

**Pine Hill Public Schools  
Science Curriculum**

<b>Unit Title: The Nature of Science</b>		<b>Unit # 1</b>
<b>Board Approval Date: August 23, 2011</b>		
<b>Course or Grade Level: Inquiry into the Sciences CP</b>		<b>Length of Time: 1 week</b>
<b>Pacing</b>		
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-How do Scientists explore the world?</li> <li>-How are the many types of science organized?</li> <li>-What are scientific theories, and how are they different from scientific laws?</li> <li>-How can I think and act like a scientist ?</li> <li>-How do scientists measure things?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Root Words</li> <li>-Steps of the scientific method</li> <li>-Controls vs. Variables</li> <li>-Data collection and organization methods</li> <li>- Inquiring, observing, and discovering as a way to build science knowledge from the known to the unknown</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>- List the branches of science</li> <li>- Differentiate between scientific laws and theories</li> <li>- Use the Scientific Method to solve problems</li> <li>- Determine the meaning of a term based on its root words</li> <li>- Design and perform experiments using the scientific method</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs</li> <li>- Creation and usage of data tables</li> <li>- Use of Graphing Calculators</li> <li>-graph of graphs and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-homework/class work</li> <li>-quiz</li> <li>-test</li> <li>-Inquiry lab on scientific method</li> </ul>	
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>-Provide advanced notice of tests</li> <li>-Include hands-on activities</li> <li>-Provide material at student's level of functioning</li> <li>-Use multi sensory approach</li> </ul>	
<b>Inter- disciplinary Connections</b>	<ul style="list-style-type: none"> <li>- Mathematical connections</li> <li>-Connection to English</li> <li>-Science and society</li> <li>-Scientific discoveries and the link to Ethics</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>- Hands-on activities</li> <li>-Laboratories related to the subject matter</li> <li>-Word processing systems</li> <li>-Computer access</li> </ul>	
<b>2009 NJCCCS</b>		
<b>Standard: 5.1</b>		
<b>Strand(s): D</b>		

<b>Content Statement(s):</b>				<b>CPI # / CPI(s):</b>			
Demonstrate how to use scientific tools and instruments and knowledge of how to handle animals with respect for their safety and welfare.							
<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		

**Pine Hill Public Schools  
Science Curriculum**

<b>Unit Title: The Way Science Works</b>		<b>Unit # 2</b>
<b>Course or Grade Level: Inquiry into the Sciences CP</b>		<b>Length of Time: 1 week</b>
<b>Pacing</b>		
<b>Essential Questions</b>	What are the Units of Measurement? What are the tools scientists use? Why is organizing data an important science skill? How do scientists handle very small or very large numbers? How can you tell the precision of a measurement?	
<b>Content</b>	-Data collection and organization methods - Inquiring, observing, and discovering as a way to build science knowledge from the known to the unknown - Presenting scientific data -Writing numbers in scientific notation -Using significant figures	
<b>Skills</b>	-List the tools scientists use to perform experiments -Using correct significant figures when recording numerical data -Creating and using Line, Bar, and Pie Graphs	
<b>Math Skills/ Science Processes</b>	-Use of graphs - Creation and usage of data tables - Use of Graphing Calculators -graph of graphs and charts	
<b>Assessments</b>	homework/class work -quiz -test -Laboratories	
<b>Interventions / differentiated instruction</b>	-Provide advanced notice of tests -Include hands-on activities -Provide material at student's level of functioning -Use multi sensory approach	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>- Mathematical connections</li> <li>- Connection to English</li> <li>- Science and society</li> <li>- Scientific discoveries and the link to Ethics</li> </ul>	
<b>Lesson resources / Activities</b>	- Hands-on activities -Laboratories related to the subject matter -Word processing systems -Computer access	
<b>2009 NJCCCS</b>		
<b>Standard: 5.1</b>		
<b>Strand(s): A,B,C,D</b>		
<b>Content Statement(s):</b>		<b>CPI # / CPI(s):</b>

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

<b>Pine Hill Public Schools Science Curriculum</b>	
<b>Unit Title: Chemistry: Matter</b>	<b>Unit # 3</b>
<b>Course or Grade Level: Inquiry into the Sciences CP</b>	<b>Length of Time: 2 weeks</b>
<b>Pacing</b>	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-How can matter be classified?</li> <li>-Why are Carbon and Copper classified as elements?</li> <li>-How are elements related to compounds?</li> <li>-What is the difference between a pure substance and a mixture?</li> <li>-Why are color, volume and density classified as physical properties?</li> <li>-Why are flammability and reactivity classified as chemical properties?</li> </ul>
<b>Content</b>	<ul style="list-style-type: none"> <li>-Elements and symbols</li> <li>-Compounds</li> <li>-Substance and mixtures</li> <li>-Water</li> <li>-Physical properties</li> <li>-Chemical properties</li> </ul>
<b>Skills</b>	<ul style="list-style-type: none"> <li>- Classifying matter</li> <li>- List the properties of an element</li> <li>- Differentiate between compounds and mixtures</li> <li>- List the three phases of matter</li> <li>- Energy and changes of state</li> <li>- Properties of gas</li> </ul>
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs</li> <li>- Creation and usage of data tables</li> <li>- Use of Graphing Calculators</li> <li>-graph of graphs and charts</li> </ul>
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-homework/class work</li> <li>-quiz</li> <li>-test</li> <li>-Labs on using pH (biological buffers, antacids), building molecular models</li> </ul>
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>-Provide advanced notice of tests</li> <li>-Include hands-on activities</li> <li>-Provide material at student's level of functioning</li> <li>-Use multi sensory approach</li> </ul>

<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>- Mathematical connections</li> <li>- Connection to English</li> <li>- Science and society</li> <li>- Scientific discoveries and the link to Ethics</li> </ul>						
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>- Hands-on activities</li> <li>-Laboratories related to the subject matter</li> <li>-Word processing systems</li> <li>-Computer access</li> </ul>						
<b>2009 NJCCCS</b>							
<b>Standard: 5.3</b>							
<b>Strand(s): A</b>							
					5.3.12.C.1		
<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		

**Pine Hill Public Schools  
Science Curriculum**

<b>Unit Title: Chemistry: Atoms and Interactions</b>		<b>Unit # 4</b>
<b>Course or Grade Level: Inquiry into the Sciences CP</b>		<b>Length of Time: 12 Days</b>
<b>Pacing</b>		
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-What is an atom?</li> <li>Who came up with the first atomic theory?</li> <li>-What is the difference between protons, neutrons, and electrons?</li> <li>-What do all atoms have in common?</li> <li>-What is the modern model of an atom?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>- Modern models of an atom</li> <li>- Electron energy levels</li> <li>- Atomic number and Mass number</li> <li>- Importance of specific elements (carbon, oxygen, hydrogen, nitrogen, phosphorus, sulfur)</li> <li>- Isotopes</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>- Describe the structure and function of the parts of an atom</li> <li>-Describe how atoms interact</li> <li>-Describe the unique properties of atoms</li> <li>-Model (using physical or digital tools) the major categories of inorganic molecules</li> <li>-Conduct experiments to demonstrate the impact of various conditions on atoms</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs</li> <li>- Creation and usage of data tables</li> <li>- Use of Graphing Calculators</li> <li>-graph of graphs and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>- -homework/class work</li> <li>-quiz</li> <li>-test</li> <li>-Laboratories</li> </ul>	
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>-Provide advanced notice of tests</li> <li>-Include hands-on activities</li> <li>-Provide material at student's level of functioning</li> <li>-Use multi sensory approach</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>- Mathematical connections</li> <li>- Connection to English</li> <li>- Science and society</li> <li>- Scientific discoveries and the link to Ethics</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>- Hands-on activities</li> <li>-Laboratories related to the subject matter</li> <li>-Word processing systems</li> <li>-Computer access</li> </ul>	

**2009 NJCCCS**

**Standard:**

**Strand(s):**

**Content Statement(s):** **CPI # / CPI(s):**

**21<sup>st</sup> Century Themes**

	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		

**Pine Hill Public Schools  
Science Curriculum**

**Unit Title: The Periodic Table of Elements**

**Unit # 5**

**Course or Grade Level: Inquiry into the Sciences CP**

**Length of Time: 1 week**

**Pacing**

**Essential Questions**

- How are the elements arranged in the modern periodic table?
- Why do the elements within a group on the periodic table have the same properties?
- What happens to an atom when it gains or loses electrons?
- What are the main categories of elements?

**Content**

- Arrangement of the periodic table
- The role of electrons
- Ion formation
- Classifying elements
- Metals, Non-metals, Noble gases, Halogens
- Semiconductors

**Skills**

- Identifying patterns of elemental properties related to positioning on the periodic table
- Identify the role of electrons in chemical reactions
- List the properties of Metals, Non-metals, Noble gases, Halogens

**Math Skills/  
Science Processes**

- Use of graphs
- Creation and usage of data tables
- Use of Graphing Calculators
- graph of graphs and charts

**Assessments**

- homework/class work
- quiz
- test
- labs on the microscope, investigating cell types

**Interventions /  
differentiated instruction**

- Provide advanced notice of tests
- Include hands-on activities
- Provide material at student's level of functioning
- Use multi sensory approach

**Inter-disciplinary Connections**

- Mathematical connections
- Connection to English
- Science and society
- Scientific discoveries and the link to Ethics

**Lesson resources /  
Activities**

- Hands-on activities
- Laboratories related to the subject matter
- Word processing systems
- Computer access

**2009 NJCCCS**

**Standard: 5.3**

**Strand(s): A. Organization and Development**



<b>Content Statement(s):</b>				<b>CPI # / CPI(s):</b>			
Predict a cells response in a given set of environmental conditions.							
<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		

**Pine Hill Public Schools  
Science Curriculum**

<b>Unit Title: The Structure of Matter</b>		<b>Unit #6</b>
<b>Course or Grade Level: Inquiry into the Sciences CP</b>		<b>Length of Time: 10 days</b>
<b>Pacing</b>		
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-What holds a compound together?</li> <li>-What determines the properties of a compound?</li> <li>-Why do atoms form bonds?</li> <li>-How do ionic compounds form?</li> <li>-What gives metals their distinct properties?</li> <li>-How are compounds named?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Compounds and Molecules</li> <li>-Ionic and Covalent Bonding</li> <li>-Compound names and formulas</li> <li>-Organic and Bio-chemical compounds</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>- Review ionic, covalent, and hydrogen bonding</li> <li>- Use Lewis structures to show the difference between ionic and covalent bonding</li> <li>- Define isotopes and explain how they are used in biological research and medicine</li> <li>- Differentiate between acids and bases</li> <li>- Describe the importance of pH to maintain homeostasis in living things</li> <li>- Explain how structure affects chemical properties</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs</li> <li>- Creation and usage of data tables</li> <li>- Use of Graphing Calculators</li> <li>-graph of graphs and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-Homework/Class work</li> <li>-quiz</li> <li>-test</li> <li>-Labs investigation osmosis and diffusion</li> </ul> <p style="margin-left: 20px;">Benchmark #1</p>	
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>-Provide advanced notice of tests</li> <li>-Include hands-on activities</li> <li>-Provide material at student's level of functioning</li> <li>-Use multi sensory approach</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>- Mathematical connections</li> <li>- Connection to English</li> <li>- Science and society</li> <li>- Scientific discoveries and the link to Ethics</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>- Hands-on activities</li> <li>-Laboratories related to the subject matter</li> <li>-Word processing systems</li> <li>-Computer access</li> </ul>	

**Standard:**

**Strand(s):**

<b>Content Statement(s):</b>	<b>CPI # / CPI(s):</b>

**21<sup>st</sup> Century Themes**

	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		

**Pine Hill Public Schools  
Science Curriculum**

**Unit Title: Chemistry: Chemical Reactions**

**Unit # 7**

**Course or Grade Level: Inquiry into the Sciences CP**

**Length of Time: 2 weeks**

**Pacing**

**Essential Questions**

- When do chemical reactions take place?
- What is the role of oxygen in chemical reactions?
- How do you balance a chemical equation?
- What does a catalyst do?
- What are the factors affecting reaction rates?

**Content**

- The nature of chemical reactions
- Chemical equations
- Balanced equations a mole ratios
- Reaction types
- Electrons and chemical reaction
- Reaction rates and equilibrium

**Skills**

- Describe the reactants and products of a chemical reaction
- List the properties of Endothermic and exothermic reactions
- Balance chemical equations as to show conservation of mass
- Use patterns to identify types of chemical reactions and predict the products
- Use the elemental mass of a compound to determine it's empirical formula

**Math Skills/  
Science Processes**

- Use of graphs
- Creation and usage of data tables
- Use of Graphing Calculators
- graph of graphs and charts

**Assessments**

- Homework/Class work
- quiz
- test
- Cancer activity

**Interventions /  
differentiated instruction**

- Provide advanced notice of tests
- Include hands-on activities
- Provide material at student's level of functioning
- Use multi sensory approach

**Inter-disciplinary Connections**

- Mathematical connections
- Connection to English
- Science and society
- Scientific discoveries and the link to Ethics

**Lesson resources /  
Activities**

- Hands-on activities
- Laboratories related to the subject matter
- Word processing systems
- Computer access

**2009 NJCCCS**

**Standard: 5.3**

<b>Strand(s):</b> B. Matter and Energy Transformations							
<b>Content Statement(s):</b>				<b>CPI # / CPI(s):</b>			
Investigate and describe the complementary relationship between photosynthesis and cellular respiration.							
<u><b>21<sup>st</sup> Century Themes</b></u>							
	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
<u><b>21<sup>st</sup> Century Skills</b></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  
Science Curriculum**

<b>Unit Title: Organic and Biochemical Compounds</b>		<b>Unit # 8</b>
<b>Course or Grade Level: Inquiry into the Sciences CP</b>		<b>Length of Time: 1 week</b>
<b>Pacing</b>		
<b>Essential Questions</b>	-How does structure relate to function in living systems from the cellular level to the level of the organism as a whole?	
<b>Content</b>	<ul style="list-style-type: none"> <li>- Importance of specific elements (carbon, oxygen, hydrogen, nitrogen, phosphorus, sulfur)</li> <li>- Dehydrations synthesis and hydrolysis</li> <li>- Macromolecules (structure and function)</li> <li>- Enzymes (function)</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>- Describe the structure and function of the four major types of organic molecules</li> <li>-Describe how polymers are built and broken down</li> <li>-Describe the unique properties of enzymes</li> <li>-Model (using physical or digital tools) the four major categories of organic molecules</li> <li>-Conduct experiments to demonstrate the impact of various conditions on enzymes</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs</li> <li>- Creation and usage of data tables</li> <li>- Use of Graphing Calculators</li> <li>-graph of graphs and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>- -homework/class work</li> <li>-quiz</li> <li>-test</li> <li>-Labs: Qualitative Identification of macromolecules, miscibility lab</li> </ul>	
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>-Provide advanced notice of tests</li> <li>-Include hands-on activities</li> <li>-Provide material at student's level of functioning</li> <li>-Use multi sensory approach</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>- Mathematical connections</li> <li>- Connection to English</li> <li>- Science and society</li> <li>- Scientific discoveries and the link to Ethics</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>- Hands-on activities</li> <li>-Laboratories related to the subject matter</li> <li>-Word processing systems</li> <li>-Computer access</li> </ul>	
<b>2009 NJCCCS</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		

**Pine Hill Public Schools  
Science Curriculum**

<b>Unit Title: Solutions and Mixtures</b>		<b>Unit #9</b>
<b>Course or Grade Level: Inquiry into the Sciences CP</b>		<b>Length of Time: 1 week</b>
<b>Pacing</b>		
<b>Essential Questions</b>	What is a homogeneous solution? What is a heterogeneous solution? What is solubility? Why is water called the universal solvent?	
<b>Content</b>	-Heterogeneous mixture -Homogeneous mixture -Water: A common solvent -The dissolving process -Solubility -Saturated solutions -Concentration of solutions	
<b>Skills</b>	-Compare and contrast heterogeneous and homogeneous solutions -Describe water's ability to be a solvent -Utilize the molarity equation to model concentration of solutions -Interpret the molarity equation to predict concentration -Describe a saturated solution -Identify types of solutions	
<b>Math Skills/ Science Processes</b>	-Use of graphs - Creation and usage of data tables - Use of Graphing Calculators -graph of graphs and charts	
<b>Assessments</b>	-Homework/Class work -Quiz -Test -Labs/ activities -Performance Assessment	
<b>Interventions / differentiated instruction</b>	-Provide advanced notice of tests -Include hands-on activities -Provide material at student's level of functioning -Use multi sensory approach	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>- Mathematical connections</li> <li>- Connection to English</li> <li>- Science and society</li> <li>- Scientific discoveries and the link to Ethics</li> </ul>	
<b>Lesson resources / Activities</b>	- Hands-on activities -Laboratories related to the subject matter -Word processing systems -Computer access	



**Standard:5.3.12**

**Strand(s):D.3**

**CPI # / CPI(s):**

**21<sup>st</sup> Century Themes**

Global Awareness

Financial, Economic,  
Business, and Entrepreneurial  
Literacy

Civic Literacy

Health Literacy

**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

**Pine Hill Public Schools  
Science Curriculum**

**Unit Title: Acids, Bases and Salts**

**Unit # 10**

**Course or Grade Level: Inquiry into the Sciences CP**

**Length of Time: 7days**

**Pacing**

**Essential Questions**

- What are the properties of acids and bases
- How is pH related to hydronium and hydroxide ion concentrations
- What is a salt?
- What are some household products that contain: acids, bases & salts

**Content**

- Acids
- Bases
- pH
- Acid-Base reactions
- Salts
- Cleaning Products
- Acids, Bases and salts in food

**Skills**

- Differentiate between an acid and base
- Use the pH scale to predict if a liquid is an: acid or base
- List the characteristics of a salt
- Describe an acid base reaction
- Identify acids. Bases and salts in the home

**Math Skills/  
Science Processes**

- Use of graphs
- Creation and usage of data tables
- Use of Graphing Calculators
- graph of graphs and charts

**Assessments**

- Homework/Class work
- quiz
- test
- Labs/activities

**Interventions /  
differentiated instruction**

- Provide advanced notice of tests
- Include hands-on activities
- Provide material at student's level of functioning
- Use multi sensory approach

**Inter-disciplinary Connections**

- Mathematical connections
- Connection to English
- Science and society
- Scientific discoveries and the link to Ethics

**Lesson resources /  
Activities**

- Hands-on activities
- Laboratories related to the subject matter
- Word processing systems
- Computer access

**Standard:5.3.12**

**Strand(s):E.3**

**Content Statement(s): Provide a scientific explanation for the history of life on Earth using scientific evidence.** **CPI # / CPI(s):**

**21<sup>st</sup> Century Themes**

	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
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	Media Literacy		ICT Literacy		Life and Career Skills		
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**Pine Hill Public Schools  
Science Curriculum**

<b>Unit Title: Nuclear Changes</b>		<b>Unit # 11</b>
<b>Course or Grade Level: Inquiry into the Sciences CP</b>		<b>Length of Time: 14 days</b>
<b>Pacing</b>		
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-What is Radioactivity?</li> <li>-What happens when an isotope undergoes radioactive decay?</li> <li>-What holds the nuclei of an atom together?</li> <li>-What is released when the nuclei of a heavy element is released?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>- Nuclear radiation</li> <li>- Nuclear decay</li> <li>- Radioactive decay rates</li> <li>- Nuclear forces</li> <li>- Nuclear Fission and Fusion</li> <li>- Beneficial uses of Nuclear radiation</li> <li>- Risks of Nuclear radiation</li> <li>- Nuclear power</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-List types of Radiation</li> <li>-Describe and debate risks and benefits of Nuclear radiation</li> <li>-List the steps of Nuclear Fission and Nuclear Fusion</li> <li>-Model Radioactive decay</li> <li>-Define Radioactive decay</li> <li>-Describe the process of Nuclear power</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs</li> <li>- Creation and usage of data tables</li> <li>- Use of Graphing Calculators</li> <li>-graph of graphs and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-Homework/ Class work</li> <li>-Quiz</li> <li>-Test</li> <li>-Online activities</li> </ul>	
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>-Provide advanced notice of tests</li> <li>-Include hands-on activities</li> <li>-Provide material at student's level of functioning</li> <li>-Use multi sensory approach</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>- Mathematical connections</li> <li>- Connection to English</li> <li>- Science and society</li> <li>- Scientific discoveries and the link to Ethics</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>- Hands-on activities</li> <li>-Laboratories related to the subject matter</li> <li>-Word processing systems</li> <li>-Computer access</li> </ul>	

**2009 NJCCCS**

**Standard:5.3.12**

**Strand(s):E.3**

**Content Statement(s): Provide a scientific explanation for the Radiation on Earth using scientific evidence.**

**CPI # / CPI(s):**

**21<sup>st</sup> Century Themes**

	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		

**Pine Hill Public Schools  
Science Curriculum**

<b>Unit Title: Physics: Motion</b>		<b>Unit # 12</b>
<b>Course or Grade Level: Inquiry into the Sciences CP</b>		<b>Length of Time: 15 days</b>
<b>Pacing</b>		
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-What is Motion?</li> <li>-What is the difference between speed and velocity?</li> <li>-What changes when an object accelerates?</li> <li>-What are the interactions between force and motion?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>- Observing Motion</li> <li>- Speed and Velocity</li> <li>- Calculating speed</li> <li>- Graphing motion, and acceleration</li> <li>- Fundamental forces</li> <li>- Balanced and unbalanced forces</li> <li>- The force of friction</li> <li>- Friction and motion</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Define motion, speed, velocity and acceleration.</li> <li>-Provide examples of motion, speed, velocity and acceleration</li> <li>-Define and model motion, speed, velocity and acceleration</li> <li>-Provide and explain examples of friction</li> <li>-Recognize that motion, speed, velocity and acceleration are all related forces</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs</li> <li>- Creation and usage of data tables</li> <li>- Use of Graphing Calculators</li> <li>-graph of graphs and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-Homework/ Class work</li> <li>-Quiz</li> <li>-Test</li> <li>-Laboratories</li> <li>-Benchmark #3</li> </ul>	
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>-Provide advanced notice of tests</li> <li>-Include hands-on activities</li> <li>-Provide material at student's level of functioning</li> <li>-Use multi sensory approach</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>- Mathematical connections</li> <li>- Connection to English</li> <li>- Science and society</li> <li>- Scientific discoveries and the link to Ethics</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>- Hands-on activities</li> <li>-Laboratories related to the subject matter</li> <li>-Word processing systems</li> <li>-Computer access</li> </ul>	
<b>2009 NJCCCS</b>		
<b>Standard:5.3.12</b>		

**Strand(s):E.1**

<b>Content Statement(s): Account for the appearance of a novel trait that arose in a given population.</b>	<b>CPI # / CPI(s):</b>

**21<sup>st</sup> Century Themes**

	Global Awa-ress		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		

**Pine Hill Public Schools  
Science Curriculum**

<b>Unit Title: Forces</b>		<b>Unit # 13</b>
<b>Course or Grade Level: Inquiry into the Sciences CP</b>		<b>Length of Time: 18 days</b>
<b>Pacing</b>		
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-What is Gravity?</li> <li>-What makes an object speed-up, slow-down or change direction?</li> <li>-How are mass and weight measured?</li> <li>-Why do fall to the ground when dropped?</li> <li>-How do you calculate the momentum of an object?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Newton's first and second laws</li> <li>-Weight and Mass</li> <li>-Law of universal gravitation</li> <li>-Free fall</li> <li>-Projectile motion</li> <li>-Action and Reaction</li> <li>-Momentum</li> <li>-Conservation of Momentum</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Describe Newton's first and second law of motion</li> <li>-Compare and contrast weight and mass</li> <li>-Utilize the Law of universal gravitation</li> <li>-Explain Free fall</li> <li>-Perform the momentum equations to solve for momentum</li> <li>-Interpret the Law of Momentum</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs</li> <li>- Creation and usage of data tables</li> <li>- Use of Graphing Calculators</li> <li>-graph of graphs and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-Homework/ Class work</li> <li>-Quiz</li> <li>-Test</li> <li>- Labs/activities</li> <li>-Online activities</li> <li>-Performance Assessment</li> </ul>	
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>-Provide advanced notice of tests</li> <li>-Include hands-on activities</li> <li>-Provide material at student's level of functioning</li> <li>-Use multi sensory approach</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>- Mathematical connections</li> <li>- Connection to English</li> <li>- Science and society</li> <li>- Scientific discoveries and the link to Ethics</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>- Hands-on activities</li> <li>-Laboratories related to the subject matter</li> <li>-Word processing systems</li> <li>-Computer access</li> </ul>	



<b>2009 NJCCCS</b>							
<b>Standard:5.3.12</b>							
<b>Strand(s):C.1</b>							
<b>Content Statement(s): Analyze the interrelationships and interdependencies the forces on Earth</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		

**Pine Hill Public Schools  
Science Curriculum**

<b>Unit Title: Work and Energy</b>		<b>Unit # 14</b>
<b>Course or Grade Level: Inquiry into the Sciences CP</b>		<b>Length of Time: 1 week</b>
<b>Pacing</b>		
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-How is work calculated?</li> <li>- What is the relationship between work and power?</li> <li>-What are the six types of simple machine?</li> <li>-What is energy?</li> <li>-How does energy change?</li> <li>-What is the Law of Conservation of Energy?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Power</li> <li>-Machines and Mechanical advantage</li> <li>-The six simple machines</li> <li>-Types of energy</li> <li>-Energy transformations</li> <li>-Law of Conservation of Energy</li> <li>-Efficiency of machines</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Describe how work and power are related</li> <li>-List the six types of simple machines</li> <li>-Compare and contrast potential and kinetic energy</li> <li>-Describe the main types of energy</li> <li>-Interpret the Law of conservation of Energy</li> <li>- Describe Machines and Mechanical advantage</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs</li> <li>- Creation and usage of data tables</li> <li>- Use of Graphing Calculators</li> <li>-graph of graphs and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-Benchmark</li> <li>-Practice performance assessment</li> </ul>	
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>-Provide advanced notice of tests</li> <li>-Include hands-on activities</li> <li>-Provide material at student's level of functioning</li> <li>-Use multi sensory approach</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>- Mathematical connections</li> <li>- Connection to English</li> <li>- Science and society</li> <li>- Scientific discoveries and the link to Ethics</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>- Hands-on activities</li> <li>-Laboratories related to the subject matter</li> <li>-Word processing systems</li> <li>-Computer access</li> </ul>	

**Standard:**

**Strand(s):**

<b>Content Statement(s):</b>	<b>CPI # / CPI(s):</b>

**21<sup>st</sup> Century Themes**

	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		

**Pine Hill Public Schools  
Science Curriculum**

<b>Unit Title: Heat and Temperature</b>		<b>Unit # 15</b>
<b>Course or Grade Level: Inquiry into the Sciences CP</b>		<b>Length of Time: 1 week</b>
<b>Pacing</b>		
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-What does temperature have to do with energy?</li> <li>-What three temperature scales are used?</li> <li>-How does energy transfer happen?</li> <li>-What is a conductor and an insulator?</li> <li>-What happens to heat energy when it is transferred?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>- Temperature and Energy</li> <li>- Temperature scales</li> <li>- Relating temperature to energy scales</li> <li>- Methods of energy transfer</li> <li>- Conductors and Insulators</li> <li>- Specific heat</li> <li>- Laws of Thermodynamics</li> <li>- Heat Engines</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>- Perform experiments using Conductors and Insulators</li> <li>- Relate temperature and energy</li> <li>- Define the Laws of Thermodynamics</li> <li>- Define Specific heat</li> <li>- Describe methods of energy transfer</li> <li>- Describe Specific heat</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs</li> <li>- Creation and usage of data tables</li> <li>- Use of Graphing Calculators</li> <li>-graph of graphs and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-homework/class work</li> <li>-lab safety quiz</li> <li>-performance during lab experiments</li> </ul>	
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>-Provide advanced notice of tests</li> <li>-Include hands-on activities</li> <li>-Provide material at student's level of functioning</li> <li>-Use multi sensory approach</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>- Mathematical connections</li> <li>- Connection to English</li> <li>- Science and society</li> <li>- Scientific discoveries and the link to Ethics</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>- Hands-on activities</li> <li>-Laboratories related to the subject matter</li> <li>-Word processing systems</li> </ul>	

	-Computer access
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**2009 NJCCCS**

**Standard:**

**Strand(s):**

<b>Content Statement(s):</b>	<b>CPI # / CPI(s):</b>

**21<sup>st</sup> Century Themes**

	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		

**Pine Hill Public Schools  
Science Curriculum**

<b>Unit Title: Waves</b>		<b>Unit # 16</b>
<b>Course or Grade Level: Inquiry into the Sciences CP</b>		<b>Length of Time: 1 week</b>
<b>Pacing</b>		
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-What does a wave carry?</li> <li>-How are waves generated?</li> <li>-What are the ways to measure and compare waves?</li> <li>-How do waves behave when they hit a boundary, when they pass around an edge or opening, and when they pass from one medium to another?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Waves</li> <li>-Vibrations and waves</li> <li>-Transverse and longitudinal waves</li> <li>-Surface waves</li> <li>-Wave properties</li> <li>-Reflection, Diffraction and Refraction</li> <li>-Interface</li> <li>-Standing waves</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Define a wave</li> <li>-Describe the Doppler Effect</li> <li>-Perform frequency and wave-length equations</li> <li>-Compare Transverse and longitudinal waves</li> <li>- Compare Reflection, Diffraction and Refraction</li> <li>-Interpret the interactions of various waves</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs</li> <li>- Creation and usage of data tables</li> <li>- Use of Graphing Calculators</li> <li>-graph of graphs and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-Determine the meaning of a term based on its root words</li> <li>- Design and perform experiments using the scientific method</li> </ul>	
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>-homework/class work</li> <li>-quiz</li> <li>-test</li> <li>-Inquiry lab on scientific method</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>-Provide advanced notice of tests</li> <li>-Include hands-on activities</li> <li>-Provide material at student's level of functioning</li> <li>-Use multi sensory approach</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>- Mathematical connections</li> <li>- Connection to English</li> <li>- Science and society</li> <li>- Scientific discoveries and the link to Ethics</li> </ul>	

**Standard:**

**Strand(s):**

<b>Content Statement(s):</b>	<b>CPI # / CPI(s):</b>

**21<sup>st</sup> Century Themes**

	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		

**Pine Hill Public Schools  
Science Curriculum**

<b>Unit Title: Sound and Light</b>		<b>Unit # 17</b>
<b>Course or Grade Level: Inquiry into the Sciences CP</b>		<b>Length of Time: 1 week</b>
<b>Pacing</b>		
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-What are the characteristics of sound?</li> <li>-How do ears help humans hear sound waves?</li> <li>-How do scientific models describe light?</li> <li>-What is the Electromagnetic spectrum?</li> <li>-Why do we see colors?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Properties of sound</li> <li>-Hearing and the ear</li> <li>-Ultrasound and Sonar</li> <li>-Waves and Particles</li> <li>-The Electromagnetic spectrum</li> <li>-Reflection of Light</li> <li>-Seeing colors</li> <li>-Refraction of light</li> <li>-Lenses</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Describe the properties of sound</li> <li>-Describe the properties of light</li> <li>-Interpret the Electromagnetic spectrum</li> <li>-List the properties of waves and Particles</li> <li>-Describe the refraction of light</li> <li>-List the functions of Lenses</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs</li> <li>- Creation and usage of data tables</li> <li>- Use of Graphing Calculators</li> <li>-graph of graphs and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>homework/class work</li> <li>-quiz</li> <li>-test</li> <li>-Laboratories</li> </ul>	
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>-Provide advanced notice of tests</li> <li>-Include hands-on activities</li> <li>-Provide material at student's level of functioning</li> <li>-Use multi sensory approach</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>- Mathematical connections</li> <li>- Connection to English</li> <li>- Science and society</li> <li>- Scientific discoveries and the link to Ethics</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>- Hands-on activities</li> <li>-Laboratories related to the subject matter</li> <li>-Word processing systems</li> <li>-Computer access</li> </ul>	
<b>2009 NJCCCS</b>		



**Standard:**

**Strand(s):**

<b>Content Statement(s):</b>	<b>CPI # / CPI(s):</b>

**21<sup>st</sup> Century Themes**

	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		

**Pine Hill Public Schools  
Science Curriculum**

<b>Unit Title: Electricity and Magnetism</b>		<b>Unit # 18</b>
<b>Course or Grade Level: Inquiry into the Sciences CP</b>		<b>Length of Time: 3 weeks</b>
<b>Pacing</b>		
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-What are the different kinds of electrical charge?</li> <li>-How are electrical potential energy and gravitational potential energy similar?</li> <li>- What is Voltage and Current?</li> <li>-What is magnetism?</li> <li>-How is Earth's magnetic field oriented?</li> <li>-How are magnetism and electrical currents related?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Electric charge and force</li> <li>-Voltage and Current</li> <li>-Electrical energy and Electric power</li> <li>-Types of electrical circuits</li> <li>-Fuses and circuit breakers</li> <li>-Magnets and magnetic fields</li> <li>-Electromagnetism</li> <li>- Types of electrical circuits</li> <li>-Transformers</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Relate Electric charge and force</li> <li>-Describe Voltage and Current</li> <li>-List Types of electrical circuits</li> <li>-Describe Types of electrical circuits</li> <li>-Interpret Types of electrical circuits</li> <li>-Describe magnets and magnetic fields</li> <li>-List the principles of Electrmagnetism</li> <li>-Describe the types of electrical circuits</li> <li>-List the function of a transformer</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs</li> <li>- Creation and usage of data tables</li> <li>- Use of Graphing Calculators</li> <li>-graph of graphs and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>homework/class work</li> <li>-quiz</li> <li>-test</li> <li>-Laboratories</li> </ul>	
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>-Provide advanced notice of tests</li> <li>-Include hands-on activities</li> <li>-Provide material at student's level of functioning</li> <li>-Use multi sensory approach</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>- Mathematical connections</li> <li>- Connection to English</li> <li>- Science and society</li> <li>- Scientific discoveries and the link to Ethics</li> </ul>	

<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>- Hands-on activities</li> <li>-Laboratories related to the subject matter</li> <li>-Word processing systems</li> <li>-Computer access</li> </ul>
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**2009 NJCCCS**

**Standard:**

**Strand(s):**

<b>Content Statement(s):</b>	<b>CPI # / CPI(s):</b>
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**21<sup>st</sup> Century Themes**

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
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Media Literacy	ICT Literacy	Life and Career Skills	
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**Pine Hill Public Schools  
Science Curriculum**

<b>Unit Title: The Earth-Moon-Sun system</b>		<b>Unit # 19</b>
<b>Course or Grade Level: Inquiry into the Sciences CP</b>		<b>Length of Time: 3 weeks</b>
<b>Pacing</b>		
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-What is Rotation and Revolution</li> <li>-How does the Moon affect the Earth</li> <li>-What are the lunar phases?</li> <li>-How is the earth's magnetic field oriented?</li> <li>-How are the motions of the Earth and Moon related?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Rotation and Revolution</li> <li>-Lunar cycles</li> <li>-Tides</li> <li>-Types of phases</li> <li>-The Moon's surface</li> <li>-Types of magnetic fields</li> <li>-Giant impact theory</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Relate Rotation and Revolution</li> <li>-Describe Lunar cycles</li> <li>-List Types of phases</li> <li>-Describe Tides</li> <li>-Describe magnets and magnetic fields</li> <li>-List the principles of Electromagnetism</li> <li>-Describe The Moon's surface</li> <li>-List the principles of the Giant impact theory</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs</li> <li>- Creation and usage of data tables</li> <li>- Use of Graphing Calculators</li> <li>-graph of graphs and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>homework/class work</li> <li>-quiz</li> <li>-test</li> <li>-Laboratories</li> </ul>	
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>-Provide advanced notice of tests</li> <li>-Include hands-on activities</li> <li>-Provide material at student's level of functioning</li> <li>-Use multi sensory approach</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>- Mathematical connections</li> <li>- Connection to English</li> <li>- Science and society</li> <li>- Scientific discoveries and the link to Ethics</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>- Hands-on activities</li> <li>-Laboratories related to the subject matter</li> <li>-Word processing systems</li> <li>-Computer access</li> </ul>	

**Standard:**

**Strand(s):**

<b>Content Statement(s):</b>	<b>CPI # / CPI(s):</b>

**21<sup>st</sup> Century Themes**

	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		

**Pine Hill Public Schools  
Science Curriculum**

<b>Unit Title: Weather</b>		<b>Unit # 20</b>
<b>Course or Grade Level: Inquiry into the Sciences CP</b>		<b>Length of Time: 3 weeks</b>
<b>Pacing</b>		
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-What are the different kinds of weather fronts?</li> <li>-How are climate and weather related?</li> <li>- What is atmospheric pressure?</li> <li>-What are high and low pressure systems?</li> <li>-How is Earth's being affected by humans?</li> <li>-What causes climate?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Atmospheric pressure</li> <li>-Weather and climate</li> <li>-Air masses and weather fronts</li> <li>-Types of weather</li> <li>-Earth's changing climate</li> <li>-How humans effect climate</li> <li>-Global warming</li> <li>-The ozone layer</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Relate weather and climate</li> <li>-Describe Air masses and weather fronts</li> <li>-List Types of weather</li> <li>-Describe Earth's changing climate</li> <li>-Interpret How humans effect climate</li> <li>-List the principles of Global warming</li> <li>-Describe the types of electrical circuits</li> <li>-List the function of the ozone layer</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs</li> <li>- Creation and usage of data tables</li> <li>- Use of Graphing Calculators</li> <li>-graph of graphs and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>homework/class work</li> <li>-quiz</li> <li>-test</li> <li>-Laboratories</li> </ul>	
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>-Provide advanced notice of tests</li> <li>-Include hands-on activities</li> <li>-Provide material at student's level of functioning</li> <li>-Use multi sensory approach</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>- Mathematical connections</li> <li>- Connection to English</li> <li>- Science and society</li> <li>- Scientific discoveries and the link to Ethics</li> </ul>	

<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>- Hands-on activities</li> <li>-Laboratories related to the subject matter</li> <li>-Word processing systems</li> <li>-Computer access</li> </ul>
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**2009 NJCCCS**

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**21<sup>st</sup> Century Themes**

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		

**Pine Hill Public Schools  
Science Curriculum**

<b>Unit Title: Earth's minerals</b>		<b>Unit # 21</b>
<b>Course or Grade Level: Inquiry into the Sciences CP</b>		<b>Length of Time: 3 weeks</b>
<b>Pacing</b>		
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-What are the different kinds of rocks?</li> <li>-How are rocks and minerals formed?</li> <li>- What is a mineral?</li> <li>-What is rock cycle?</li> <li>-How is Earth's minerals used?</li> <li>-How are rocks classified?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Minerals</li> <li>-Mineral formation</li> <li>-The rock cycle</li> <li>-Types of rocks</li> <li>-Elements</li> <li>-The nature of magma</li> <li>-Earth's changing surface</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Relate mineral hardness to composition</li> <li>-Describe how the rock cycle works</li> <li>-List types of rocks</li> <li>-Describe types of elements</li> <li>-Interpret Earth's changing surface</li> <li>-Describe mineral formation</li> <li>-Describe the nature of magma</li> <li>-List the function of rocks and minerals in the global economy</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs</li> <li>- Creation and usage of data tables</li> <li>- Use of Graphing Calculators</li> <li>-graph of graphs and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>homework/class work</li> <li>-quiz</li> <li>-test</li> <li>-Laboratories</li> </ul>	
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>-Provide advanced notice of tests</li> <li>-Include hands-on activities</li> <li>-Provide material at student's level of functioning</li> <li>-Use multi sensory approach</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>- Mathematical connections</li> <li>- Connection to English</li> <li>- Science and society</li> <li>- Scientific discoveries and the link to Ethics</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>- Hands-on activities</li> <li>-Laboratories related to the subject matter</li> <li>-Word processing systems</li> <li>-Computer access</li> </ul>	



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**21<sup>st</sup> Century Themes**

	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		

**Pine Hill Public Schools  
Science Curriculum**

<b>Unit Title: the Solar System</b>		<b>Unit # 22</b>
<b>Course or Grade Level: Inquiry into the Sciences CP</b>		<b>Length of Time: 3 weeks</b>
<b>Pacing</b>		
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-What is a Solar system?</li> <li>-How are the Sun and planets related?</li> <li>- What is the Geocentric model?</li> <li>-What is the origin of the solar system?</li> <li>-What are the inner and outer planets?</li> <li>-How old is our universe?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Planet motion</li> <li>-Planets near and far from the Sun</li> <li>-The Sun, a small regular star</li> <li>-Types of stars</li> <li>-How meteorites occur</li> <li>-Dwarf planets</li> <li>-Types of comets</li> <li>-Life in the Solar System</li> <li>-Other Solar Systems</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Relate planetary motion to distance from the Sun</li> <li>-Describe planets near and far from the Sun</li> <li>-List types of planets</li> <li>-Describe how meteorites occur</li> <li>-Describe how solar systems are formed</li> <li>-List the principles of The Geocentric model</li> <li>-Describe the types of stars</li> <li>-List the function of rotation and revolution</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs</li> <li>- Creation and usage of data tables</li> <li>- Use of Graphing Calculators</li> <li>-graph of graphs and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>homework/class work</li> <li>-quiz</li> <li>-test</li> <li>-Laboratories</li> </ul>	
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>-Provide advanced notice of tests</li> <li>-Include hands-on activities</li> <li>-Provide material at student's level of functioning</li> <li>-Use multi sensory approach</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>- Mathematical connections</li> <li>- Connection to English</li> <li>- Science and society</li> <li>- Scientific discoveries and the link to Ethics</li> </ul>	

<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>- Hands-on activities</li> <li>-Laboratories related to the subject matter</li> <li>-Word processing systems</li> <li>-Computer access</li> </ul>
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**21<sup>st</sup> Century Themes**

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
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Media Literacy	ICT Literacy	Life and Career Skills	
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**Pine Hill Public Schools  
Science Curriculum**

<b>Unit Title: Stars and Galaxies</b>		<b>Unit #23</b>
<b>Course or Grade Level: Inquiry into the Sciences CP</b>		<b>Length of Time: 3 weeks</b>
<b>Pacing</b>		
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-What are the constellations?</li> <li>-How are telescopes used to view other galaxies?</li> <li>- How do stars form?</li> <li>-What is a star?</li> <li>-How is a star's size and color related to it's temperature?</li> <li>-How is and H-R diagram used to classify stars?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Constellations</li> <li>-Types of telescopes</li> <li>-H-R diagram</li> <li>-Types of stars</li> <li>-Structure of our Sun</li> <li>-Life cycle of a star</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Relate star size, color and temperature</li> <li>-Describe the types of stars</li> <li>-List the characteristics of our Sun</li> <li>-Describe how a star is formed</li> <li>-Interpret the H-R diagram</li> <li>-Describe how telescopes are used</li> <li>-List the principles of the Nebular theory</li> <li>-Describe the types of electrical circuits</li> <li>-List the function of a our star</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs</li> <li>- Creation and usage of data tables</li> <li>- Use of Graphing Calculators</li> <li>-graph of graphs and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>homework/class work</li> <li>-quiz</li> <li>-test</li> <li>-Laboratories</li> </ul>	
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>-Provide advanced notice of tests</li> <li>-Include hands-on activities</li> <li>-Provide material at student's level of functioning</li> <li>-Use multi sensory approach</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>- Mathematical connections</li> <li>- Connection to English</li> <li>- Science and society</li> <li>- Scientific discoveries and the link to Ethics</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>- Hands-on activities</li> <li>-Laboratories related to the subject matter</li> <li>-Word processing systems</li> <li>-Computer access</li> </ul>	

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**21<sup>st</sup> Century Themes**

	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		

**Pine Hill Public Schools  
Science Curriculum**

<b>Unit Title: Cosmology</b>		<b>Unit #24</b>
<b>Course or Grade Level: Inquiry into the Sciences CP</b>		<b>Length of Time: 3 weeks</b>
<b>Pacing</b>		
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-What is cosmology?</li> <li>-How is the universe expanding?</li> <li>- How do galaxies form?</li> <li>-What the Big Bang theory?</li> <li>-How is a universe formed?</li> <li>-What is the universe made of?</li> <li>-What is the Milky way</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-The Big Bang Theory</li> <li>-Expansion of the Universe</li> <li>-Types of galaxies</li> <li>-The Milky Way</li> <li>-Dark Matter</li> <li>-Black holes</li> <li>-Hubble Redshift</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Relate the expansion of the universe to Hubble Redshift</li> <li>-Describe The Big Bang Theory</li> <li>-List the of galaxies</li> <li>-Describe The Milky Way</li> <li>-Interpret the H-R diagram</li> <li>-Describe the expansion of the universe</li> <li>-List the principles of Cosmology</li> <li>-Describe how the universe began</li> <li>-List the function of gravity in universal expansion</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs</li> <li>- Creation and usage of data tables</li> <li>- Use of Graphing Calculators</li> <li>-graph of graphs and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>homework/class work</li> <li>-quiz</li> <li>-test</li> <li>-Laboratories</li> </ul>	
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>-Provide advanced notice of tests</li> <li>-Include hands-on activities</li> <li>-Provide material at student's level of functioning</li> <li>-Use multi sensory approach</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>- Mathematical connections</li> <li>- Connection to English</li> <li>- Science and society</li> <li>- Scientific discoveries and the link to Ethics</li> </ul>	

<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>- Hands-on activities</li> <li>-Laboratories related to the subject matter</li> <li>-Word processing systems</li> <li>-Computer access</li> </ul>
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**21<sup>st</sup> Century Themes**

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
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Media Literacy	ICT Literacy	Life and Career Skills	
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Revised: August 28, 2012