



IPC Curriculum Bundle #3

Title	 	Suggested Dates
Energy and Momentum		10/4-10/22 (14 days)

Big Idea/Enduring Understanding	Guiding Questions
Energy in any form is the ability to do work and cause change. Momentum is a quantity of motion that is unchanged in any interactions of a system.	Why is energy a fundamental concept taught in all science courses? How can energy be conserved if it is never created nor destroyed?

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the district curriculum.

Knowledge & Skills with Student Expectations	District Specificity/Examples	Suggested Resources (See note above)
Vocabulary: energy, kinetic energy, potential energy, law of conservation of energy, fossil fuels, nuclear, wind, hydroelectric, solar, fuel cell, energy level		
IPC.5 Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to: 5A recognize and demonstrate that objects and substances in motion have kinetic energy such as vibration of atoms, water flowing down a stream moving pebbles, and bowling balls knocking down pins;	Including <ul style="list-style-type: none"> • Calculate Gravitational Potential energy and Kinetic energy • Describe the relationship between work and energy • Graph GPE and KE 	“Slinky Activity” – http://slinky.org/ Energy in a Slinky Lab Roller Coaster Physics - video – http://streaming.discoveryeducation.com/search/assetDetail.cfm?guidAssetID=a6be2713-30c3-4d5c-8ed6-13b0818e8044&tabDisplay=districtContent&rand=72CB31A6-19BB-3157-0819F02A5F453627 Gencon demo (motor/hand generator)
IPC.5 Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to: 5B demonstrate common forms of potential energy, including gravitational, elastic, and chemical, such as a ball on an inclined plane, springs, and batteries;		Momentum and Conservation of Momentum Wksht education.jlab.org/jsat/powerpoint/energy_forms_and_changes.ppt Energy and Momentum Wksht
IPC.5 Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	<ul style="list-style-type: none"> • Conversions between KE and GPE • Law of Conservation of Energy 	Cog video “Roller Coaster Lab” – Investigations in Physics and Chemistry

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<p>5D investigate the law of conservation of energy;</p>		<p>“Energy Conservation Lab” – <u>Investigations in Physics and Chemistry</u></p>
<p>IPC.5 Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:</p> <p>5H analyze energy conversions such as those from radiant, nuclear, geothermal sources; fossil fuels such as coal, gas, oil; and the movement of water or wind;</p>	<ul style="list-style-type: none"> • Analyze energy transformations • Solar to electrical • Chemical to electrical • Solar to chemical (photosynthesis) • Mechanical to electrical • Chemical to thermal 	
<p>IPC.5 Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:</p> <p>5I critique the advantages and disadvantages of various energy sources and their impact on society and the environment.</p>	<p>Including</p> <ul style="list-style-type: none"> • Rechargeable or disposable batteries, fossil fuels, nuclear, wind, hydroelectric, solar cells, and fuel cells • Differentiate between batteries, generators, transformers, and motors. <p>Such as</p> <ul style="list-style-type: none"> • Radiant (solar) • Hydroelectric • Nuclear • Geothermal sources • Fossil fuels 	
<p>IPC.4 Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:</p> <p>4E apply the concept of conservation of momentum using action and reaction forces such as students on skateboards;</p>	<p>Calculate Momentum</p>	<p>Momentum Labs (water balloon toss, ball drop)</p> <p>Egg throw at bed sheet</p> <p>Egg drop</p>