, and Quantity:** Observable phenomena exist from very short to very long time periods. (3-LS4-1)
- **Systems and System Models:** A system can be described in terms of its components and their interactions. (3-LS4-4)
- **The Nature of Science:** Science assumes consistent patterns in natural systems. (3-LS4-1)
- **Engineering, Technology, and Applications of Science:**
  - Knowledge of relevant scientific concepts and research findings is important in engineering. (3-LS4-4)
  - Engineers improve existing technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones). (3-5-ETS1-2)

Unit Essential Questions

- Where can you find whales in the desert?
- How do we know what dinosaurs looked like?
- Can you outrun a dinosaur?
- What kinds of animals might there be in the future?
- Can selection happen without people?

Objectives

Students will know (DCIs):

- **Social Interactions and Group Behavior**
  - Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size.
- **Inheritance of Traits**
  - Many characteristics of organisms are inherited from their parents.
  - Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment.
- **Variation of Traits**
  - Different organisms vary in how they look and function because they have different inherited information.

- The environment also affects the traits that an organism develops.
- **Ecosystem Dynamics, Functioning, and Resilience**
  - When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die.
- **Evidence of Common Ancestry and Diversity**
  - Some kinds of plants and animals that once lived on Earth are no longer found anywhere.
  - Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments.
- **Natural Selection**
  - Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing
- **Adaptation**
  - For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.
- **Biodiversity and Humans**
  - Populations live in a variety of habitats, and change in those habitats affects the organisms living there

Students will be able to (Science and Engineering Practices):

- Construct an argument with evidence, data, and/or a model. (3-LS2-1), (3-LS4-3)
- Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS4-1)
- Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem. (3-LS4-4)
- Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS3-1)
- Use evidence (e.g., observations, patterns) to support an explanation. (3-LS3-2), (3-LS4-2)

Resources

Mystery Science Unit: Animals Through Time resources and materials

Interdisciplinary Connections

Connections to NJSLS - English Language Arts

• RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS2-1), (3-LS4-1), (3-LS4-2), (3-LS4-3), (3-LS4-4)

• RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS3-1), (3-LS3-2), (3-LS4-1), (3-LS4-2), (3-LS4-3), (3-LS4-4)

• RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-LS2-1), (3-LS3-1), (3-LS3-2), (3-LS4-1), (3-LS4-2), (3-LS4-3), (3-LS4-4)

• W.3.1 Write opinion pieces on topics or texts, supporting a point of view with reasons. (3-LS2-1), (3-LS4-1), (3-LS4-3), (3-LS4-4)

• W.3.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS3-1), (3-LS3-2), (3-LS4-1), (3-LS4-2), (3-LS4-3), (3-LS4-4)

• W.3.8 Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. (3-LS4-1)

• SL.3.4 Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. (3-LS3-1), (3-LS3-2), (3-LS4-2), (3-LS4-3), (3-LS4-4)

Connections to NJSLS - Mathematics

- MP.2 Reason abstractly and quantitatively. (3-LS3-1), (3-LS3-2), (3-LS4-1), (3-LS4-2), (3-LS4-3), (3-LS4-4)
- MP.4 Model with mathematics. (3-LS2-1), (3-LS3-1), (3-LS3-2), (3-LS4-1), (3-LS4-2), (3-LS4-3), (3-LS4-4)
- MP.5 Use appropriate tools strategically. (3-LS4-1)
- 3.NBT Number and Operations in Base Ten (3-LS2-1)
- 3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. (3-LS4-2), (3-LS4-3)
- 3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. (3-LS3-1), (3-LS3-2), (3-LS4-1)

UNIT 4: POWER OF FLOWERS

Summary and Rationale

This unit develops the idea that by studying how plants reproduce and pass on their traits, we human beings have figured out how to make food plants even more useful to us. Students first discover how plants reproduce by exploring the process of pollination and fruiting. Then students are introduced to the process of plant domestication (selection of traits based on inheritance and variation). The crosscutting concept of patterns is called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in analyzing and interpreting data, and developing models. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Recommended Pacing

15-17 days

State Standards (Performance Expectations)

3-LS1-1: Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.	
Clarification Statement	Changes organisms go through during their life form a pattern.
Boundary Statement	Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction.
3-LS3-1: Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.	
Clarification Statement	Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans.
Boundary Statement	Assessment does not include genetic mechanisms of inheritance and prediction of traits. Assessment is limited to non-human examples.

Instructional Focus

Unit Enduring Understandings (Crosscutting Concepts)

- **Patterns:**
  - Patterns of change can be used to make predictions. (3-LS1-1)
  - Similarities and differences in patterns can be used to sort and classify natural phenomena. (3-LS3-1
- **The Nature of Science:** Science findings are based on recognizing patterns. (3-LS1-1)

Unit Essential Questions

- Why do plants grow flowers?
- Why do plants give fruit?
- Why are some apples red and some green?

Objectives

Students will know (Disciplinary Core Ideas):

- **Growth and Development of Organisms**
  - Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.
- **Inheritance of Traits**

- Many characteristics of organisms are inherited from their parents.
- **Variation of Traits**
  - Different organisms vary in how they look and function because they have different inherited information.

Students will be able to (Science and Engineering Practices):

- Develop models to describe phenomena. (3-LS1-1)
- Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS3-1)

Resources

Mystery Science Unit: Power of Flowers resources and materials

Interdisciplinary Connections

Connections to NJSLS - English Language Arts

• RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS3-1)

• RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-LS3-1)

• RI.3.7 Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur). (3-LS1-1)

• W.3.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS3-1)

• SL.3.4 Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. (3-LS3-1)

• SL.3.5 Create engaging audio recordings of stories or poems that demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details. (3-LS1-1)

Connections to NJSLS - Mathematics

• MP.2 Reason abstractly and quantitatively. (3-LS3-1)

• MP.4 Model with mathematics. (3-LS1-1), (3-LS3-1)

• 3.NBT Number and Operations in Base Ten (3-LS1-1)

• 3.NF Number and Operations—Fractions (3-LS1-1)

• 3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. (3-LS3-1)