Branchburg Township Public Schools

Office of Curriculum and Instruction

Grade 3 Science Curriculum

Adopted by the Board of Education October 2022

This curriculum is aligned with the 2020 New Jersey Student Learning Standards in Science

Curriculum Scope and Sequence			
Content Area	Science	**Course Title/Grade Level:**	3rd

Topic/Unit Name		Suggested Pacing (Days/Weeks)
Topic/Unit #1	Earth's Systems and Human Activity	September-October
Topic/Unit #2	Ecosystems and Heredity	November-April
Topic/Unit #3	Motion and Stability	May-June

Topic/Unit 1 Title	Earth's Systems and Human Activity	Approximate Pacing	September-October

STANDARDS		
NJSLS (Science)		
Students will be able to...	Students will know…	Crosscutting Concepts
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.] [Assessment Boundary: 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 a weather-related hazard.*** [Clarification Statement: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.]	**ESS2.D: 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. (3-ESS2-1) Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years. (3-ESS2-2) **ESS3.B: Natural Hazards** A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (3-ESS3-1) (Note: This Disciplinary Core Idea is also addressed by 4-ESS3-2.)	**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) **Connections to Engineering, Technology, and Applications of Science Influence of Engineering, Technology, and Science on Society and the Natural World** Engineers improve existing technologies or develop new ones9.1.4.G.1 Describe how valuable items might be damaged or lost and ways to protect them. 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) **Connections to Nature of Science** Science is a Human Endeavor Science affects everyday life. (3-ESS3-1)

Interdisciplinary Connections:	CS & DT:
3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).6 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. *Excludes multiplicative comparison problems (problems involving notions of “times as much"). (Example- In math unit 1, students learn to measure liquid volumes and find the masses of various objects as they would in science when students conduct experiments and collect data on preventing natural disasters) 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. For example, draw a bar graph in which each square in the bar graph might represent 5 pets. (Example: In math unit 1, students learn to represent data on scaled bar and picture graphs. In science, students analyze data about seasonal and weather changes on various graphs to determine patterns)	8.1.5.DA.5: Propose cause and effect relationships, predict outcomes, or communicate ideas using data. 8.2.2.ED.1: Communicate the function of a product or device. (Example- When students start exploring the phenomena “Mrs. Flood’s basement floods when it rains,” they will discuss and describe why houses by bodies of water can flood and need to be protected.) 8.1.5.IC.1: Identify computing technologies that have impacted how individuals live and work and describe the factors that influenced the changes. 8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim (Example: Students will determine how to collect the data for the length of a day activity: google sheets, google docs, or other digital tools. The length of a day activity links to using patterns in Science to determine weather and season changes) 8.1.5.DA.3: Organize and present collected data visually to communicate insights gained from different views of the data. (Example: Students will look at weather charts over time and collect the data to make predictions about the patterns)

CLKS:	
9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process (e.g., 2.1.5.EH.4, 4-ESS3-1, 6.3.5.CivicsPD.2). *Example: Students will gather information about weather, weather patterns and explore what causes flooding and other natural disasters before coming up with a solution to stop flooding in a house.* 9.2.5.CAP.3: Identify qualifications needed to pursue traditional and non-traditional careers and occupations. 9.2.5.CAP.4: Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements. *Example: When building a house, a contractor/architect needs to consider the location and climate in order to determine what type of materials and what type of house to build*	
UNIT/TOPIC ESSENTIAL QUESTIONS AND ENDURING OBJECTIVES/UNDERSTANDINGS	
Bend 1: This is the weather for Readington, NJ for the week. (after initial phenomenon- opportunity for students to choose any place they want and track weather and then make predictions) Bend 2: Mrs. Rivers basement floods when it rains.	
STUDENT LEARNING OBJECTIVES	
Key Knowledge	**Process/Skills/Procedures/Application of Key Knowledge**
Students will know: data tables climate weather natural disasters natural phenomenon argument claim evidence models structure function system	***Students will be able to:*** Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. Obtain and combine information to describe climates in different regions of the world Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

patterns	
ASSESSMENT OF LEARNING	
Summative Assessment (Assessment at the end of the learning period)	Students will develop a model and construct an argument with evidence to explain the science behind the phenomena using the Disciplinary Core Ideas, Cross Cutting Concepts, and Science and Engineering Practices.
Formative Assessments (Ongoing assessments during the learning period to inform instruction)	Models, claims, evidence, data and research, planning and carrying out investigations, classroom discussions, anecdotal notes
Alternative Assessments (Any learning activity or assessment that asks students to *perform* to demonstrate their knowledge, understanding and proficiency)	Quizzes, Discovery Education Board activities, worksheets/activities, PBL (extensions), modified assessments as per IEPs
Benchmark Assessments (used to establish baseline achievement data and measure progress towards grade level standards; given 2-3 X per year)	Grade level benchmark assessment
RESOURCES	
Core instructional materials: NGSS GRC Model	
Supplemental materials: Discovery Education Encyclopedia Britannica https://thewonderofscience.com/videos/2017/12/10/ess2d-weather-and-climate (resource for teacher understanding) https://gpm.nasa.gov/education/national-standard/ess2d	
Modifications for Learners	
See appendix	

Topic/Unit 2 Title	Ecosystems and Heredity	Approximate Pacing	November-March

STANDARDS		
NJSLS (Science)		
Students will be able to...	Student will know…	Crosscutting Concepts
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.] [Assessment Boundary: Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction.] **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.] [Assessment Boundary: 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.	**LS1.B: 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. (3-LS1-1) **LS2.D: 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 (Note: Moved from K–2). (3-LS2-1) **LS3.A: Inheritance of Traits** Many characteristics of organisms are inherited from their parents. (3-LS3-1) Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. (3- LS3-2) **LS3.B: Variation of Traits** Different organisms vary in how they look and function because they have different inherited information. (3-LS3-1)	**Patterns:** Similarities and differences in patterns can be used to sort and classify natural phenomena. (3-LS3-1) Patterns of change can be used to make predictions. (3-LS1-1) **Cause and Effect:** Cause and effect relationships are routinely identified and used to explain change. (3-LS3-2)(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) ---------- **Connections to Engineering, Technology, and Applications of Science Interdependence of Science, Engineering, and Technology** Knowledge of relevant scientific concepts and research findings is

[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 distribution 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.] [Assessment Boundary: 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.]	The environment also affects the traits that an organism develops. (3-LS3-2) **LS2.C: 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. (secondary to 3-LS4-4) **LS4.A: Evidence of Common Ancestry and Diversity** Some kinds of plants and animals that once lived on Earth are no longer found anywhere. (Note: moved from K-2) (3-LS4-1) -Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments. (3-LS4-1) **LS4.B: Natural Selection** Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. (3-LS4-2) **LS4.C: Adaptation** For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)	important in engineering. (3-LS4-4) --- **Connections to Nature of Science Scientific Knowledge Assumes an Order and Consistency in Natural Systems** Science assumes consistent patterns in natural systems. (3-LS4-1)

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 merits of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.* [Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.] [Assessment Boundary: Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.]	**LS4.D: Biodiversity and Humans** Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)	
Interdisciplinary Connections:	**CS & DT:**	
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). (Example- In Science, students learn about certain animals that lived long ago but not now and learn about their traits and how they related to animals that are still around) RI.3.5 Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.	8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models. 8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task. (Example: When students engineer a design to trap the pythons in the Everglades they have to take into consideration the materials and the cost of the materials to make the least expensive trap they can make) 8.2.5.ED.6: Evaluate and test alternative solutions to a problem using the constraints and tradeoffs identified in the design process.	

(Example: Students will read various texts and research online to determine causes and effects of increase and decrease of populations in the Everglades) 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. (Example: When students participate in the Seeds to Salad program, students can think about how many plants can go in a certain area, how close the plants can be for optimum growing environment, and the effect of raised beds vs. non-raised beds.)	(Example- Students will use books, websites, and online articles to find information on animal traits and habits in order to help design traps for the pythons)

CLKS:

9.1.5.FP.3: Analyze how spending choices and decision-making can result in positive or negative consequences.
Example- students will need to research materials and cost as a supply chain manager would need to do for a pharmaceutical company
9.4.5.CT.2: Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem (e.g., 2.1.5.CHSS.1, 4-ESS3-1).
Example- The E.P.A. has to make decisions about the animals in the environment and how they impact the world around them.

UNIT/TOPIC ESSENTIAL QUESTIONS AND ENDURING OBJECTIVES/UNDERSTANDINGS

Bend 1: Zebras live in groups and have adaptations to survive.

Bend 2: Fossils/Extinction

Bend 3:The bald eagle has declined to almost extinction and now increased.
Bend 4: Burmese Pythons have invaded the Florida Everglades and are heavily impacting the wildlife and food chains.

STUDENT LEARNING OBJECTIVES	
Key Knowledge	**Process/Skills/Procedures/Application of Key Knowledge**
Students will know: organisms survival fossils extinction adaptation traits life cycle natural phenomenon argument claim evidence models structure function system patterns	***Students will be able to:*** Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. Construct an argument that some animals form groups that help members survive. Use evidence to support the explanation that traits can be influenced by the environment. Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. 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. 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. Make a claim about the merits of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

ASSESSMENT OF LEARNING	
Summative Assessment (Assessment at the end of the learning period)	Students will develop a model and construct and argument with evidence to explain the science behind the phenomena using the Disciplinary Core Ideas, Cross Cutting Concepts, and Science and Engineering Practices

Formative Assessments (Ongoing assessments during the learning period to inform instruction)	Models, claims, evidence, data and research, planning and carrying out investigations, classroom discussions, anecdotal notes
Alternative Assessments (Any learning activity or assessment that asks students to *perform* to demonstrate their knowledge, understanding and proficiency)	Quizzes, Discovery Education Board activities, worksheets/activities, PBL (extensions), modified assessments as per IEPs
Benchmark Assessments (used to establish baseline achievement data and measure progress towards grade level standards; given 2-3 X per year)	Grade level benchmark assessment
RESOURCES	
Core instructional materials: NGSS GRC Model	
Supplemental materials: Discovery Education Encyclopedia Britannica https://thewonderofscience.com/ls1b-growth-and-development-of-organisms (resource for teacher understanding) https://thewonderofscience.com/ls2d-social-interactions-and-group-behavior (resource for teacher understanding) https://www.exploringnature.org/db/view/Grade-3-3-LS2-Ecosystems-Interactions-Energy-and-Dynamics	
Modifications for Learners	
See appendix	

Topic/Unit 3 Title	Motion and Stability	Approximate Pacing	March-April

STANDARDS		
NJSLS (Science)		
Students will be able to...	Student will know…	Crosscutting Concepts
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.] [Assessment Boundary: 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.] [Assessment Boundary: 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	**PS2.A: 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.) (3-PS2-1) 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.) (3-PS2-2) **PS2.B: Types of Interactions** Objects in contact exert forces on each other. (3-PS2-1) Electric and magnetic forces between a pair of objects do not require that the objects be in	**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-PS2-3) ---------- **Connections to Engineering, Technology, and Applications of Science Interdependence of Science, Engineering, and Technology** 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)

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 paper clips, 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.] [Assessment Boundary: 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.* [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.]	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. (3-PS2-3),(3-PS2-4)	
Interdisciplinary Connections:	**CS & DT:**	
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	8.2.5.ED.5: Describe how specifications and limitations impact the engineering design process. (Example-Students learn about pushes and pulls and forces which will be used in math and science in the upper grades. In 4th grade, students build on pushes and pulls to start learning about energy transfer) 8.2.5.ED.1: Explain the functions of a system and its subsystems	

(such as a beaker with a measurement scale) to represent the problem. (Example: When students develop a model to demonstrate balanced and unbalanced forces as well as pushes and pulls they will be analyzing and collecting data based on different masses and distances) 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. (Examples: When students design ways to test pushes and pulls they will be collecting data on the distance it went)	(Example- Students learn about the uses of magnets and how they can help with everyday life functions) 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models. 8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task. Use a graphic organizer to organize information about problem or issue (Example-Students make a model of a swing to test out and demonstrate the effects of forces.)
CLKS:	
9.4.5.CT.2: Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem (e.g., 2.1.5.CHSS.1, 4-ESS3-1). 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems. 9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global (e.g., 6.1.5.CivicsCM.3). *Example: Students learn about the many uses of magnets and how they help make our everyday life easier. Dairy cow farmers use magnets to protect their cows from "hardware disease"*	
UNIT/TOPIC ESSENTIAL QUESTIONS AND ENDURING OBJECTIVES/UNDERSTANDINGS	
Bend 1: A child moves when pushed on a swing. Swing Gif -- play and ask what do you notice? Why is the swing moving? Bend 2: Magnets attract. - Hand out magnets and have students explore-- what do they notice? Bend 2b: Farmers feed their cows a magnet.	
STUDENT LEARNING OBJECTIVES	
Key Knowledge	**Process/Skills/Procedures/Application of Key Knowledge**

Students will know:	***Students will be able to:***
forces motion natural phenomenon argument claim evidence models structure function system patterns	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion. Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. Define a simple design problem that can be solved by applying scientific ideas about magnets.

ASSESSMENT OF LEARNING	
Summative Assessment (Assessment at the end of the learning period)	Students will develop a model and construct and argument with evidence to explain the science behind the phenomena using the Disciplinary Core Ideas, Cross Cutting Concepts, and Science and Engineering Practices
Formative Assessments (Ongoing assessments during the learning period to inform instruction)	Models, claims, evidence, data and research, planning and carrying out investigations, classroom discussions, anecdotal notes
Alternative Assessments (Any learning activity or assessment that asks students to *perform* to demonstrate their knowledge, understanding and proficiency)	Quizzes, Discovery Education Board activities, worksheets/activities, PBL (extensions), modified assessments as per IEPs
Benchmark Assessments (used to establish baseline achievement data and	Grade level benchPatterns Rubric Grade 3mark assessment

measure progress towards grade level standards; given 2-3 X per year)	
RESOURCES	
Core instructional materials: NGSS GRC Model	
Supplemental materials: Discovery Education Encyclopedia Britannica https://thewonderofscience.com/3ps22 (resource for staff) https://thewonderofscience.com/phenomenon/2018/7/8/amazing-rube-goldberg-machines	
Modifications for Learners	
See appendix	

Topic/Unit 4 Title	Ecosystems and Heredity	Approximate Pacing	May-June

STANDARDS		
NJSLS (Science)		
Students will be able to...	Student will know…	Crosscutting Concepts
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.] [Assessment Boundary: 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.] [Assessment Boundary: 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	**LS1.B: 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. (3-LS1-1) The environment also affects the traits that an organism develops. (3-LS3-2) **LS2.C: 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. (secondary to 3-LS4-4) **LS4.D: Biodiversity and Humans** Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)	**Patterns:** Similarities and differences in patterns can be used to sort and classify natural phenomena. (3-LS3-1) Patterns of change can be used to make predictions. (3-LS1-1) **Cause and Effect:** Cause and effect relationships are routinely identified and used to explain change. (3-LS3-2)(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) ---------- **Connections to Engineering, Technology, and Applications of Science Interdependence of Science, Engineering, and Technology** Knowledge of relevant scientific concepts and research findings is

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-LS4-3.** 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 merits of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.* [Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.] [Assessment Boundary: Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.]		important in engineering. (3-LS4-4) --- **Connections to Nature of Science Scientific Knowledge Assumes an Order and Consistency in Natural Systems** Science assumes consistent patterns in natural systems. (3-LS4-1)
Interdisciplinary Connections:	**CS & DT:**	
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). (Example- In Science, students learn about certain animals that lived long ago but not now and learn	8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models. 8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.	

about their traits and how they related to animals that are still around) RI.3.5 Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently. (Example: Students will read various texts and research online to determine causes and effects of increase and decrease of populations in the Everglades) 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. (Example: When students participate in the Seeds to Salad program, students can think about how many plants can go in a certain area, how close the plants can be for optimum growing environment, and the effect of raised beds vs. non-raised beds.)	(Example: When students engineer a design to trap the pythons in the Everglades they have to take into consideration the materials and the cost of the materials to make the least expensive trap they can make) 8.2.5.ED.6: Evaluate and test alternative solutions to a problem using the constraints and tradeoffs identified in the design process. (Example- Students will use books, websites, and online articles to find information on animal traits and habits in order to help design traps for the pythons)
CLKS:	
9.1.5.FP.3: Analyze how spending choices and decision-making can result in positive or negative consequences. *Example- students will need to research materials and cost as a supply chain manager would need to do for a pharmaceutical company* 9.4.5.CT.2: Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem (e.g., 2.1.5.CHSS.1, 4-ESS3-1). *Example- The E.P.A. has to make decisions about the animals in the environment and how they impact the world around them.*	
UNIT/TOPIC ESSENTIAL QUESTIONS AND ENDURING OBJECTIVES/UNDERSTANDINGS	
Phenomena: The life cycle of this plant is 30 days.	

STUDENT LEARNING OBJECTIVES	
Key Knowledge	**Process/Skills/Procedures/Application of Key Knowledge**
Students will know: organisms survival fossils extinction adaptation traits life cycle natural phenomenon argument claim evidence models structure function system patterns	***Students will be able to:*** Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. 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. 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. Make a claim about the merits of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

ASSESSMENT OF LEARNING	
Summative Assessment (Assessment at the end of the learning period)	Students will develop a model and construct and argument with evidence to explain the science behind the phenomena using the Disciplinary Core Ideas, Cross Cutting Concepts, and Science and Engineering Practices
Formative Assessments (Ongoing assessments during the learning period to inform instruction)	Models, claims, evidence, data and research, planning and carrying out investigations, classroom discussions, anecdotal notes
Alternative Assessments (Any learning activity or assessment	Quizzes, Discovery Education Board activities, worksheets/activities, PBL (extensions), modified assessments as per IEPs

that asks students to *perform* to demonstrate their knowledge, understanding and proficiency)	
Benchmark Assessments (used to establish baseline achievement data and measure progress towards grade level standards; given 2-3 X per year)	Grade level benchmark assessment
RESOURCES	
Core instructional materials: NGSS GRC Model	
Supplemental materials: Discovery Education Encyclopedia Britannica https://thewonderofscience.com/ls1b-growth-and-development-of-organisms (resource for teacher understanding) https://thewonderofscience.com/ls2d-social-interactions-and-group-behavior (resource for teacher understanding) https://www.exploringnature.org/db/view/Grade-3-3-LS2-Ecosystems-Interactions-Energy-and-Dynamics	
Modifications for Learners	
See appendix	