3-5 NGSS Standards

Grade 3	Grade 4	Grade 5
1. Motion and Stability ● Standard 3-PS2 Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. ● Standard 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. ● Standard 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. ● Standard 3-PS2-4 Define a simple design problem that can be solved by applying scientific ideas about magnets.	**1. Energy** ● Standard 4-PS3-1 Use evidence to construct an explanation relating the speed of an object to the energy of that object. ● Standard 4-PS3-2 Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. ● Standard 4-PS3-3 Ask questions and predict outcomes about the changes in energy that occur when objects collide. ● Standard 4-PS3-4 Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	**1. Matter and its Interactions** ● Standard 5-PS1-1 Develop a model to describe that matter is made of particles too small to be seen. ● Standard 5-PS1-2 Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. ● Standard 5-PS1-3 Make observations and measurements to identify materials based on their properties. ● Standard 5-PS1-4 Conduct an investigation to determine whether the mixing of two or more substances results in new substances.
2. From Molecules to Organisms: Structures and Processes ● Standard 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.	**2. Waves and their Applications in Technologies for information Transfer** ● Standard 4-PS4-1 Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move. ● Standard 4-PS4-2 Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen. ● Standard 4-PS4-3 Generate and compare multiple solutions that use patterns to transfer information.	**2. Motion and Stability: Forces and Interactions** ● Standard 5-PS2-1 Support an argument that the gravitational force exerted by Earth on objects is directed down.
3. Ecosystems:	**3. From Molecules to**	**3. Energy**

Interactions, Energy, Dynamics ● Standard 3-LS2-1 Construct an argument that some animals form groups that help members survive.	**Organisms: Structures and Processes** ● Standard 4-LS1-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. ● Standard 4-LS1-2 Use a model to describe that animals' receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.	● Standard 5-PS3-1 Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.
4. Heredity: Inheritance and Variation of Traits ● Standard 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. ● Standard 3-LS3-2 Use evidence to support the explanation that traits can be influenced by the environment.	**4. Earth's Place in the Universe** ● Standard 4-ESS1-1 Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.	**4. From Molecules to Organisms: Structures and Processes** ● Standard 5-LS1-1 Support an argument that plants get the materials they need for growth chiefly from air and water.
5. Biological Evolution: Unity and Diversity ● Standard 3-LS4-1 Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. ● Standard 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. ● Standard 3-LS4-3 Construct an argument with evidence that in a particular habitat some organisms can	**5. Earth's Systems** ● Standard 4-ESS2-1 Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. ● Standard 4-ESS2-2 Analyze and interpret data from maps to describe patterns of Earth's features.	**5. Ecosystems: Interactions, Energy, and Dynamics** ● Standard 5-LS2-1 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

survive well, some survive less well, and some cannot survive at all. ● Standard 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.		
6. Earth's Systems ● Standard 3-ESS2-1 Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. ● Standard 3-ESS2-2 Obtain and combine information to describe climates in different regions of the world.	**6. Earth and Human Activity** ● Standard 4-ESS3-1 Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment. ● Standard 4-ESS3-2 Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.	**6. Earth's Place in the Universe** ● Standard 5-ESS1-1 Support an argument that the apparent brightness of the sun and stars is due to their relative distances from Earth. ● Standard5-ESS1-2 Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.
7. Earth and Human Activity ● Standard 3-ESS3-1 Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.		**7.Earth's Systems** ● Standard 5-ESS2-1 Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. ● Standard 5-ESS2-2 Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.
7. Engineering Design ● Standard 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. ● Standard 3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely		**Earth and Human Activity** ● Standard 5-ESS3-1 Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

to meet the criteria and constraints of the problem. ● Standard 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.		