

### 4th Grade Thematic Model

*Narrative and Rationale:* The three bundles in this Grade 4 model are characterized by the overarching theme that students can find evidence of patterns and systems throughout the natural and designed world. Each bundle also relates to energy transfer, as students begin to learn about the concept of energy in colliding objects and the role of energy in a large system early in the year, and then apply that knowledge to information transfer and to different Earth systems later in the year.

Cognitive demand increases as the year progresses, with the expectations that students will become more adept at using the science and engineering practices and the crosscutting concepts. The instruction begins with concrete, familiar experiences and moves to more abstract learning. Note that the practices and crosscutting concepts described are intended as end-of-instructional unit expectations and not curricular designations – additional practices and crosscutting concepts should be used throughout instruction in each bundle.

<p><b>Bundle 1:</b> What evidence of patterns and systems do we see in motion, weathering, fossils, and rock formation? ~12 weeks</p>	<p><b>Bundle 2:</b> What evidence of patterns and systems do we see in organism structure and how those structures function in information transfer? ~12 weeks</p>	<p><b>Bundle 3:</b> What evidence of patterns and systems do we see in erosion, waves, and Earth features? ~12 weeks</p>
<p><b>4-PS3-1.</b> Use evidence to construct an explanation relating the speed of an object to the energy of that object.</p> <p><b>4-PS3-3.</b> Ask questions and predict outcomes about the changes in energy that occur when objects collide.</p> <p><b>4-ESS1-1.</b> Identify evidence from patterns in rock formations and fossils in rock layers for changes in a landscape over time to support an explanation for changes in a landscape over time.</p> <p><b>4-ESS2-1.</b> Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.<sup>1</sup></p> <p><b>3-5 ETS1-2.</b> 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.<sup>1</sup></p>	<p><b>4-PS3-2.</b> Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.</p> <p><b>4-PS4-2.</b> Develop a model to describe that light reflecting from objects and entering the eye.</p> <p><b>4-PS4-3.</b> Generate and compare multiple solutions that use patterns to transfer information.*</p> <p><b>4-LS1-1.</b> Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.</p> <p><b>4-LS1-2.</b> 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.</p> <p><b>3-5 ETS1-2.</b> 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.</p>	<p><b>4-PS3-4.</b> Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.*</p> <p><b>4-PS4-1.</b> Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.</p> <p><b>4-ESS2-1.</b> Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.</p> <p><b>4 ESS2-2.</b> Analyze and interpret data from maps to describe patterns of Earth’s features.</p> <p><b>4-ESS3-1.</b> Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.</p> <p><b>4-ESS3-2.</b> Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.*</p>

<sup>1</sup> The bundle only includes part of this PE; the PE is not fully assessable in a unit of instruction leading to this bundle.

4th Grade Thematic Model Course Flowchart

