

<b>Planned Course: Physical Science</b>	<b>Course Number: 400</b>	<b>Department: Science</b>	
<b>Unit 4: Energy and Work</b>	<b>Grade Level: 9th</b>		
<b>Estimated Time: 3 weeks</b>	<b>Level/Track: General</b>	<b>Date Approved: 9/25/2014</b>	
<b>PA Academic Standards</b>	<b>Core Concepts (in question format)</b> • Skills/Knowledge	<b>Activities/Strategies/Study Skills</b> (identify some activities as remedial or enrichment activities)	<b>Assessments</b> (include types and topics)

<p>3.2 Physical Sciences: Chemistry and Physics</p> <p>3.2.10.B2</p> <ul style="list-style-type: none"> <li>• Explain how the overall energy flowing through a system remains constant.</li> <li>• Describe the work-energy theorem.</li> <li>• Explain the relationships between work and power.</li> </ul>	<p>What is the relationship between energy, work, and power?</p> <ul style="list-style-type: none"> <li>• The student will be able to determine the amount of work being done if given specific scenarios</li> <li>• The student will be able to calculate work using force and distance</li> <li>• The student will be able to discriminate between kinetic and potential energy</li> <li>• The student will be able to calculate potential energy using weight and height</li> <li>• The student will be able to calculate kinetic energy using mass and velocity</li> </ul>	<ul style="list-style-type: none"> <li>• Calculating work worksheet</li> <li>• Calculating kinetic and potential energy worksheet</li> <li>• Worksheet, “Identifying areas of Potential and Kinetic Energy on a Roller Coaster”</li> <li>• Lab, “Building a motor to demonstrate conversion of chemical energy to electrical energy”</li> <li>• Calculating Power Worksheet</li> <li>• Lab, “Energy and Power” (bouncing balls)</li> <li>• Work and Power calculations – going up stairs</li> <li>• Review game</li> </ul>	<ul style="list-style-type: none"> <li>• Hands on Lab Assessment (Elements of Machines, Work and Power Lab, etc.)</li> <li>• Lab Simulations Assessment (Gravitational Potential Energy Gizmo, etc.)</li> <li>• Quizzes on major concepts</li> <li>• Homework to reinforce major concepts</li> <li>• Unit Test</li> </ul>
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	<ul style="list-style-type: none"> <li>• The student will be able to describe different kinds of energy (e.g., electrical, chemical, mechanical, etc.)</li> <li>• The student will be able to calculate power using work and time</li> </ul> <p>How are simple machines used to make work easier?</p> <ul style="list-style-type: none"> <li>• The student will describe what a machine is and how it makes work easier to do</li> <li>• The student will relate the work input to a machine to the work output to the machine</li> <li>• The student will calculate the mechanical advantage of a machine</li> <li>• The student will</li> </ul>		
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	calculate a machine's efficiency		
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