

Pine Hill Public Schools Curriculum

Content Area:		Science	
Course Title/ Grade Level:		Science – Grade 8	
Unit 1:	Science Practices	Month:	September
Unit 2:	Physics	Month:	October/November
Unit 3:	Physics II	Month:	December/January
Unit 4:	Energy	Month:	January/ March
Unit 5:	Inorganic Chemistry	Month:	March/ April
Unit 6:	ASK Review/ Science and Society	Month:	May/ June
Date Created or Revised:		Spring 2012	
BOE Approval Date:		8/28/12	

**Pine Hill Public Schools
Science Curriculum**

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

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

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

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21st Century Themes

	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
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21st Century Skills

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

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

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21st Century Skills

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

Inter-disciplinary Connections	<ul style="list-style-type: none"> • History- research and discuss Archimedes and Bernoulli • Math – balancing chemical equation calculations • 						
Lesson resources / Activities	<ul style="list-style-type: none"> • Phys text-ch16-23,Life text-ch5 • Physical Science; Glencoe-McGraw Hill Science 2002 • *Life Science; Glencoe-McGraw Hill Science 2002 • *Resource box for book including tests, worksheets, enhancements, overhead transparencies • *chex mix, trail mix, balloons, magnetic atom models, mirrors and lenses kit with prisms and light, empty soda bottles, ketchup packets, bottle rocket kit 						
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**Pine Hill Public Schools
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Unit Title: Science and Society		Unit #: 6
Course or Grade Level: 8		Length of Time:
Pacing	<ul style="list-style-type: none"> • 	
Essential Questions	<ul style="list-style-type: none"> • How does science affect our daily lives? 	
Content	<ul style="list-style-type: none"> • Scientific Method • Science fair design & procedures • Famous Inventors • Basic forensic science • Ink Chromatography • Handwriting Analysis • 	
Skills	<ul style="list-style-type: none"> • Reinforce & review the scientific method • Design an invention/product to benefit society • Identify known inventors & recognize the usefulness of their inventions • Demonstrate the fingerprinting process • Identify different print classifications • Solve a crime using various forensic techniques 	
Math Skills/ Science Processes	<ul style="list-style-type: none"> • TBD 	
Assessments	<ul style="list-style-type: none"> • 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 & reveal the guilty party 	
Interventions / differentiated instruction	<ul style="list-style-type: none"> • TBD 	
Inter-disciplinary Connections	<ul style="list-style-type: none"> • TBD 	
Lesson resources / Activities	<ul style="list-style-type: none"> • TBD 	
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<u>21st Century Skills</u>							
	Creativity and Innovation		Critical Thinking and Problem Solving		Communication and Collaboration		Information Literacy
	Media Literacy		ICT Literacy		Life and Career Skills		