IPC Curriculum Bundle # 3

Title	Suggested Dates
Energy & Momentum	10/5 – 10/23/2009 (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	Specificity & Examples	Suggested Resources (Read the note above)

6 The student knows the impact of energy transformations in everyday life.
 	
6A Describe the law of conservation of energy.
	Including
	• Calculate Gravitational Potential energy and Kinetic energy
	• Conversions between KE and GPE
	• Analyze energy transformations
	  • Solar to electrical
	  • Chemical to electrical
	  • Solar to chemical (photosynthesis)
	• Describe the relationship between work and energy
	• *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*
	• *demonstrate common forms of potential energy, including gravitational, elastic, and chemical, such as a ball on an inclined plane, springs, and batteries*
	• *investigate the law of conservation of energy*
		"Slinky Activity" – http://slinky.org/
		
		"Roller Coaster Lab" – Investigations in Physics and Chemistry
		
		"Energy Conservation Lab" – Investigations in Physics and Chemistry
		
		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)

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6 The student knows the impact of energy transformations in everyday life. **6D** Investigate and compare economic and environmental impacts of using various energy sources.	Including • Rechargeable or disposable batteries, fossil fuels, nuclear, wind, hydroelectric, solar cells, and fuel cells • Differentiate between batteries, generators, transformers, and motors.	
4 The student knows concepts of force and motion evident in everyday life. **4A** Calculate speed, momentum, acceleration, work, and power in systems. Including • The human body • Moving toys • Machines	Calculate Momentum • *apply the concept of conservation of momentum using action and reaction forces such as students on skateboards*	Momentum Labs (water balloon toss, ball drop) Egg throw at bed sheet Egg drop