

## Pine Hill Public Schools Curriculum

Content Area:		<b>Science</b>	
Course Title/ Grade Level:		Science – Grade 8	
Unit 1:	Science Practices	Month:	<b>September</b>
Unit 2:	Physics	Month:	<b>October/November</b>
Unit 3:	Physics II	Month:	<b>December/January</b>
Unit 4:	Energy	Month:	<b>January/ March</b>
Unit 5:	Inorganic Chemistry	Month:	<b>March/ April</b>
Unit 6:	ASK Review/ Science and Society	Month:	<b>May/ June</b>
BOE Approval Date:		August 23, 2011	

**Pine Hill Public Schools  
Science Curriculum**

<b>Unit Title:</b> Science Practices		<b>Unit #: 1</b>
<b>Course or Grade Level: 8</b>		<b>Length of Time:</b>
<b>Pacing</b>	•	
<b>Essential Questions</b>	• What is Science?	
<b>Content</b>	<ul style="list-style-type: none"> <li>• Scientific Method</li> <li>• Lab Safety</li> <li>• Fields of Scientific study</li> <li>• Measurements</li> <li>• Scientific Law &amp; Theory</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>• Identify the steps scientists often use to solve problems</li> <li>• Describe why scientists use variables</li> <li>• Compare &amp; contrast science technology</li> <li>• Identify &amp; convert SI units</li> <li>• Analyze data using the various types of graph</li> <li>• Know when and how to use appropriate safety equipment with all classroom materials.</li> <li>• Understand and practice safety procedures for conducting science investigations.</li> <li>• Distinguish between dependent &amp; independent variables</li> </ul>	
<b>Math Skills/ Science Processes</b>	• TBD	
<b>Assessments</b>	• Lab Reports, Tests, Quizzes, Experiments designed by the student	
<b>Interventions / differentiated instruction</b>	• TBD	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>• Math – interpret data for graphs</li> <li>• Social Studies – research and timelines for scientists</li> <li>• Lang Arts – reading, writing, vocabulary</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>• Physical Science; Glencoe-McGraw Hill Science 2002</li> <li>• Resource box for book including tests, worksheets, enhancements, overhead transparencies</li> <li>• <a href="http://www.sciencespot.net">www.sciencespot.net</a> for worksheets</li> <li>• teacher made flash cards for steps of scientific method and examples</li> </ul>	
<b>2009 NJCCCS</b>		
<b>Standard:</b>		
<b>Strand(s):</b>		
<b>Content Statement(s):</b>		<b>CPI # / CPI(s):</b>

<b><u>21<sup>st</sup> Century Themes</u></b>							
	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
<b><u>21<sup>st</sup> Century Skills</u></b>							
	Creativity and Innovation		Critical Thinking and Problem Solving		Communication and Collaboration		Information Literacy
	Media Literacy		ICT Literacy		Life and Career Skills		

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<b>Unit Title:</b> Physics		<b>Unit #: 2</b>
<b>Course or Grade Level: 8</b>		<b>Length of Time:</b>
<b>Pacing</b>	•	
<b>Essential Questions</b>	• What happens in a car crash?	
<b>Content</b>	<ul style="list-style-type: none"> <li>• Motion</li> <li>• Distance &amp; displacement</li> <li>• Speed &amp; Velocity</li> <li>• Motion graphs</li> <li>• Newton's 1<sup>st</sup> Law of Motion</li> <li>• Law of Inertia</li> <li>• Body Systems</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>• Interpret motion graphs</li> <li>• Distinguish between distance &amp; displacement</li> <li>• Explain the difference between speed &amp; velocity</li> <li>• Identify how acceleration, time, and velocity are related</li> <li>• Explain how (+) &amp; (-) acceleration affect motion</li> <li>• Describe how to calculate the acceleration of an object</li> <li>• Describe what inertia is and how it is related to Newton's 1<sup>st</sup> Law of Motion</li> <li>• Identify the forces &amp; motion that are present during a car crash</li> <li>• Identify body systems effected in a car accident</li> </ul>	
<b>Math Skills/ Science Processes</b>	• TBD	
<b>Assessments</b>	• Tests, Quizzes, Labs, Design a demonstration for Newton's 1 <sup>st</sup> law of motion.	
<b>Interventions / differentiated instruction</b>	• TBD	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>• Lang Arts – reading, writing, vocabulary</li> <li>• Math – interpret data for graph</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>• <b>PS Ch2&amp;3,LS –Ch19 pgs 546-549, Ch20 pgs574-577, 583-587, 600-608</b></li> <li>• <b>ES Ch10 pg284</b></li> <li>• Physical Science; Glencoe-McGraw Hill Science 2002</li> <li>• Resource box for book including tests, worksheets, enhancements, overhead transparencies</li> <li>• toy car, ramp, and raw egg to demonstrate importance of seatbelts</li> <li>• broom, plastic container, toilet tissue tube to demonstrate inertia</li> </ul>	

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	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
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**21<sup>st</sup> Century Skills**

	Creativity and Innovation		Critical Thinking and Problem Solving		Communication and Collaboration		Information Literacy
	Media Literacy		ICT Literacy		Life and Career Skills		

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<b>Unit Title:</b> Physics II		<b>Unit #: 3</b>
<b>Course or Grade Level: 8</b>		<b>Length of Time:</b>
<b>Pacing</b>	•	
<b>Essential Questions</b>	• How are forensic science & physics used to examine a car crash?	
<b>Content</b>	<ul style="list-style-type: none"> <li>• Forces</li> <li>• Newton's 2<sup>nd</sup> &amp; 3<sup>rd</sup> Laws of Motion</li> <li>• Friction</li> <li>• Law of Gravitation</li> <li>• Weight</li> <li>• Momentum</li> <li>• Solar System</li> <li>• Birth of sun &amp; star</li> <li>•</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>• Explain how force, mass &amp; acceleration are related</li> <li>• Describe the 3 different types of friction</li> <li>• Observe the effects of air resistance on falling objects</li> <li>• Describe gravitational force</li> <li>• Distinguish between mass &amp; weight</li> <li>• Explain why objects that are thrown or shot will follow a curved path.</li> <li>• Compare motion in a straight line w/ circular motion</li> <li>• Identify when action &amp; reaction forces occur</li> <li>• Demonstrate how it is conserved</li> <li>• Describe what inertia is and how it is related to Newton's 1<sup>st</sup> Law of Motion</li> <li>• Identify the forces &amp; motion that are present during a car crash</li> <li>• Identify body systems effected in a car accident</li> </ul>	
<b>Math Skills/ Science Processes</b>	• TBD	
<b>Assessments</b>	• Tests, Quizzes, Labs, Design a demonstration for Newton's 2 <sup>nd</sup> and 3 <sup>rd</sup> law of motion	
<b>Interventions / differentiated instruction</b>	• TBD	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>• Lang Arts – reading, writing, vocabulary</li> <li>• Math – interpret data for graphs</li> <li>•</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>• PS Ch3, ES Ch 24 &amp; 25</li> <li>• Physical Science; Glencoe-McGraw Hill Science 2002</li> <li>• *Resource box for book including tests, worksheets, enhancements, overhead transparencies</li> </ul>	
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<b>Unit Title:</b> Energy		<b>Unit #: 4</b>
<b>Course or Grade Level: 8</b>		<b>Length of Time:</b>
<b>Pacing</b>	•	
<b>Essential Questions</b>	•	
<b>Content</b>	<ul style="list-style-type: none"> <li>• Kinetic &amp; potential energy</li> <li>• Ways energy can be stored</li> <li>• Calculating KE &amp; GPE</li> <li>• Law of conservation of Energy</li> <li>• Converting mass into energy</li> <li>• Simple machines &amp; work</li> <li>• Energy &amp; Nutrition in the Body</li> <li>• Sound</li> <li>• Earthquakes &amp; Volcanoes</li> <li>•</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>• Distinguish between kinetic &amp; potential energy</li> <li>• Recognize different ways energy can be stored</li> <li>• Calculating KE &amp; GPE</li> <li>• Describe how energy is conserved when changing from one form to another</li> <li>• Apply the law of conservation of energy to familiar situations</li> <li>• Identify different machines &amp; how they work</li> <li>• Explain how energy is used in the body</li> <li>• Identify how sound travels</li> <li>• Describe how sound creates energy</li> <li>• Explain how machines make work easier and describe the six types of simple machines</li> <li>•</li> </ul>	
<b>Math Skills/ Science Processes</b>	• TBD	
<b>Assessments</b>	• Tests, Quizzes, Labs,	
<b>Interventions / differentiated instruction</b>	• TBD	
<b>Inter-disciplinary Connections</b>	• TBD	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>• Phys text-ch4,5,12 Earth text-ch11,12</li> <li>• Life text-ch18p518-535,ch22,ch23</li> <li>• Physical Science; Glencoe-McGraw Hill Science 2002</li> <li>• *Resource box for book including tests, worksheets, enhancements, overhead transparencies</li> </ul>	



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<b>Unit Title:</b> Inorganic Chemistry		<b>Unit #: 5</b>
<b>Course or Grade Level: 8</b>		<b>Length of Time:</b>
<b>Pacing</b>	<ul style="list-style-type: none"> <li>•</li> </ul>	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>• What are the states of matter?</li> <li>• How are they classified?</li> <li>• What are their properties &amp; how do they bond?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>• Kinetic theory</li> <li>• Particle movement &amp; behavior</li> <li>• Atomic structure &amp; mass</li> <li>• Periodical table</li> <li>• Types of bonds</li> <li>• Solutions &amp; Mixtures</li> <li>• Mirrors &amp; Lenses</li> <li>• Genetics</li> <li>•</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>• Explain the kinetic theory of matter</li> <li>• Describe the particle movement in the 4 states of matter</li> <li>• Explain Archimedes', Pascal &amp; Bernoulli's principles &amp; how they are used</li> <li>• Explain how gas exerts pressure on its container</li> <li>• Explain how a gas is affected when pressure, temperature, or volume is changed</li> <li>• Define substances &amp; mixtures</li> <li>• Identify elements &amp; compounds</li> <li>• Compare &amp; contrast solutions, colloids &amp; suspensions</li> <li>• Compare &amp; contrast physical &amp; chemical properties of a substance</li> <li>• Identify the names &amp; symbols of common elements</li> <li>• Describe the electron cloud model of an atom</li> <li>• Explain how electrons are arranged in an atom</li> <li>• Compute the atomic mass &amp; number of an atom</li> <li>• Explain the composition of the periodic table &amp; the terms metal, nonmetal &amp; metalloid</li> <li>• Use the periodic table to obtain information</li> <li>• Identify different mirrors &amp; lenses &amp; how they work</li> <li>• Understand the heredity process &amp; genetic reproduction</li> <li>•</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>• TBD</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>• Tests, Quizzes, Labs, Models, Student demonstrations</li> </ul>	
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>• TBD</li> </ul>	

<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>• History- research and discuss Archimedes and Bernoulli</li> <li>• Math – balancing chemical equation calculations</li> <li>•</li> </ul>						
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>• Phys text-ch16-23,Life text-ch5</li> <li>• Physical Science; Glencoe-McGraw Hill Science 2002</li> <li>• *Life Science; Glencoe-McGraw Hill Science 2002</li> <li>• *Resource box for book including tests, worksheets, enhancements, overhead transparencies</li> <li>• *chex mix, trail mix, balloons, magnetic atom models, mirrors and lenses kit with prisms and light, empty soda bottles, ketchup packets, bottle rocket kit</li> </ul>						
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<b>Unit Title:</b> Science and Society		<b>Unit #: 6</b>
<b>Course or Grade Level: 8</b>		<b>Length of Time:</b>
<b>Pacing</b>	<ul style="list-style-type: none"> <li>•</li> </ul>	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>• How does science affect our daily lives?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>• Scientific Method</li> <li>• Science fair design &amp; procedures</li> <li>• Famous Inventors</li> <li>• Basic forensic science</li> <li>• Ink Chromatography</li> <li>• Handwriting Analysis</li> <li>•</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>• Reinforce &amp; review the scientific method</li> <li>• Design an invention/product to benefit society</li> <li>• Identify known inventors &amp; recognize the usefulness of their inventions</li> <li>• Demonstrate the fingerprinting process</li> <li>• Identify different print classifications</li> <li>• Solve a crime using various forensic techniques</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>• TBD</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>• Tests, Quizzes, Labs, Project to market and sell a new way to use a simple machine, Students will come up with a scientific question and follow the scientific method to solve it for the science fair. Process a crime scene &amp; reveal the guilty party</li> </ul>	
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>• TBD</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>• TBD</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>• TBD</li> </ul>	
<b>2009 NJCCCS</b>		
<b>Standard:</b>		
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Revised: August 28,2012