

Environmental Science Matter and Energy in Organisms and Ecosystems

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Standard:	
<p>HLSL2- Construct and revise an explanation based on evidence for the cycling 3. of matter and flow of energy in ecosystems</p>	<p>HS-LS2-3</p>
<p>HS- Use mathematical representations to support claims for the cycling of LS2-4. matter and flow of energy among organisms in an ecosystem.</p>	<p>HS-LS2-3</p>
<p>HS- Develop a model to illustrate the role of photosynthesis and cellular LS2- respiration in the cycling of carbon among the biosphere, atmosphere, 5. hydrosphere, and geosphere.</p>	<p>HS-LS2-5</p>
<p>21st Century Learning Expectations:</p> <ul style="list-style-type: none"> • Hinsdale students will communicate through various means • Hinsdale students will be able to solve problems 	<p>Link for 21st Century Learning Expectations</p>
<p>Enduring Understandings (cross cutting concepts):</p> <ul style="list-style-type: none"> • Energy flows through ecosystems. The main source of energy for most ecosystems is the Sun. • During Photosynthesis, light energy is converted and stored as chemical energy by combining Carbon dioxide and water into Carbohydrates, releasing Oxygen as a byproduct. • The process of Cellular respiration utilizes the products of photosynthesis (Carbohydrates and Oxygen) to produce ATP, a usable form of energy for cellular processes. 	

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<ul style="list-style-type: none"> • These 2 processes keep Carbon and Oxygen constantly cycling in the biosphere 	
<p>Learning Competencies (engineering practices)</p>	<p>Essential Questions (core ideas)</p>
<p><i>Students will be able to: (NGSS Science and Engineering practices)</i></p> <ul style="list-style-type: none"> • Develop models to illustrate the flow of energy in ecosystems. • Use a model to explain the chemical changes and rearrangement of atoms during photosynthesis and cellular respiration. • Illustrate the flow of energy and explain the energy losses that occurs in an ecosystem. 	<ul style="list-style-type: none"> • How do organisms obtain and use energy from the environment? • How do Carbon and Oxygen Cycle through Earth? • What is the relationship between the processes of Photosynthesis and Respiration? • What form of energy do living things use?
<p>Performance Task Sample:</p> <p><u>Biogeochemical cycles</u></p> <p><u>Energy Pyramids lab</u></p>	