



**Grade 7 Correlation Guide  
2016 Science Indiana Academic Standards to 2022 Performance Expectations\***

<b>Physical Science</b>	
<b>2016 Indiana Academic Standard</b>	<b>2022 Performance Expectation</b>
<b>7.PS.6</b> Investigate Newton’s third law of motion to show the relationship between action and reaction forces.	<b>MS-PS2-1.</b> Apply Newton’s Third Law to design a solution to a problem involving the motion of two colliding objects.
<b>7.PS.4</b> Investigate Newton’s first law of motion (Law of Inertia) and how different forces (gravity, friction, push and pull) affect the velocity of an object.  <b>7.PS.5</b> Investigate Newton’s second law of motion to show the relationship among force, mass and acceleration.	<b>MS-PS2-2.</b> Plan an investigation to provide evidence that the change in an object’s motion depends on the sum of the forces on the object and the mass of the object.
	<b>MS-PS2-3.</b> Ask questions and design a plan to determine the factors that affect the strength of electric and magnetic forces.
	<b>MS-PS2-4.</b> Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.
	<b>MS-PS2-5.</b> Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.
<b>6.PS.3</b> Describe how potential and kinetic energy can be transferred from one form to another.	<b>MS-PS3-1.</b> Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.
	<b>MS-PS3-2.</b> Develop a model to describe what happens when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.



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<p><b>7.PS.9</b> Compare and contrast the three types of heat transfer: radiation, convection, and conduction.</p>	<p><b>MS-PS3-3.</b> Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.</p>
<p><b>7.PS.8</b> Investigate a process in which energy is transferred from one form to another and provide evidence that the total amount of energy does not change during the transfer when the system is closed (Law of conservation of energy).</p>	<p><b>MS-PS3-4.</b> Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.</p>
<p><b>6.PS.3</b> Describe how potential and kinetic energy can be transferred from one form to another.</p>	<p><b>MS-PS3-5.</b> Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.</p>

Life Science	
2016 Indiana Academic Standard	2022 Performance Expectation
<p><b>7.LS.1</b> Investigate and observe cells in living organisms and collect evidence showing that living things are made of cells. Compare and provide examples of prokaryotic and eukaryotic organisms. Identify the characteristics of living things.</p>	<p><b>MS-LS1-1.</b> Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.</p>
<p><b>7.LS.5</b> Compare and contrast the form and function of the organelles found in plant and animal cells.</p>	<p><b>MS-LS1-2.</b> Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.</p>
<p><b>7.LS.3</b> Explain how cells develop through differentiation into specialized tissues and organs in multicellular organisms.</p>	<p><b>MS-LS1-3.</b> Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.</p>
	<p><b>MS-LS1-7.</b> Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.</p>
	<p><b>MS-LS1-8.</b> Gather and synthesize information that sensory receptors respond to</p>



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	stimuli by sending messages to the brain for immediate behavior or storage as memories.
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Earth and Space Science	
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<p><b>7.ESS.2</b> Construct a model or scale drawing (digitally or on paper), based on evidence from rock strata and fossil records, for how the geologic time scale is used to organize Earth's 4.6 billion-year-old history.</p>	<p><b>MS-ESS1-4.</b> Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.</p>
<p><b>7.ESS.3</b> Using simulations or demonstrations, explain continental drift theory and how lithospheric (tectonic) plates have been and still are in constant motion resulting in the creation of landforms on the Earth's surface over time.</p> <p><b>7.ESS.4</b> Construct an explanation, based on evidence found in and around Indiana, for how large scale physical processes, such as Karst topography and glaciation, have shaped the land.</p>	<p><b>MS-ESS2-1.</b> Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.</p> <p><b>MS-ESS2-2.</b> Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.</p> <p><b>MS-ESS2-3.</b> Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.</p> <p><b>MS-ESS3-1.</b> Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.</p>
	<p><b>MS-ESS3-2.</b> Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.</p>

## Engineering Design



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<p><b>6-8.E.1</b> Identify the criteria and constraints of a design to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.</p>	<p><b>6-8.ETS1-1.</b> Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.</p>
<p><b>6-8.E.2</b> Evaluate competing design solutions using a systematic process to identify how well they meet the criteria and constraints of the problem.</p>	<p><b>6-8.ETS1-2.</b> Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.</p>
<p><b>6-8.E.3</b> Analyze data from investigations to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.</p>	<p><b>6-8.ETS1-3.</b> Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.</p>
<p><b>6-8.E.4</b> Develop a prototype to generate data for repeated investigations and modify a proposed object, tool, or process such that an optimal design can be achieved.</p>	<p><b>6-8.ETS1-4.</b> Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.</p>

\*Performance expectations are three dimensional. All three dimensions (Disciplinary Core Ideas, Science and Engineering Practices, and Crosscutting Concepts) must be included as part of effective instruction.

For more information, see the [Indiana Department of Education's Indiana Academic Standards webpage](#) or contact the [Office of Teaching and Learning](#).