


IPC Curriculum Bundle #2

Title		Suggested Dates
Motion & Forces		9/14 – 10/2/2009 (14 days)

Big Idea/Enduring Understanding	Guiding Questions
Forces cause changes in motion.	How do people, animals, automobiles, & rockets move? Why are forces essential to all living organisms & applicable to non-living objects?

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)
<p>3 Uses critical thinking and scientific problem solving to make informed decisions.</p> <p>3E Research and describe the history of chemistry/physics and contributions of scientists.</p>	<p>Such as</p> <ul style="list-style-type: none"> • Isaac Newton • Galileo Galilei • Albert Einstein 	
<p>4 The student knows concepts of force and motion evident in everyday life.</p> <p>4A Calculate speed, momentum, acceleration, work, and power in systems. Including</p> <ul style="list-style-type: none"> • The human body • Moving toys • Machines 	<ul style="list-style-type: none"> • Solve for different variables in problems of speed, work, force, momentum, power, and acceleration • Describe the effect on motion by friction • Calculate the net force in a simple system • Distinguish between speed and velocity • Define free fall and explain acceleration due to gravity • Explain why all motion is relative • Compare and contrast average speed, instantaneous speed, and terminal velocity • describe and calculate an object's motion in terms of position, displacement, speed, and acceleration • measure and graph distance and speed as a function of time using moving toys 	<p>SST Lab (Bring your favorite toy and measure it's velocity)</p> <p>“Futball/Soccer Computer Lab” – www.sycd.co.uk/dtg/</p> <p>Acceleration Lab - Investigations in Physics and Chemistry</p> <p>“Basics of Physics: Exploring the Laws of Motion” – video – http://streaming.discoveryeducation.com/search/assetDetail.cfm?guidAssetID=27DE45E9-9B3D-478E-A546-D893FC4D2B92</p>

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<p>4 The student knows concepts of force and motion evident in everyday life.</p> <p>4B Investigate and describe applications of Newton's laws. Including</p> <ul style="list-style-type: none">• Vehicle restraints• Sports activities• Geological processes• Satellite orbits	<ul style="list-style-type: none">• Explain Newton's three laws of motion• Compare balanced and unbalanced forces• Identify modern applications of Newton's laws in a variety of disciplines• Define inertia and describes its effects in daily situations• Explain the relationship between gravity and the universe and how it applies to astronomy.• <i>investigate how an object's motion changes only when a net force is applied, including activities and equipment such as toy cars, vehicle restraints, sports activities, and classroom objects</i>• <i>assess the relationship between force, mass, and acceleration, noting the relationship is independent of the nature of the force, using equipment such as dynamic carts, moving toys, vehicles, and falling objects</i>• <i>describe the gravitational attraction between objects of different masses at different distances, including satellites</i>• <i>examine electrical force as a universal force between any two charged objects and compare the relative strength of the electrical force and gravitational force</i>	<p>“Force, Mass, and Acceleration”, “Weight, Gravity, and Friction” – <u>Investigations in Physics and Chemistry</u></p> <p>Newton's Laws Demonstrations (inertia, weight in an elevator)</p> <p>Bottle Rocket Lab (Pasco/foot pump/bicycle pump)</p> <p>Mu of a Shoe Lab</p>
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