NGSS ARTICULATION MAP K–4
for PHENOLOGY Curriculum

	KINDERGARTEN	FIRST GRADE	SECOND GRADE	THIRD GRADE	FOURTH GRADE
Physical Science	**K-PS3 Energy** **K-PS3-1** Make observations to determine the effect of sunlight on Earth's surface. **K-PS3-2** Use tools and materials provided to design and build a structure that will reduce the warming effect of sunlight on Earth's surface.			**3-PS2 Motion and Stability: Forces and Interactions** **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.	**4-PS3 Energy** **4-PS3-2** Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.
Life Science	**K-LS1 From Molecules to Organisms: Structures and Processes** **K-LS1-1** Use observations to describe patterns of what plants and animals (including humans) need to survive.	**1-LS1 From Molecules to Organisms: Structures and Processes** **1-LS1-1**. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. **1-LS3 Heredity: Inheritance and Variation of Traits** **1-LS3-1** Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.	**2-LS2 Ecosystems: Interactions, Energy, and Dynamics** **2-LS2-1** Plan and conduct an investigation to determine if plants need sunlight and water to grow. **2-LS2-2** Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants. **2-LS4 Biological Evolution: Unity and Diversity** **2-LS4-1** Make observations of plants and animals to compare the diversity of life in different habitats.	**3-LS1 From Molecules to Organisms: Structures and Processes** **3-LS1-1** Develop models to describe organisms that have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. **3-LS3 Heredity: Inheritance and Variation of Traits** **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. **3-LS3-2** Use evidence to support the explanation that traits can be influenced by the environment. **3-LS4 Biological Evolution: Unity and Diversity** **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. **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.	**4-LS1 From Molecules to Organisms: Structures and Processes** **4-LS1-1** Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
Earth Science	**K-ESS2 Earth's Systems** **K-ESS2-1** Use and share observations of local weather conditions to describe patterns over time. **K-ESS2-2** Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. **K-ESS3 Earth and Human Activity** **K-ESS3-1** Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live. **K-ESS3-2** Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather. **K-ESS3-3** Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.	**1-ESS1 Earth's Place in the Universe** **1-ESS1-1** Use observation of the sun, moon, and stars to describe patterns that can be predicted. **1-ESS1-2** Make observations at different times of year to relate the amount of daylight to the time of year.	**2-ESS1 Earth's Place in the Universe** **2-ESS1-1** Use information from several sources to provide evidence that Earth events can occur quickly or slowly. **2-ESS2 Earth's Systems** **2-ESS2-1** Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. **2-ESS2-2** Develop a model to represent the shapes and kinds of land and bodies of water in an area. **2-ESS2-3** Obtain information to identify where water is found on Earth and that it can be solid or liquid.	**3-ESS2 Earth Systems** **3-ESS2-1** Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. **3-ESS2-2** Obtain and combine information to describe climates in different regions of the world. **3-ESS3 Earth and Human Activity** **3-ESS3-1** Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.	**4-ESS3 Earth and Human Activity** **4-ESS3-1** Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment. **4-ESS3-2** Generate and compare multiple solutions to reduce the impacts of natural Earth process on humans.
Engineering Design	**K-2-ETS1 Engineering Design** **K-2-ETS1-1** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. **K-2-ETS1-2** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. **K-2-ETS1-3** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	**K-2-ETS1 Engineering Design** **K-2-ETS1-1** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. **K-2-ETS1-2** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. **K-2-ETS1-3** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	**K-2-ETS1 Engineering Design** **K-2-ETS1-1** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. **K-2-ETS1-2** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. **K-2-ETS1-3** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	**3-5-ETS1 Engineering Design** **3-5-ETS1-1** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. **3-5-ETS1-2** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. **3-5-ETS1-3** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	**3-5-ETS1 Engineering Design** **3-5-ETS1-1** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. **3-5-ETS1-2** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. **3-5-ETS1-3** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.