

4th Grade Science Curriculum

	Module Focus Essential Question	Skills
September-October	<p>Bundle 1: Organism Structures and Behavior</p> <p>Guiding Questions:</p> <ul style="list-style-type: none"> • What are an animal’s structures that are used as sense receptors? • What is the function of the sense receptors? • Which sense receptors and their functions can be grouped together? 	<ul style="list-style-type: none"> • Design a zoo that is organized by grouping animals with the best sense receptors, and to describe how having those sense receptors helps animals survive. In addition, students will design a scavenger hunt for students who go on field trips to the zoo. • Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. • 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. • Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. • 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.
October-January	<p>Bundle 2: Changes over Time to Earth's Surface and Resources</p> <p>Guiding Questions:</p> <ul style="list-style-type: none"> • What can workers expect to see while on the job? • What can you do to protect Earth’s resources? • What risks are involved with working on the mine? • How will your company try to minimize the risks of coal mining? 	<ul style="list-style-type: none"> • Create an ad to attract new workers to a coal-mining project. • Identify evidence from patterns in rock formations and fossils in rock layers to support possible explanations of Michigan’s geological changes over time. • Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. • Analyze and interpret data from maps to describe patterns of Earth's features. • Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment. • Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.* • Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. • 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. • 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.

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January - March	<p>Bundle 3:Using Energy Transformations Guiding Questions:</p> <ul style="list-style-type: none"> • How would energy be transferred if a speeding asteroid collided with a spaceship? • How could electric currents be used in a warning system? 	<ul style="list-style-type: none"> • Develop an electrical warning system to alert astronauts on a spaceship of potential asteroid collisions. • Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. • Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. • Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. • 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. • Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. • Ask questions and predict outcomes about the changes in energy that occur when objects collide. • 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. • Use evidence to construct an explanation relating the speed of an object to the energy of that object.
March- June	<p>Bundle 4:Communicating Using Wave Energy Guiding Questions:</p> <ul style="list-style-type: none"> • How does sound travel through air? • How does light travel through air? • What types of objects reflect light best? • What types of technology use sound or light to communicate? 	<ul style="list-style-type: none"> • Create an emergency signaling system and show how it interacts with the eye or ear. • Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move. • Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. • 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. • 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. • Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen. • Generate and compare multiple solutions that use patterns to transfer information.