

## Links to the Three Dimensions in the *Framework for K-12 Science Education*

Scientific and Engineering Practices	Crosscutting Concepts
<ol style="list-style-type: none"> <li>1. Asking Questions and Defining Problems</li> <li>2. Developing and Using Models</li> <li>3. Planning and Carrying Out Investigations</li> <li>4. Analyzing and Interpreting Data</li> <li>5. Using Mathematics and Computational Thinking</li> <li>6. Constructing Explanations and Designing Solutions</li> <li>7. Engaging in Argument from Evidence</li> <li>8. Obtaining, Evaluating, and Communicating Information</li> </ol>	<ol style="list-style-type: none"> <li>1. Patterns</li> <li>2. Cause and Effect: Mechanism and Explanation</li> <li>3. Scale, Proportion, and Quantity</li> <li>4. Systems and System Models</li> <li>5. Energy and Matter: Flows, Cycles, and Conservation</li> <li>6. Structure and Function</li> <li>7. Stability and Change</li> </ol>
Disciplinary Core Ideas in Physical Science	Disciplinary Core Ideas in Life Science
<p><b>PS1: Matter and Its Interactions</b>  <b>PS1.A:</b> Structure and Properties of Matter  <b>PS1.B:</b> Chemical Reactions  <b>PS1.C:</b> Nuclear Processes</p> <p><b>PS2: Motion and Stability: Forces and Interactions</b>  <b>PS2.A:</b> Forces and Motion  <b>PS2.B:</b> Types of Interactions  <b>PS2.C:</b> Stability and Instability in Physical Systems</p> <p><b>PS3: Energy</b>  <b>PS3.A:</b> Definitions of Energy  <b>PS3.B:</b> Conservation of Energy and Energy Transfer  <b>PS3.C:</b> Relationship Between Energy and Forces  <b>PS3.D:</b> Energy in Chemical Processes and Everyday Life</p> <p><b>PS4: Waves and Their Applications in Technologies for Information Transfer</b>  <b>PS4.A:</b> Wave Properties  <b>PS4.B:</b> Electromagnetic Radiation  <b>PS4.C:</b> Information Technologies and Instrumentation</p>	<p><b>LS1: From Molecules to Organisms: Structures and Processes</b>  <b>LS1.A:</b> Structure and Function  <b>LS1.B:</b> Growth and Development of Organisms  <b>LS1.C:</b> Organization for Matter and Energy Flow in Organisms  <b>LS1.D:</b> Information Processing</p> <p><b>LS2: Ecosystems: Interactions, Energy, and Dynamics</b>  <b>LS2.A:</b> Interdependent Relationships in Ecosystems  <b>LS2.B:</b> Cycles of Matter and Energy Transfer in Ecosystems  <b>LS2.C:</b> Ecosystem Dynamics, Functioning, and Resilience  <b>LS2.D:</b> Social Interactions and Group Behavior</p> <p><b>LS3: Heredity: Inheritance and Variation of Traits</b>  <b>LS3.A:</b> Inheritance of Traits  <b>LS3.B:</b> Variation of Traits</p> <p><b>LS4: Biological Evolution: Unity and Diversity</b>  <b>LS4.A:</b> Evidence of Common Ancestry and Diversity  <b>LS4.B:</b> Natural Selection  <b>LS4.C:</b> Adaptation  <b>LS4.D:</b> Biodiversity and Humans</p>
Disciplinary Core Ideas in Earth and Space Science	Engineering, Technology, and the Application of Science
<p><b>ESS1: Earth's Place in the Universe</b>  <b>ESS1.A:</b> The Universe and Its Stars  <b>ESS1.B:</b> Earth and the Solar System  <b>ESS1.C:</b> The History of Planet Earth</p> <p><b>ESS2: Earth's Systems</b>  <b>ESS2.A:</b> Earth Materials and Systems  <b>ESS2.B:</b> Plate Tectonics and Large-Scale System Interactions  <b>ESS2.C:</b> The Roles of Water in Earth's Surface Processes  <b>ESS2.D:</b> Weather and Climate  <b>ESS2.E:</b> Biogeology</p> <p><b>ESS3: Earth and Human Activity</b>  <b>ESS3.A:</b> Natural Resources  <b>ESS3.B:</b> Natural Hazards  <b>ESS3.C:</b> Human Impacts on Earth Systems  <b>ESS3.D:</b> Global Climate Change</p>	<p><b>ETS1: Engineering Design</b>  <b>ETS1.A:</b> Defining and Delimiting an Engineering Problem  <b>ETS1.B:</b> Developing Possible Solutions  <b>ETS1.C:</b> Optimizing the Design Solution</p> <p><b>ETS2: Links Among Engineering, Technology, Science, and Society</b>  <b>ETS2.A:</b> Interdependence of Science, Engineering, and Technology  <b>ETS2.B:</b> Influence of Engineering, Technology, and Science on Society and the Natural World</p>