Fourth Grade Science Curriculum 2022

Pacing Guide	Disciplinary Core Ideas	Sample Learning Activities	Sample Assessments	Additional Standards

August-September 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.	What are scientific questions? Analyze and discuss how scientists find answers to their questions. Identify and use science tools properly Describe and apply the scientific method Discuss how data is used to share information and conclusions Discuss scientific careers Identify ways in which technology can be used to solve problems. Collect, analyze, interpret, and present data through the completion of various labs Apply the steps of the design process when looking to for solutions **Instructional Resources** *National Geographic Science* **Student Technology:** Kahoot Google Classroom Chromebook/ IPad **Teacher Technology**: Promethean Board/Activ Panel YouTube Videos ActiView Scholastic BrainPop Bill Nye Video	**Formative Assessments:** Discussion Classwork/Activities Teacher Observation Student Participation **Summative Assessments**: Completed Labs & Investigations Chapter Test **Benchmark Assessment:** BOY Benchmark Accommodations and Modifications	**Interdisciplinary Standard:** **RI.4.7** Apply understanding of nonfiction text features when reading the science textbook **Technology Standard:** 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.

October-November Energy	**4-PS3-1** Use evidence to construct an explanation relating the speed of an object to the energy of that object. **4-PS3-2** Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. **4-PS3-3** Ask questions and predict outcomes about the changes in energy that occur when objects collide. **4-PS3-4** Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	Define and Discuss: types of Energy Investigate different forms of energy through labs Discuss and observe what energy can do Brainstorm and create a model to demonstrate a way to transfer energy Investigate and observe: transfer of energy Apply understanding to create an electric circuit Discuss, brainstorm and observe ways to obtain energy Investigate and reflect on the relationship between an object's mass and needed force Investigate change in energy due to speed Using the design process, create a device that gives energy from one form to another **Instructional Resources** *National Geographic Science* **Student Technology:** Kahoot Google Classroom Chromebook/ IPad **Teacher Technology**: Promethean Board/Activ Panel YouTube Videos	**Formative Assessments:** Energy Quiz Discussion Classwork/Activities Teacher Observation Student Participation **Summative Assessments**: Completed Labs & Investigations Chapter Test Accommodations and Modifications	**Interdisciplinary Standard:** 4.NF.B.3 Calculating an average speed **Technology Standard:** 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.

December & January Waves and Their Applications in Technologies for Information Transfer	**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. **4-PS4-2** Develop a model to describe and entering the eye allows objects to be seen. **4-PS4-3** Generate and compare multiple solutions that use patterns to transfer information.	Define and discuss: What is a wave? Identify ways to make a wave through exploration Make observations and describe patterns of waves Create a model demonstrating the properties of a wave Define: amplitude and wavelength Explore light waves Investigate and observe how waves can cause objects to move Explore ways that patterns are used to transfer information Develop a new way to use patterns to transfer information Compare designs with classmates **Instructional Resources** *National Geographic Science* **Student Technology:** Kahoot Google Classroom Chromebook/ IPad **Teacher Technology**: Promethean Board/Activ Panel YouTube Videos ActiView Scholastic BrainPop Bill Nye Video Science Spin	**Formative Assessments:** Waves Quiz Discussion Classwork/Activities Teacher Observation Student Participation **Summative Assessments**: Completed Labs & Investigations Chapter Test Accommodations and Modifications	**Interdisciplinary Standard:** W 4.2 Write a step by step explanation on waves can cause objects to move using unit specific vocabulary and supporting details. **Technology Standard:** 8.2.5.ED.3: Follow step by step directions to solve a problem, using appropriate tools to accomplish the task.

February 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. **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.	Classify plants and animals based on physical characteristics. Identify plants and animals internal and external structures Use models to describe the structures that help plants survive and reproduce. Analyze how physical features and behaviors help organisms interact with their environments. Discuss and explore how internal/external structures support the organism Determine the function of identified structures Conduct a research project to observe and report on the chosen plant/animal's structures and their interactions **Instructional Resources** *National Geographic Science* **Student Technology:** Kahoot Google Classroom Chromebook/ IPad **Teacher Technology**: Promethean Board/Activ Panel YouTube Video ActiView Scholastic BrainPop Bill Nye Video Science Spin	**Formative Assessments:** Plants & Animals and their Structures Quiz Discussion Classwork/Activities Teacher Observation Student Participation **Summative Assessments**: Completed Labs & Investigations Chapter Test Accommodations and Modifications	**Interdisciplinary Standard:** W.4.1: Write about Plants & Animal Structure supporting their writing with reasons and information. **Technology Standard:** 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.

March/April 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 impact of natural Earth processes on humans	Define and list: Natural Resources Renewable vs nonrenewable natural resources Analyze and observe natural resources' effect on the earth Discuss: natural resources and energy Analyze and research how energy used from natural resources affect the earth Brainstorm solutions to reduce impact of natural Earth processes on humans Create and present on a solution **Instructional Resources** **Instructional Resources** *National Geographic Science* **Student Technology:** Kahoot Google Classroom Chromebook/ IPad **Teacher Technology**: Promethean Board/Activ Panel YouTube Videos ActiView Scholastic BrainPop Bill Nye Video Science Spin **Student Technology:** Kahoot Google Classroom	**Formative Assessments:** Natural Resources Quiz Discussion Classwork/Activities Teacher Observation Student Participation **Summative Assessments**: Completed Labs & Investigations Chapter Test Accommodations and Modifications	**Interdisciplinary Standard:** SL 4.1 Participate in discussions to analyze student solutions to natural processes impact on humans **Technology Standard:** 8.1.5.DA.3: Organize and present collected data visually to communicate insights gained from different views of the data.

May/June Earth's Place in the Universe & Earth's Systems	**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-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. **4-ESS2-2** Analyze and interpret data from maps to describe patterns of Earth's features.	Observe patterns in rock formations and fossils Discuss changes in a landscape over time Discuss and analyze implications of certain fossils/rock layers Define and discuss: weather and erosion Identify impact of weathering and erosion on world around us Make observations evidence of the effects of weathering Explore and measure the rate of erosion by water, ice, wind, or vegetation Investigate: what can affect the rate or impact of weathering/erosion Create a model to demonstrate understanding of weather/erosion Collect and analyze data on variables for created model Analyze and observe impact plants have on erosion/weathering Identify landscapes and discuss the evidence of weathering/erosion **Instructional Resources** *National Geographic Science* **Student Technology:** Kahoot Google Classroom Chromebook/ IPad	**Formative Assessments:** Weathering and Erosion Quiz Discussion Classwork/Activities Teacher Observation Student Participation **Summative Assessments**: Completed Labs & Investigations Chapter Test **Benchmark:** EOY Benchmark Accommodations and Modifications	**Interdisciplinary Standard:** L 4.5 Use figurative language (of student's choice) to describe the impact of weathering/erosion on chosen landscape. **Technology Standard:** 8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim.

Alternate Assessments: Weathering and Erosion Photo Scavenger Hunt, Natural Resource Protection Plan, Worksheets/Activities
21st Century Standards: 9.1.4.F.2 & 9.2.4.A.1
21st Century Skills: Critical Thinking; Collaboration; Technology Literacy
Career Ready Practices: CRP 2, CRP 4, CRP 10