

## Pine Hill Public Schools Curriculum

Content Area:	<b>Science</b>		
Course Title/ Grade Level:	Chemistry / 11		
Unit 1:	Scientific Processes	Duration:	<b>5 days</b>
Unit 2:	Matter and Change	Duration:	<b>10 days</b>
Unit 3:	Measurement	Duration:	<b>10 days</b>
Unit 4:	Atomic Structure	Duration:	<b>10 days</b>
Unit 5:	Electrons in Atoms	Duration:	<b>10 days</b>
Unit 6:	<b>The Periodic Table</b>	Duration:	<b>15 days</b>
Unit 7:	Chemical Bonds: Ionic and Metallic	Duration:	<b>10 days</b>
Unit 8:	Covalent Bonding	Duration:	<b>5 days</b>
Unit 9:	<b>Chemical Formulas</b>	Duration:	<b>10 days</b>
Unit 10:	Chemical Quantities	Duration:	<b>15 days</b>
Unit 11:	Chemical Reactions	Duration:	<b>10 days</b>
Unit 12:	<b>Stoichiometry</b>	Duration:	<b>10 days</b>
Unit 13:	States of Matter	Duration:	<b>15 days</b>
Unit 14:	Solutions	Duration:	<b>15 days</b>
Unit 15:	Chemical Equilibrium	Duration:	<b>5 days</b>
Unit 16:	Acid-Base Theories	Duration:	<b>10 days</b>
Unit 17:	Oxidation-Reduction Reactions	Duration:	<b>5 days</b>
Unit 18:	Nuclear Chemistry	Duration:	<b>10 days</b>
Date Created or Revised:	2011		
BOE Approval Date:	8/28/12		

**Pine Hill Public Schools  
Science Curriculum**

<b>Unit Title:</b> Scientific Processes		<b>Unit # 1</b>
<b>Course or Grade Level:</b> CP Chemistry		<b>Length of Time:</b> 5 days
<b>Pacing</b>	Scientific Processes - 1 week	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>- How do scientists solve problems?</li> <li>- What is it that chemists do and how does chemistry affect us in our daily lives?</li> <li>- How can we perform labs safely, use the collected data and interpret it correctly?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Steps of the scientific method</li> <li>-Controls vs. Variables</li> <li>-Data collection and organization methods</li> <li>-Lab Safety</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>- 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> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-homework/class work</li> <li>-quizzes</li> <li>-tests</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>-Computer access</li> </ul>	
<b>2009 NJCCCS</b>		
<b>Standard:</b> 5.1		
<b>Strand(s):</b> D		
<b>Content Statement(s):</b>		<b>CPI # / CPI(s):</b>
Demonstrate how to use scientific tools and instruments		

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

x	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	x	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:</b> Matter and Change		<b>Unit # 2</b>
<b>Course or Grade Level:</b> CP Chemistry		<b>Length of Time:</b> 10 days
<b>Pacing</b>	Properties of Matter – 1 week    Classification of Matter – 1 week	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-What are the properties of matter?</li> <li>-How is matter classified?</li> <li>-How are compounds and mixtures different?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Lab Safety</li> <li>-Chemical and physical properties</li> <li>-Mixtures and compounds</li> <li>-Physical and chemical properties</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Identify and use laboratory equipment</li> <li>-Perform labs and be able to draw scientific conclusions</li> <li>-Compare and contrast properties of matter</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>- Creation and usage of data tables</li> <li>-Making mathematical calculations with derived data</li> </ul>	
<b>Assessments</b>	homework/class work <ul style="list-style-type: none"> <li>-quizzes</li> <li>-tests</li> <li>-Labs Density, Chemical and physical properties</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>- Science and society</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>-Computer access</li> </ul>	

**2009 NJCCCS**

**Standard:** 5.2.12

**Strand(s):** A

**Content Statement(s):** Account for the physical properties of solids, liquids and gases

**CPI # / CPI(s):** 5.2.12.A.2

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

x	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	x	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:</b> Measurement		<b>Unit #3</b>
<b>Course or Grade Level:</b> CP Chemistry		<b>Length of Time:</b> 10 days
<b>Pacing</b>	Scientific Measurements – 1 week, Significant digits – 1 week	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-How do you evaluate accuracy and precision?</li> <li>-Why must measurements be reported to the correct number of significant digits?</li> <li>-What units are used in scientific measurements?</li> <li>-Why is dimensional analysis useful?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>- Accuracy, precision and error</li> <li>- Significant figures</li> <li>- SI Units</li> <li>- -Dimensional analysis</li> </ul>	
<b>Skills</b>	Mathematical – making measurements and using conversion factors	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Creation and usage of data tables</li> <li>-Use of charts</li> <li>- Calculating density</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-homework/class work</li> <li>-quizzes</li> <li>-tests</li> <li>-labs : Density</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> </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>-</li> <li>-Computer access</li> </ul>	

**2009 NJCCCS**

**Standard:** 5.1

5.3.12.0

**Strand(s):** B

**Content Statement(s):** Design investigations, collect evidence and analyze data

**CPI # / CPI(s):** 5.1.12.B.1

x	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	x	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:</b> Atomic Structure		<b>Unit # 4</b>	
<b>Course or Grade Level:</b> CP Chemistry		<b>Length of Time:</b> 10 days	
<b>Pacing</b>	Atomic Structure – 2 weeks		
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>- How has the model of atomic structure changed over time?</li> <li>- What are three kinds of subatomic particles?</li> <li>- How can you distinguish between different types of atoms?</li> </ul>		
<b>Content</b>	<ul style="list-style-type: none"> <li>- Early models of the atom</li> <li>- Structure of the nuclear atom</li> <li>- Atomic number and Atomic mass</li> </ul>		
<b>Skills</b>	<ul style="list-style-type: none"> <li>-compare and contrast different models of atomic structure</li> <li>-compare isotopes of the same atom through lab modeling</li> </ul>		
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>- Creation and usage of data tables</li> <li>- Use of charts</li> </ul>		
<b>Assessments</b>	<ul style="list-style-type: none"> <li>- -homework/class work</li> <li>-quizzes</li> <li>-tests</li> <li>-Labs: Lab on Imaginary Isotopes</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>- Scientific discoveries and effects on society</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:5.1.12</b>			
<b>Strand(s):C</b>			
<b>Content Statement(s): Reflect on and revise understandings as new evidence emerges</b>		<b>CPI # / CPI(s): 5.1.12.C.1</b>	
<b><u>21<sup>st</sup> Century Themes</u></b>			
X	Global Awareness	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy
			Health Literacy



21<sup>st</sup> Century Skills

	Creativity and Innovation	X	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> Electrons in Atoms		<b>Unit #5</b>
<b>Course or Grade Level:</b> CP Chemistry		<b>Length of Time:</b> 10 days
<b>Pacing</b>	Quantum mechanical model – 1 week, Electron Configurations – 1 week	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>- What does the quantum mechanical model of the atom determine about the electrons in the atom?</li> <li>- How do sublevels of principal energy levels differ?</li> <li>- What are the three rules for writing electron configurations of elements?</li> <li>- How does the quantum model explain the behavior of light?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>- The Quantum model of the atom</li> <li>- Electron configurations</li> <li>- Atomic Spectra</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>- Comparing and contrasting different models of the atom</li> <li>- Using the periodic table to determine electron configurations</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>- Creation and usage of data tables</li> <li>- graphs and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-homework/class work</li> <li>-quizzes</li> <li>-tests</li> <li>-lab on flame tests</li> <li>Benchmark #1</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>- Scientific discoveries and the links to society</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:</b> 5.1.12 , 5.1.12		
<b>Strand(s):</b> C , D		
<b>Content Statement(s):</b> Reflect on and revise understandings as new evidence emerges. Represent ideas using tables and diagrams.		<b>CPI # / CPI(s):</b> CPI # / CPI(s): 5.1.12.C.1, 5.1.12.D.2

<u>21<sup>st</sup> Century Themes</u>							
x	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
<u>21<sup>st</sup> Century Skills</u>							
	Creativity and Innovation	x	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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<b>Unit Title: The Periodic Table</b>		<b>Unit #6</b>
<b>Course or Grade Level: CP Chemistry</b>		<b>Length of Time: 15 days</b>
<b>Pacing</b>	Periodic Table – 7 days, Electron configuration – 8 days	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>- How did chemists and Mendeleev organize the known elements?</li> <li>- How is the modern periodic table organized?</li> <li>- What are the three broad classes of elements?</li> <li>- How can elements be classified based on their electron configurations?</li> <li>- What are the periodic trends for elements based on atomic size and electronegativity?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>- Organizing and classifying the elements</li> <li>- Periodic trends</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>- Organizing the elements into metals, nonmetals and metalloids</li> <li>- Classifying the elements according to groups and periods</li> <li>- Comparing and contrasting periodic trends in atomic radius, ionic radius, and electronegativity</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs and charts</li> <li>- Creation and usage of data tables</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-Homework/Class work</li> <li>-quizzes</li> <li>-tests</li> <li>-Labs investigation: Alkalai Metals and Alkaline Earth Metals 3 dimensional model of atomic electronegativity</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:5.2.12</b>		
<b>Strand(s):A</b>		
<b>Content Statement(s): Predict the placement of unknown elements on the periodic table based on their physical and chemical properties</b>		<b>CPI # / CPI(s): 5.2.12.A.3</b>

<b><u>21<sup>st</sup> Century Themes</u></b>							
x	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	x	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:</b> Chemical Bonds: Ionic and Metallic		<b>Unit # 7</b>
<b>Course or Grade Level:</b> CPChemistry		<b>Length of Time:</b> 10 days
<b>Pacing</b>	Ionic and Metallic Compounds –1 week , Bond Formation – 1 week	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-How do you find the number of valence electrons in an atom?</li> <li>-How are cations and anions formed?</li> <li>-What are the properties of ionic and molecular compounds?</li> <li>-How can you model the valence electrons of metals?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Formation of ions</li> <li>-Formation of ionic compounds and the properties of ionic compounds</li> <li>Bonding in metals</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Determine valence electrons using periodic table</li> <li>-Determine formation of cations and anions using the periodic table</li> <li>-Predict formation of ionic compounds</li> <li>-Compare and contrast ionic, molecular, and metallic bonds?</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs and charts</li> <li>- Creation and usage of data tables</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>--Homework/Class work</li> <li>-quizzes</li> <li>-tests</li> <li>-Lab: 2 dimensional model of formation of ionic compounds</li> <li>Formation of an alloy</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>-Computer access</li> </ul>	
<b>2009 NJCCCS</b>		
<b>Standard:</b> 5.2.12		
<b>Strand(s):</b> B		
<b>Content Statement(s):</b> Model how the outermost electrons determine the reactivity of elements and the nature of the chemical bonds they form		<b>CPI # / CPI(s):</b> 5.2.12.B.1

<u>21<sup>st</sup> Century Themes</u>							
x	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
<u>21<sup>st</sup> Century Skills</u>							
	Creativity and Innovation	x	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:</b> Covalent Bonding		<b>Unit # 8</b>
<b>Course or Grade Level:</b> CP Chemistry		<b>Length of Time:</b> 5 days
<b>Pacing</b>	Covalent Bonding – 1 week	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-What information does a molecular formula provide?</li> <li>-How do melting and boiling points of molecular compounds differ from those of ionic compounds?</li> <li>-How are compounds shaped?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Molecules and molecular compounds</li> <li>- The nature of the octet rule in covalent bonding</li> <li>-Formation of double and triple covalent bonds and their effects on bond dissociation energies</li> <li>-VSEPR theory</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Comparing and contrasting molecular and ionic compounds</li> <li>-Comparing single, double and triple covalent bonds</li> <li>-Predicting the shape of molecules</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs and charts</li> <li>- Creation and usage of data tables</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-Homework/Class work</li> <li>-quizzes</li> <li>-tests</li> <li>Lab: Determine chemical formula using the drop method in formation of precipitates</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(s):</b> 5.2.12		
<b>Strand(s):</b> B,C		
<b>Content Statement:</b> Model how the outermost electrons determine the nature of the bonds they form. Account for any trends in the melting and boiling points of various compounds		<b>CPI # / CPI(s):</b> 5.2.12.B.1, 5.2.12.C2



<u>21<sup>st</sup> Century Themes</u>							
x	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
<u>21<sup>st</sup> Century Skills</u>							
	Creativity and Innovation	x	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: Chemical Formulas</b>		<b>Unit # 9</b>
<b>Course or Grade Level: CP Chemistry</b>		<b>Length of Time: 10 days</b>
<b>Pacing</b>	Chemical Formulas – 2 weeks	
<b>Essential Questions</b>	How are ionic compounds named and their formulas written? How are molecular compounds named and their formulas written? How are acids and bases named and their formulas written?	
<b>Content</b>	<ul style="list-style-type: none"> <li>- Naming of monatomic and polyatomic ions</li> <li>- Naming and writing formulas for ionic compounds</li> <li>- Naming and writing formulas for molecular compounds</li> <li>- Naming and writing formulas for acids and bases</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>- Differentiating between types of ions</li> <li>- Comparing and contrasting ionic and molecular compounds</li> <li>- Comparing and contrasting acids and bases</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>- Creation and usage of data tables</li> <li>-use of graphs and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-Homework/Class work</li> <li>-Practice writing and naming chemical formulas</li> <li>-Quizzes</li> <li>-Tests, including Benchmark #2</li> <li>-Labs/ activities: Cooperative learning groups – Naming and writing formulas</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>-Computer access</li> </ul>	
<b>2009 NJCCCS</b>		
<b>Standard:5.1.12</b>		
<b>Strand(s):D</b>		
<b>Content Statement(s):Engage in multiple forms of discussion in order to process, make sense of, and learn from other’s ideas. Represent ideas using literal representations, such as tables and charts</b>		<b>CPI # / CPI(s): 5.1.12.D.1, 5.1.12.D.2</b>

<u>21<sup>st</sup> Century Themes</u>							
x	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
<u>21<sup>st</sup> Century Skills</u>							
	Creativity and Innovation	x	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:</b> Chemical Quantities		<b>Unit # 10</b>
<b>Course or Grade Level:</b> CPChemistry		<b>Length of Time:</b> 15 days
<b>Pacing</b>	Chemical Quantities – 3 weeks	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-How is Avogadro’s number related to the mole of any substance?</li> <li>-How is the atomic mass of an element related to the molar mass of an element?</li> <li>-How is the mass of a mole of a compound calculated?</li> <li>-How do you convert the mass and volume of substances to the number of moles of the substance?</li> <li>-How do you calculate the percent by mass of an element in a compound?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Measuring matter</li> <li>-Mass of a mole of an element</li> <li>-Mass of a mole of a compound</li> <li>-Mole-Mass and Mole-Volume relationships</li> <li>-Percent composition and chemical formulas</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Comparing different methods of measuring substances</li> <li>-Calculating atomic and molecular masses</li> <li>-Computing mass-mole and mass-volume relationships</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of flow diagrams, ie, the mole diagram</li> <li>- Use of data tables and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-Homework/Class work</li> <li>-quizzes</li> <li>-tests</li> <li>-Labs/activities: Percent composition of a hydrate</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>-Computer access</li> </ul>	
<b>2009 NJCCCS</b>		
<b>Standard:5.1.12</b>		
<b>Strand(s):D</b>		
<b>Content Statement(s): Representing ideas using literal</b>		<b>CPI # / CPI(s): 5.1.12.D. 2</b>

<b>representations, such as tables and diagrams</b>							
<u><b>21<sup>st</sup> Century Themes</b></u>							
x	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	x	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:</b> Chemical Reactions		<b>Unit # 11</b>
<b>Course or Grade Level:</b> CP Chemistry		<b>Length of Time:</b> 10 days
<b>Pacing</b>	Chemical Equations – 1 week, Types of Chemical Reactions – 1 week	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>- How do you write a word equation?</li> <li>- How do you write a skeleton equation</li> <li>- What are the steps in writing a balanced chemical equation?</li> <li>_ What are the five general types of chemical reactions?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Chemical equations</li> <li>-Balancing chemical equations</li> <li>-Identifying types of chemical reactions</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Writing chemical equations</li> <li>-Mathematically balancing chemical reactions</li> <li>-comparing and contrasting different types of chemical reactions</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs and charts</li> <li>- Creation and usage of data tables</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-Homework/ Class work</li> <li>-Quizzes</li> <li>-Tests</li> <li>-Online activities</li> <li>-Labs: Copper mining</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:5.2.12</b>		
<b>Strand(s):B</b>		
<b>Content Statement(s):Balance chemical equations by applying the law of conservation of mass.</b>		<b>CPI # / CPI(s): 5.2.12.B.3</b>

<u><b>21<sup>st</sup> Century Themes</b></u>							
x	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	x	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: Stoichiometry</b>		<b>Unit # 12</b>
<b>Course or Grade Level: CPChemistry</b>		<b>Length of Time: 10 days</b>
<b>Pacing</b>	Stoichiometry – 2 weeks	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-In terms of what quantities can you interpret a balanced chemical equation?</li> <li>-What is the general procedure for solving a stoichiometric problem?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Interpreting chemical equations</li> <li>-Writing and using mole ratios</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-making predictions based on data presented</li> <li>-use of mole diagram in solving stoichiometric problems</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>- Creation and usage of data tables</li> <li>-Use of diagrams and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-Homework/ Class work</li> <li>-Quizzes</li> <li>-Tests</li> <li>-Predicting the amount of product in a chemical reaction</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:5.1.12**

**Strand(s):B**

**Content Statement(s): Revise predictions and explanations using evidence and connecting them to scientific knowledge, models and theories.**

**CPI # / CPI(s): 5.1.12.B.3**

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

x	Global Awa-reness		Financial, Economic, Business, and Entrepreneurial		Civic Literacy		Health Literacy
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			Literacy				
<u>21<sup>st</sup> Century Skills</u>							
	Creativity and Innovation	x	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:</b> States of Matter		<b>Unit # 13</b>
<b>Course or Grade Level:</b> CP Chemistry		<b>Length of Time:</b> 15 days
<b>Pacing</b>	Kinetic theory – 1 week, Gas Laws – 2 weeks	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-How does kinetic theory explain the nature and properties of gases, liquids and solids</li> <li>-How are the conditions at which phase changes occur on a phase diagram?</li> <li>-What are three factors that affect gas pressure</li> <li>-How are pressure, volume and temperature of a gas related?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Kinetic theory and the model for gases, liquids and solids</li> <li>-Phase diagrams</li> <li>-Factors affecting gas pressure</li> <li>-Boyle’s law, Charles’ Law, Gay-Lussac’s Law, Combined Gas Law, Ideal Gas Law, Dalton’s Law of Partial Pressures and Graham’s Law of Diffusion</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Comparing and contrasting the properties of solids, liquids and gases</li> <li>-Ability to read a phase diagram</li> <li>-Predict by computation changes in pressure, volume and temperature</li> <li>-Calculate mass of an unknown gas given the mass of a known gas</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>- Use of charts</li> <li>- Creation and usage of data tables</li> <li>- Computations using gas laws</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-Homework/ Class work</li> <li>-Quizzes</li> <li>-Tests</li> <li>- Labs : Heating and Cooling curves, Graham’s Law lab</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>- 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>-Computer access</li> </ul>	
<b>2009 NJCCCS</b>		
<b>Standard:5.2.12</b>		
<b>Strand(s):C</b>		
<b>Content Statement(s): Use the kinetic molecular theory to describe and explain the properties of solids, liquids and gases. Account for any trends in the melting</b>		<b>CPI # / CPI(s): 5.2.12.C1, 5.2.12.C.2</b>

<b>points and boiling points of various compounds.</b>							
<b><u>21<sup>st</sup> Century Themes</u></b>							
x	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	x	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:</b> Solutions		<b>Unit # 14</b>
<b>Course or Grade Level:</b> CPChemistry		<b>Length of Time:</b> 15 days
<b>Pacing</b>	Properties of Solutions – 1 weeks, Molarity and molality – 2 weeks	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-What is the difference between a solute and a solvent?</li> <li>-What is the difference between a solution, a suspension, and a colloid?</li> <li>-What factors determine the rate at which a solute will dissolve?</li> <li>-How is solubility usually expressed?</li> <li>-How are concentrations expressed quantitatively?</li> <li>-How are freezing-point depression and boiling-point elevation related to molality?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Solvents and solutes</li> <li>-Suspensions, colloids and solutions</li> <li>-Solubility and factors affecting solubility</li> <li>-Molarity and molality</li> <li>-Freezing-point depression and Boiling-point elevation</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Interpretation of a solubility graph</li> <li>-Contrasting solutions, suspensions and colloids</li> <li>-Calculating Molarity and molality</li> <li>-Calculating freezing-point depression and boiling-point elevation</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>- Creation and usage of data tables</li> <li>-reading of graphs and charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-Homework/ Class work</li> <li>-Quizzes</li> <li>-Tests</li> <li>- Labs : Determining molecular mass by boiling-point elevation</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>- 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>-Computer access</li> </ul>	
<b>2009 NJCCCS</b>		
<b>Standard:5.2.12</b>		
<b>Strand(s):A,C</b>		

<b>Content Statement(s): Describe the process by which solutes dissolve in solvents. Account for any trends in the melting points and boiling points of various compounds</b>			<b>CPI # / CPI(s): 5.1.12.A.5, 5.1.12.C.2</b>				
<u><b>21<sup>st</sup> Century Themes</b></u>							
x	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	x	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:</b> Chemical Equilibrium		<b>Unit # 15</b>
<b>Course or Grade Level:</b> CP Chemistry		<b>Length of Time:</b> 5 days
<b>Pacing</b>	Chemical Equilibrium – 1 week	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-What four factors influence the rate of a chemical reaction?</li> <li>-What three stresses can cause a change in the equilibrium position of a chemical system?</li> <li>-How can LeChatalier’s Principle be used to predict the changes in the concentration of reactants or products?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Collision theory</li> <li>-Energy change graphs</li> <li>-Reversible reactions and chemical equilibrium</li> <li>-LeChatalier’s Principle</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-contrasting factors influencing the rate of a chemical reaction</li> <li>-interpreting energy change graphs</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>-Use of graphs</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-Homework/ Class work</li> <li>-Quizzes</li> <li>-Tests</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>-Computer access</li> </ul>	
<b>2009 NJCCCS</b>		
<b>Standard:5.1.12</b>		
<b>Strand(s):B</b>		
<b>Content Statement(s): Revise predictions and explanations using evidence and connect those to established scientific knowledge, models and theories</b>		<b>CPI # / CPI(s): 5.1.12.B.3</b>

21<sup>st</sup> Century Themes

x	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
<u>21<sup>st</sup> Century Skills</u>							
	Creativity and Innovation	x	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:</b> Acid-Base Theories		<b>Unit # 16</b>
<b>Course or Grade Level:</b> CPChemistry		<b>Length of Time:</b> 10 days
<b>Pacing</b>	Acids and Bases – 2 weeks	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-What are the properties of acids and bases?</li> <li>-How did Arrhenius define an acid and a base?</li> <li>-How did Bronsted-Lowry define an acid and a base?</li> <li>-How did Lewis define and acid and a base?</li> <li>-How is the hydrogen-ion concentrations used to classify a solution as neutral, acidic or basic?</li> <li>-What are the products of the reaction of an acid with a base?</li> <li>-What is the endpoint of a titration?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Arrhenius acids and bases</li> <li>-Bronsted-Lowry acids and bases</li> <li>-Lewis acids and bases</li> <li>-The pH concept</li> <li>-Acid/Base reactions and Titration</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Comparing and contrasting properties of acids and bases</li> <li>-Comparing theories of acid and base formation</li> <li>-Measuring pH</li> <li>-Titrating an acid base reaction to endpoint</li> </ul>	
<b>Math Skills/ Science Processes</b>	-reading of graphs and charts	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-homework/class work</li> <li>-quizzes</li> <li>-tests</li> <li>-Lab: Acid/Base Titration</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               <ul style="list-style-type: none"> <li>-Use multi sensory approach Mathematical connections</li> </ul> </li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <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</li> </ul>	

**2009 NJCCCS**

**Standard:5.2.12**

**Strand(s):A**



<b>Content Statement(s): Relate the pH scale to the concentrations of various acids and bases</b>					<b>CPI # / CPI(s): 5.2.12.A.6</b>		
<u><b>21<sup>st</sup> Century Themes</b></u>							
x	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	x	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:</b> Oxidation-Reduction Reactions		<b>Unit # 17</b>
<b>Course or Grade Level:</b> CP Chemistry		<b>Length of Time:</b> 5 days
<b>Pacing</b>	Redox - Reactions	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-How is the gain or loss of electrons linked to oxidation and reduction?</li> <li>-What is corrosion and how does it affect our environment?</li> <li>-How are oxidation and reduction defined in terms of a change in oxidation number?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Redox reactions</li> <li>-Corrosion</li> <li>-Assigning oxidation numbers</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Comparing and contrasting oxidation and reduction</li> <li>-Calculating oxidation numbers</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>- Creation and usage of data tables and charts</li> </ul>	
<b>Assessments</b>	homework/class work <ul style="list-style-type: none"> <li>-quiz</li> <li>-test</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>- 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>-Computer access</li> </ul>	

**2009 NJCCCS**

**Standard:5.2.12**

**Strand(s):B**

**Content Statement(s): Describe oxidation and reduction reactions, and give examples of oxidation and reduction reactions that have an impact on the environments, such as corrosion and the burning of fuel.**

**CPI # / CPI(s): 5.2.12.B.2**

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

Global Awareness	Financial, Economic,	Civic Literacy	Health Literacy
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x			Business, and Entrepreneurial Literacy				
<u>21<sup>st</sup> Century Skills</u>							
	Creativity and Innovation	x	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:</b> Nuclear Chemistry		<b>Unit # 18</b>
<b>Course or Grade Level:</b> CPChemistry		<b>Length of Time:</b> 10 days
<b>Pacing</b>	Nuclear Radiation – 1 week, Nuclear Reactions – 1 week	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>-What are the three main types of nuclear radiation?</li> <li>-How much of a sample of a radioisotope remains after each half-life?</li> <li>-What are two ways that transmutation can occur?</li> <li>-What happens in a nuclear chain reaction?</li> <li>-How do nuclear fission and fusion differ?</li> <li>-How are radioisotopes used in medicine?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>-Radiation</li> <li>-Nuclear stability and decay</li> <li>-Transmutation reactions</li> <li>-Nuclear fission and fusion</li> <li>-Radiation in your life</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>-Comparing and contrasting the types of radiation</li> <li>-Calculating radioactive decay</li> <li>Comparing nuclear fission with nuclear fusion</li> </ul>	
<b>Math Skills/ Science Processes</b>	<ul style="list-style-type: none"> <li>- Usage of data tables</li> <li>-Usage of charts</li> </ul>	
<b>Assessments</b>	<ul style="list-style-type: none"> <li>-homework/class work</li> <li>-quizzes</li> <li>-tests</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>-Computer access</li> </ul>	
<b>2009 NJCCCS</b>		
<b>Standard: 5.2.12</b>		
<b>Strand(s):A</b>		
<b>Content Statement(s): Explain how the properties of isotopes, including half-lives, decay modes, and nuclear resonances, lead to useful application of isotopes</b>		<b>CPI # / CPI(s): 5.2.12.A.4</b>

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