

**VECC**  
**Seventh Grade Science Curriculum 2008**  
**Introduction to Physical Science (Glencoe; 2008)**

**Unit 1: The Nature of Science**  
**Approximate Time: 2 weeks**  
**Essential question: *How can scientific results be justified and communicated to others?***

<b>Suggested Time Line</b>	<b>Content</b>	<b>NJCCC Standards*</b>	<b>Instructional Objectives</b>	<b>Assessment</b>	<b>Instructional Domain</b>	<b>Instructional Activities** (General)</b>
<b>Chapter 1: (1 week)</b> The Nature of Science  Sections: 1,2	Scientific inquiry	5.1.8.A.3-4 5.1.8.B.1-3  5.2.8.A.1-3	Define science. Identify the main branches of science. Describe the difference between an observation and an inference. Apply the scientific method.	Entry level <ul style="list-style-type: none"> <li>▪ Options to Diagnose Entry-Level Skills and Knowledge</li> <li>▪ Pre-tests</li> </ul> Progress monitoring <ul style="list-style-type: none"> <li>▪ Homework</li> </ul>	Inquiry Direct instruction Identifying misconceptions Student text Differentiation Flexible grouping Guided reading Applying math Modeling Leveled resources Scaffolding Independent reading and writing Cooperative learning Brainstorming Categorizing Jigsaw Learning contracts Learning logs Peer partner learning Reflective discussion Word wall	Experiments: <ul style="list-style-type: none"> <li>▪ Launch Labs</li> <li>▪ Minilabs</li> <li>▪ Labs</li> </ul> Reading/Writing skills <ul style="list-style-type: none"> <li>▪ Note-taking</li> <li>▪ Outlining</li> <li>▪ Journal topics</li> <li>▪ Essays</li> <li>▪ Reading Essentials</li> <li>▪ Foldables</li> <li>▪ Vocabulary</li> <li>▪ Graphic organizers</li> </ul> Technology <ul style="list-style-type: none"> <li>▪ Internet research</li> <li>▪ PowerPoint</li> <li>▪ Publisher</li> <li>▪ Excel</li> <li>▪ Web quests</li> </ul> Real life applications <ul style="list-style-type: none"> <li>▪ Current events</li> <li>▪ Letter writing</li> <li>▪ Home/community projects</li> </ul> Math applications <ul style="list-style-type: none"> <li>▪ Data collection and analysis</li> <li>▪ Measurements</li> <li>▪ Calculations</li> <li>▪ Metrics</li> <li>▪ Conversions</li> <li>▪ Graphs, tables, charts</li> </ul>
<b>Chapter 2: (1 week)</b> Measurement  Sections: 1,2,3	Measurement	5.3.8.A.1 5.3.8.B.1 5.3.8.C.1 5.3.8.D.1-4	Identify and apply SI units of measure. Perform calculations Use pictures and tables to give information. Create graphs and analyze results.	<ul style="list-style-type: none"> <li>▪ Section reviews</li> <li>▪ Discussion responses</li> <li>▪ Teacher observations</li> <li>▪ Student notebooks</li> <li>▪ Reading checks</li> <li>▪ Quizzes</li> </ul> Summative <ul style="list-style-type: none"> <li>▪ Lab reports</li> <li>▪ Leveled chapter tests</li> <li>▪ NJASK-formatted test</li> </ul>		

\* Standards 5.1-5.4 are to be integrated into lessons as deemed appropriate.  
 \*\* General instructional activities are to be utilized throughout the curriculum in conjunction with the specific instructional activities which have been recommended by the state as per the state standards clarifications and/or the NJCCCS Framework activities.

**Unit 2: Matter**

Approximate Time: 9 weeks

Essential Question: *How do properties of materials determine their use?*

Suggested Time Line	Content	NJCCC Standards	Instructional Objectives	Assessment	Instructional Domain	Instructional Activities** (Specific)
<b>Chapter 3: (3 weeks)</b> Section 1	Structure of matter	5.6.8.A.1	Describe the characteristics of matter. Identify what makes up matter.	Entry level <ul style="list-style-type: none"> <li>Options to Diagnose Entry-Level Skills and Knowledge</li> <li>Pre-tests</li> </ul> Progress monitoring <ul style="list-style-type: none"> <li>Homework</li> <li>Section reviews</li> <li>Discussion responses</li> <li>Teacher observations</li> <li>Student notebooks</li> <li>Reading checks</li> <li>Quizzes</li> </ul> Summative <ul style="list-style-type: none"> <li>Lab reports</li> <li>Leveled chapter tests</li> <li>NJASK-formatted test</li> </ul>	Inquiry Direct instruction Identifying misconceptions Student text Differentiation Flexible grouping Guided reading Applying math Modeling Leveled resources Scaffolding Independent reading and writing Cooperative learning Brainstorming Categorizing Jigsaw Learning contracts Learning logs Peer partner learning Reflective discussion Word wall	Create models of water, ammonia and glucose.  Use the periodic table to determine the properties of a given element.  Use physical properties to separate a mixture of salt, sand and iron filings.
Section 2	Elements and the periodic table	5.6.6.A.1 5.6.8.A.3	Describe the relationship between elements and the periodic table.			
Section 3	Substances and mixtures	5.6.6.A.3 5.6.8.A.4	Identify the characteristics of a compound. Compare and contrast types of mixtures.			
<b>Chapter 4: (2 weeks)</b> Section 1	States of matter	5.6.8.A.2	Recognize that matter is made of particles in constant motion. Relate states of matter to the arrangement of particles within them.	Summative <ul style="list-style-type: none"> <li>Lab reports</li> <li>Leveled chapter tests</li> <li>NJASK-formatted test</li> </ul>	Jigsaw Learning contracts Learning logs Peer partner learning Reflective discussion Word wall	Predict the state of matter when energy is added or removed.  Predict the motion of molecules of liquid water when enough energy is added or removed to change its state.
Section 2	Changes of states	5.6.6.A.4 5.6.8.A.2	Relate changes in thermal energy to changes in state.			
Section 3	Density and buoyancy	5.6.6.A.2	Explain why some things float but others sink.			

<b>Chapter 5: (4 weeks)</b> Section 1	Physical properties of matter	5.6.6.A.2	Identify and describe physical properties.			
Section 2	Chemical properties of matter	5.6.6.B.1	Identify and describe chemical properties, including acids and bases.			
Section 3	Physical and chemical changes	5.6.6.B.1 5.6.8.B.1	Compare and contrast physical and chemical changes.			Conduct an experiment that will illustrate the change in properties of substances through chemical reactions.

**Unit 3: Chemistry**

**Approximate Time: 6 weeks**

**Essential Question: *What determines the type and extent of a chemical reaction?***

<b>Suggested Time Line</b>	<b>Content</b>	<b>NJCCC Standards</b>	<b>Instructional Objectives</b>	<b>Assessment</b>	<b>Instructional Domain</b>	<b>Instructional Activities**</b>
<b>Chapter 7: (3 weeks)</b> Section: 1	Chemical reactions.	5.6.8.B.2-4	Determine whether or not a chemical reaction is occurring. Read and understand balanced chemical equations. Identify endothermic and exothermic reactions. Explain the law of conservation of mass.	Entry level <ul style="list-style-type: none"> <li>Options to Diagnose Entry-Level Skills and Knowledge</li> <li>Pre-tests</li> <li>Progress monitoring</li> <li>Homework</li> <li>Section reviews</li> <li>Discussion responses</li> <li>Teacher observations</li> </ul>	Inquiry Direct instruction Identifying misconceptions Student text Differentiation Flexible grouping Guided reading Applying math Modeling Leveled resources Scaffolding Independent reading and writing Cooperative learning Brainstorming	Conduct an endothermic or exothermic experiment.  Demonstrate how the products of a reaction between baking soda and vinegar have the same mass as the original reactants in a closed system.  Use models to demonstrate how hydrogen and oxygen can be rearranged to form a water molecule.

<b>Chapter 8: (3 weeks)</b> Section 1	Solutions	5.6.6.A.3	Distinguish between a substance and mixture. Compare heterogeneous and homogeneous mixtures. Describe different types of solutions.	<ul style="list-style-type: none"> <li>▪ Student notebooks</li> <li>▪ Reading checks</li> <li>▪ Quizzes</li> </ul> Summative <ul style="list-style-type: none"> <li>▪ Lab reports</li> <li>▪ Leveled chapter tests</li> <li>▪ NJASK-formatted test</li> </ul>	Categorizing Jigsaw Learning contracts Learning logs Peer partner learning Reflective discussion Word wall	
Section 2	Solubility	5.6.6.A.3,4	Describe how the structure of a compound affects which solvent it dissolves in. Identify factors that affect how much of a substance will dissolve in a solvent.			

**Unit 4: Motion and Forces**  
**Approximate Time: 6 weeks**  
**Essential Question: *How would the universe be different if one or more of the laws of motion were suspended?***

<b>Suggested Time Line</b>	<b>Content</b>	<b>NJCCC Standards</b>	<b>Instructional Objectives</b>	<b>Assessment</b>	<b>Instructional Domain</b>	<b>Instructional Activities**</b>
<b>Chapter 10: (3 weeks)</b> Section 1	Motion	5.7.6.A.1 5.7.8.A.1	Define distance, speed and velocity. Graph motion.	Entry level <ul style="list-style-type: none"> <li>▪ Options to Diagnose Entry-Level Skills and Knowledge</li> </ul>	Inquiry Direct instruction Identifying misconceptions Student text Differentiation	
Section 2	Acceleration	5.7.8.A.1	Define acceleration. Predict what effect acceleration will have on motion.	<ul style="list-style-type: none"> <li>▪ Pre-tests</li> </ul> Progress monitoring	Flexible grouping Guided reading Applying math Modeling	
Section 3	Mass and inertia	5.7.6.A.1	Identify the relationship between mass and inertia.	<ul style="list-style-type: none"> <li>▪ Homework</li> <li>▪ Section reviews</li> <li>▪ Discussion responses</li> </ul>	Leveled resources Scaffolding Independent reading and writing	

<b>Chapter 11: (3 weeks)</b> Section 1	Newton's 1 <sup>st</sup> Law	5.7.6.A.1,2 5.7.8.A.1	Distinguish between balanced and net forces. Describe Newton's 1 <sup>st</sup> law of motion. Explain how friction affects motion.	<ul style="list-style-type: none"> <li>▪ Teacher observations</li> <li>▪ Student notebooks</li> <li>▪ Reading checks</li> <li>▪ Quizzes</li> </ul>	Cooperative learning Brainstorming Categorizing Jigsaw Learning contracts Learning logs Peer partner learning Reflective discussion Word wall	NJCCCS Framework Activities. To view, click on link or visit <a href="http://www.ntuaft.com/njcccs/Webpage/Science.htm">http://www.ntuaft.com/njcccs/Webpage/Science.htm</a>
Section 2	Newton's 2 <sup>nd</sup> Law	5.7.6.A.2,3 5.7.8.A.1,2	Explain Newton's 2 <sup>nd</sup> law of motion.	<ul style="list-style-type: none"> <li>▪ Summative</li> <li>▪ Lab reports</li> <li>▪ Leveled chapter tests</li> </ul>		
Section 3	Newton's 3 <sup>rd</sup> Law	5.7.12.A.1	Identify the relationship between the forces that objects exert on each other.	<ul style="list-style-type: none"> <li>▪ NJASK-formatted test</li> </ul>		

**Unit 5: Energy**  
**Approximate Time: 7 weeks**  
**Essential Question: *How do we know that things have energy?***

<b>Suggested Time Line</b>	<b>Content</b>	<b>NJCCC Standards</b>	<b>Instructional Objectives</b>	<b>Assessment</b>	<b>Instructional Domain</b>	<b>Instructional Activities**</b>
<b>Chapter 13: (3 weeks)</b> Section 1	Energy	5.7.8.B.2	Define energy. Distinguish between kinetic and potential energy. Identify the various forms of energy.	Entry level <ul style="list-style-type: none"> <li>▪ Options to Diagnose Entry-Level Skills and Knowledge</li> <li>▪ Pre-tests</li> </ul>	Inquiry Direct instruction Identifying misconceptions Student text Differentiation Flexible grouping	See NJCCCS Framework Activities  <a href="http://www.ntuaft.com/njcccs/Webpage/Science.htm">http://www.ntuaft.com/njcccs/Webpage/Science.htm</a>
Section 2	Energy transformations	5.7.8.B.2	Explain the law of conservation of energy. Identify how energy changes form.	Progress monitoring <ul style="list-style-type: none"> <li>▪ Homework</li> <li>▪ Section reviews</li> </ul>	Guided reading Applying math Modeling Leveled resources	
Section 3	Sources of energy	5.7.8.B.1	Differentiate between renewable, nonrenewable and alternative energy resources.	<ul style="list-style-type: none"> <li>▪ Discussion responses</li> <li>▪ Teacher</li> </ul>	Scaffolding Independent reading and writing Cooperative learning	

<p><b>Chapter 14:</b> (2 weeks) Section 1</p> <p>Work and power</p> <p>5.7.8.A.1</p> <p>Recognize when work is done. Calculate how much work is done. Explain the relationship between work and power.</p>	<p>Section 3</p> <p>Simple machines</p> <p>5.7.8.A.1</p> <p>Distinguish between the six simple machines. Determine the mechanical advantage of machines.</p>	<p>observations</p> <ul style="list-style-type: none"> <li>▪ Student notebooks</li> <li>▪ Reading checks</li> <li>▪ Quizzes</li> </ul> <p>Summative</p> <ul style="list-style-type: none"> <li>▪ Lab reports</li> <li>▪ Leveled chapter tests</li> <li>▪ NJASK-formatted test</li> </ul>	<p>Brainstorming</p> <p>Categorizing</p> <p>Jigsaw</p> <p>Learning contracts</p> <p>Learning logs</p> <p>Peer partner learning</p> <p>Reflective discussion</p> <p>Word wall</p>	<p>Use levers, pulleys and lab masses to generate and measure an unbalanced force.</p>
<p><b>Chapter 15:</b> (2 weeks) Section 1</p> <p>Temperature and thermal energy</p> <p>5.7.8.B.3</p> <p>Explain how temperature is related to kinetic energy.</p>	<p>Section 2</p> <p>Heat</p> <p>5.7.8.B.3</p> <p>Explain the difference between thermal energy and heat. Describe three ways thermal energy is transferred. Identify materials that are insulators or conductors.</p>			<p>Conduct investigations using a variety of materials to show that some materials conduct heat more readily than others. Identify these materials as conductors or insulators.</p>

**Unit 6: Waves, Sound, and Light**  
**Approximate Time: 4 weeks**  
**Essential Question: *How does energy get from one place to another?***

Suggested Time Line	Content	NJCCC Standards	Instructional Objectives	Assessment	Instructional Domain	Instructional Activities**
<b>Chapter 16:</b> (2 weeks) Section 1-2	Waves and wave properties	5.7.6.B.2	Explain the relationship between waves, energy and matter. Explain why waves travel at different speeds.	Entry level <ul style="list-style-type: none"> <li>Options to Diagnose Entry-Level Skills and Knowledge</li> <li>Pre-tests</li> </ul> Progress monitoring <ul style="list-style-type: none"> <li>Homework</li> <li>Section reviews</li> <li>Discussion responses</li> <li>Teacher observations</li> <li>Student notebooks</li> <li>Reading checks</li> <li>Quizzes</li> </ul> Summative <ul style="list-style-type: none"> <li>Lab reports</li> <li>Leveled chapter tests</li> <li>NJASK-formatted test</li> </ul>	Inquiry Direct instruction Identifying misconceptions Student text Differentiation Flexible grouping Guided reading Applying math Modeling Leveled resources Scaffolding Independent reading and writing Cooperative learning Brainstorming Categorizing Jigsaw Learning contracts Learning logs Peer partner learning Reflective discussion Word wall	
Section 3	Wave behavior	5.7.8.B.4	Compare and contrast reflection and refraction.			
<b>Chapter 18:</b> (1 week) Section 1-2	Electromagnetic waves and spectrum	5.7.8.B.1	Explain how electromagnetic waves are produced. Describe the properties of electromagnetic waves. Differentiate between visible, ultraviolet and infrared radiation.			
<b>Chapter 19:</b> (1 week) Section 1-3	Properties and behavior of light	5.7.8.B.4	Determine why objects appear to have color. Explain how light is reflected. Determine why light rays refract.			

**Unit 7: Electricity and Magnetism**

**Approximate Time: 2 weeks**

**Essential Question: *What causes electrical charges to flow?***

Suggested Time Line	Content	NJCCC Standards	Instructional Objectives	Assessment	Instructional Domain	Instructional Activities**
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<p><b>Chapter 20:</b> <b>(2 weeks)</b> Section 1-3</p>	<p>Electricity</p>	<p>5.7.6.B.3</p>	<p>Describe a battery and how it produces an electric current. Determine the electric power used in a circuit.</p>	<p>Entry level</p> <ul style="list-style-type: none"> <li>▪ Options to Diagnose Entry-Level Skills and Knowledge</li> <li>▪ Pre-tests</li> </ul> <p>Progress monitoring</p> <ul style="list-style-type: none"> <li>▪ Homework</li> <li>▪ Section reviews</li> <li>▪ Discussion responses</li> <li>▪ Teacher observations</li> <li>▪ Student notebooks</li> <li>▪ Reading checks</li> <li>▪ Quizzes</li> </ul> <p>Summative</p> <ul style="list-style-type: none"> <li>▪ Lab reports</li> <li>▪ Leveled chapter tests</li> <li>▪ NJASK-formatted test</li> </ul>	<p>Inquiry</p> <p>Direct instruction</p> <p>Identifying misconceptions</p> <p>Student text</p> <p>Differentiation</p> <p>Flexible grouping</p> <p>Guided reading</p> <p>Applying math</p> <p>Modeling</p> <p>Leveled resources</p> <p>Scaffolding</p> <p>Independent reading and writing</p> <p>Cooperative learning</p> <p>Brainstorming</p> <p>Categorizing</p> <p>Jigsaw</p> <p>Learning contracts</p> <p>Learning logs</p> <p>Peer partner learning</p> <p>Reflective discussion</p> <p>Word wall</p>	<p>Design an electric circuit to investigate the behavior of a system.</p>
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