

**CV Guarantee**  
(Integ Lab Sci/ 9-10)

<b>Big Idea: Conduct and compose a formal lab write up.</b>			
<p><b>Standard:</b></p> <p>HGSS-SEP-3 Plan and conduct an investigation individually and collaboratively to produce data to serve as the basis for evidence, and in the design: decide on types, how much, and accuracy of data needed to produce reliable measurements and consider limitations on the precision of the data (e.g., number of trials, cost, risk, time), and refine the design accordingly. (HS-LS1-3) (HS-PS3-4)</p> <p>CCSS.ELA-LITERACY.RST.9-10.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.</p> <p>CCSS.ELA-LITERACY.RST.9-10.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.</p>		<p><b>Timeline:</b></p> <p>March-April</p>	
<p><b>Key Vocabulary:</b></p> <ul style="list-style-type: none"> <li>● Introduction</li> <li>● Objective</li> <li>● Hypothesis</li> <li>● Procedures</li> <li>● Independent variable</li> <li>● Dependent variable</li> <li>● Control groups</li> <li>● Results</li> <li>● Data</li> <li>● Figure</li> <li>● Table</li> <li>● Conclusion</li> <li>● Discussion</li> <li>● References</li> </ul>		<p><b>Vocabulary Activities:</b></p> <ul style="list-style-type: none"> <li>● Quizlet</li> </ul>	
<b>Knowledge</b>	<b>Reasoning</b>	<b>Performance Skills</b>	<b>Product Examples</b>
<ul style="list-style-type: none"> <li>● Understand formatting of a formal lab reporting guideline.</li> <li>● Understand academic and content specific</li> </ul>	<ul style="list-style-type: none"> <li>● Determine necessary information for background that will assist reader.</li> </ul>	<ul style="list-style-type: none"> <li>● Summarize background information to concisely demonstrate purpose of given lab.</li> </ul>	<ul style="list-style-type: none"> <li>● Produce a complete and accurate formal lab report based on</li> </ul>

<p>vocabulary in creating a formal lab report.</p> <ul style="list-style-type: none"> <li>● Recognize credible sources to be used for introduction.</li> </ul>	<ul style="list-style-type: none"> <li>● Analyze data to determine important findings and comparisons to include in results.</li> <li>● Analyze and interpret results, in order to come up with appropriate conclusions.</li> <li>● Decide appropriate lab equipment to utilize.</li> </ul>	<ul style="list-style-type: none"> <li>● Create a well written hypothesis that is falsifiable in third person.</li> <li>● Write concise and descriptive procedures that complete and clear.</li> <li>● Create a data table that clearly displays information in a visually pleasing and descriptive manner.</li> <li>● Cite evidence from the experiment to support conclusions.</li> </ul>	<p>formal lab report guidelines.</p> <ul style="list-style-type: none"> <li>● Produce individual section of formal lab reports based on student data.</li> </ul>
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**Resources:**

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<b>Big Idea: Students can analyze and cite texts, data, and figures to form written conclusions.</b>			
<p><b>Standard:</b></p> <p>NGSS-SEP-4 Scientific investigations produce data that must be analyzed in order to derive meaning. Because data patterns and trends are not always obvious, scientists use a range of tools—including tabulation, graphical interpretation, visualization, and statistical analysis—to identify the significant features and patterns in the data. Scientists identify sources of error in the investigations and calculate the degree of certainty in the results. Modern technology makes the collection of large data sets much easier, providing secondary sources for analysis.</p> <p>CCSS.ELA-LITERACY.RST.9-10.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.</p> <p>CCSS.ELA-LITERACY.RST.9-10.2 Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.</p>		<p><b>Timeline:</b></p> <p>All Year</p>	
<p><b>Key Vocabulary:</b></p> <ul style="list-style-type: none"> <li>● Cite</li> <li>● Synthesis</li> <li>● Interpret</li> <li>● Data</li> <li>● Analyze</li> </ul>		<p><b>Vocabulary Activities:</b></p> <p>Quizlet NewsELA</p>	
<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>● Explain the main point of an article, graph, or chart.</li> <li>● Cite evidence from the article to support a point of view or the main point.</li> </ul>		<p><b>Reasoning</b></p> <ul style="list-style-type: none"> <li>● Compare and contrast multiple texts points of view or purpose.</li> <li>● Distinguish between points that give concrete evidence and</li> </ul>	
<p><b>Performance Skills</b></p> <ul style="list-style-type: none"> <li>● Write a summary of multiple texts that cite evidence to support the main points.</li> <li>● Explain or present the main points of multiple texts or charts.</li> </ul>		<p><b>Product Examples</b></p> <ul style="list-style-type: none"> <li>● Written summary or essay</li> <li>● Presentation</li> <li>● Graphs and charts</li> </ul>	

<ul style="list-style-type: none"> <li>● Read a graph, chart or data set and explain the purpose and summarize the meaning.</li> </ul>	<p>points that need more support.</p> <ul style="list-style-type: none"> <li>● Determine the point of a graph, chart, or data set and whether or not the presentation is skewed.</li> <li>● Compare and contrast chart, graphs, and data sets.</li> </ul>	<ul style="list-style-type: none"> <li>● Create a chart or graph that accurately supports a data set.</li> <li>● Create a chart or graph that skews the presentation of the to make a specific point.</li> </ul>	
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**Resources:**  
[www.NewsELA.com](http://www.NewsELA.com)

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<b>Big Idea: Students can read, annotate and synthesize scientific articles.</b>			
<b>Standard:</b>  CCSS.ELA-LITERACY.RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.  CCSS.ELA-LITERACY.RST.11-12.5 Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.  CCSS.ELA-LITERACY.RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.		<b>Timeline:</b>  All year	
<b>Key Vocabulary:</b> <ul style="list-style-type: none"> <li>● Synthesize</li> <li>● Claim</li> <li>● Author</li> <li>● Conclusion</li> <li>● Contrast</li> </ul>		<b>Vocabulary Activities:</b> <ul style="list-style-type: none"> <li>● Quizlet</li> <li>● NewsELA</li> </ul>	
<b>Knowledge</b>	<b>Reasoning</b>	<b>Performance Skills</b>	<b>Product Examples</b>
<ul style="list-style-type: none"> <li>● Recognize credible sources to be used for introduction.</li> <li>● Understand background information in regards to the article/text</li> </ul>	<ul style="list-style-type: none"> <li>● Analyze text for key points to highlight.</li> <li>● Make connections between multiple texts.</li> <li>● Analyze and interpret texts, in order evaluate meaning and importance.</li> <li>●</li> </ul>	<ul style="list-style-type: none"> <li>● Annotate articles</li> <li>● Correctly cite author and article title in writing.</li> <li>● Use scientific language in writing.</li> <li>● Summarize scientific texts to concisely express meaning.</li> <li>● Compare and contrast multiple scientific texts.</li> </ul>	<ul style="list-style-type: none"> <li>● Summary</li> <li>● Essay</li> <li>● Short answer on Exam</li> </ul>
<b>Resources:</b> <a href="http://www.NewsELA.com">www.NewsELA.com</a>			

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<b>Big Idea: Atoms have an internal structure that affects their properties and how they bond.</b>			
<b>Standard:</b> HS-PS1-1 Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.  PS1.A Each atom has a charged substructure consisting of a nucleus, which is made of protons and neutrons, surrounded by electrons.  HS-PS3-4 Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).		<b>Timeline:</b>  September- October	
<b>Key Vocabulary:</b> <ul style="list-style-type: none"> <li>● Atom</li> <li>● Compound</li> <li>● Nucleus</li> <li>● Proton</li> <li>● Neutron</li> <li>● Electron</li> </ul>		<b>Vocabulary Activities:</b>  Quizlet	
<b>Knowledge</b> <ul style="list-style-type: none"> <li>● Understand the structure of an atom and how atoms differ.</li> <li>● Explain why isotopes have charges.</li> <li>● Understand that elements properties are differ depending on their atomic structure and location in the periodic table.</li> <li>● Explain common properties of elements.</li> </ul>		<b>Reasoning</b> <ul style="list-style-type: none"> <li>● Compare and contrast atoms in different locations of the periodic table.</li> <li>● Reason why an atom would want to bond with another.</li> <li>● Differentiate between physical and chemical properties.</li> </ul>	
<b>Performance Skills</b> <ul style="list-style-type: none"> <li>● Model an atom and describe the charge.</li> <li>● Present the properties and the bonding behavior of elements.</li> <li>● Model bonding of atoms to create molecules and compounds.</li> </ul>		<b>Product Examples</b> <ul style="list-style-type: none"> <li>● Atom diagram</li> <li>● Presentation</li> <li>● Written explanations</li> </ul>	
<b>Resources:</b> <a href="https://phet.colorado.edu/en/simulations/category/chemistry">https://phet.colorado.edu/en/simulations/category/chemistry</a> <a href="http://www.chem4kids.com/files/atom_structure.html">http://www.chem4kids.com/files/atom_structure.html</a>			

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<b>Big Idea: In a chemical reaction, mass is conserved while energy may be absorbed or released.</b>			
<b>Standard:</b> HS-PS1-4 Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy.  HS-PS1-5 Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.  HS-PS1-7 Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.		<b>Timeline:</b>  October- November	
<b>Key Vocabulary:</b> <ul style="list-style-type: none"> <li>● Conservation</li> <li>● Exothermic</li> <li>● Endothermic</li> <li>● Chemical Change</li> <li>● Molecule</li> <li>● Compound</li> </ul>		<b>Vocabulary Activities:</b>  Quizlet	
<b>Knowledge</b>	<b>Reasoning</b>	<b>Performance Skills</b>	<b>Product Examples</b>
<ul style="list-style-type: none"> <li>● Explain why mass is conserved during a chemical reaction.</li> <li>● Explain why energy is conserved during a chemical reaction.</li> <li>● Understand signs a reaction has occurred.</li> <li>● Explain what happens to the atoms in a chemical reaction.</li> </ul>	<ul style="list-style-type: none"> <li>● Contrast exothermic and endothermic reactions.</li> <li>● Explain how concentration or temperature will affect a reaction.</li> <li>● Examine two chemicals being mixed and decide if a reaction has occurred.</li> <li>● Reason what lab equipment should be used for specific reactions.</li> </ul>	<ul style="list-style-type: none"> <li>● Properly use lab equipment to evaluate reactions between two chemicals.</li> <li>● Perform a chemical reaction and test whether energy was absorbed or released.</li> <li>● Analyze the results of a lab and form conclusions.</li> <li>● Analyze a chemical reaction and determine if it is balanced.</li> </ul>	<ul style="list-style-type: none"> <li>● Complete a lab</li> <li>● Written analysis of a lab</li> <li>● Diagram of a chemical reaction</li> </ul>
<b>Resources:</b> Physical Science Textbook <a href="http://www.chem4kids.com/files/react_intro.html">http://www.chem4kids.com/files/react_intro.html</a>			

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<b>Big Idea: Forces affect the motion of objects and are conserved throughout a system.</b>			
<p><b>Standard:</b>            HS-PS2-1 Analyze data to support the claim that Newton’s second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.</p> <p>HS-PS2-2 Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.</p> <p>HS-PS2-3 Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision.</p>		<p><b>Timeline:</b>  December-February</p>	
<p><b>Key Vocabulary:</b></p> <ul style="list-style-type: none"> <li>● Force</li> <li>● Newton</li> <li>● Unbalanced</li> <li>● Balanced</li> <li>● Friction</li> <li>● Vector</li> <li>● Free Body Diagram</li> <li>● Velocity</li> <li>● Speed</li> <li>● Displacement</li> <li>● Pressure</li> <li>● Buoyancy</li> </ul>		<p><b>Vocabulary Activities:</b></p> <ul style="list-style-type: none"> <li>● Quizlet</li> </ul>	
Knowledge	Reasoning	Performance Skills	Product Examples
<ul style="list-style-type: none"> <li>● Understand the equations for speed, velocity, acceleration, and net force.</li> <li>● Explain how forces interact to create a net force on an object.</li> <li>● Understand that momentum is conserved during a collision.</li> </ul>	<ul style="list-style-type: none"> <li>● Examine a free body diagram and decide on the overall motion of an object.</li> <li>● Examine a graph and determine how the object is moving.</li> <li>● Predict the movement of an object when given the mass and force applied.</li> </ul>	<ul style="list-style-type: none"> <li>● Draw a free body diagram that demonstrates the forces on an object.</li> <li>● Create a graph that demonstrates changes in motion.</li> <li>● Calculate force, speed, acceleration, and net force of an object.</li> </ul>	<ul style="list-style-type: none"> <li>● Diagram</li> <li>● Calculations</li> <li>● Model</li> <li>● Presentation</li> </ul>
<p><b>Resources:</b>  <a href="https://phet.colorado.edu/en/simulations/category/physics">https://phet.colorado.edu/en/simulations/category/physics</a>  <a href="https://www.physicsclassroom.com">https://www.physicsclassroom.com</a></p>			



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<b>Big Idea: Stars emit energy via fusion over their life cycle and cause nearby objects to orbit due to their gravitational pull.</b>			
<b>Standard:</b> HS-ESS1-1 Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation.  HS-ESS1-3 Communicate scientific ideas about the way stars, over their life cycle, produce elements.  HS-ESS1-4 Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.		<b>Timeline:</b>  February-March	
<b>Key Vocabulary:</b> <ul style="list-style-type: none"> <li>● Orbit</li> <li>● Radiation</li> <li>● Elipse</li> <li>● Gravity</li> <li>● Light Spectrum</li> </ul>		<b>Vocabulary Activities:</b> <ul style="list-style-type: none"> <li>● Quizlet</li> </ul>	
<b>Knowledge</b> <ul style="list-style-type: none"> <li>● Understand the different stages of a stars life cycle.</li> <li>● Explain the process of fusion.</li> <li>● Understand that objects in space orbit others with larger gravity.</li> </ul>		<b>Reasoning</b> <ul style="list-style-type: none"> <li>● Compare the energy emissions of stars in different stages.</li> <li>● Explain the difference in the length of life cycles between different stars.</li> <li>● Predict how gravitational pull will affect object motion.</li> </ul>	
<b>Performance Skills</b> <ul style="list-style-type: none"> <li>● Model gravitational pull between different objects in space.</li> <li>● Present the stars life cycle.</li> <li>● Diagram fusion and why it's not an endless process.</li> </ul>		<b>Product Examples</b> <ul style="list-style-type: none"> <li>● Diagram</li> <li>● Model</li> <li>● Presentation</li> <li>● Paragraph</li> <li>● Essay</li> </ul>	
<b>Resources:</b> <a href="https://www.nasa.gov/offices/education/programs/national/summer/education_resources/earthspacescience_grades7-9/index.html#.XD-G5uhAqzw">https://www.nasa.gov/offices/education/programs/national/summer/education_resources/earthspacescience_grades7-9/index.html#.XD-G5uhAqzw</a>			

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<b>Big Idea: Build and use models that demonstrate the energy interactions between two objects.</b>			
<p><b>Standard:</b>          HS-PS3-2 Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative position of particles (objects).</p> <p>HS-PS3-3 Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.</p> <p>HS-PS3-4 Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).</p> <p>HS-PS3-5 Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction.</p>		<p><b>Timeline:</b>  April- May</p>	
<p><b>Key Vocabulary:</b></p> <ul style="list-style-type: none"> <li>● Energy</li> <li>● Radiation</li> <li>● Electromagnetic Radiation</li> <li>● Waves</li> <li>● Electrostatic</li> <li>● Renewable Resources</li> <li>● Sound</li> <li>● Thermal</li> </ul>		<p><b>Vocabulary Activities:</b>  Quizlet</p>	
<b>Knowledge</b>	<b>Reasoning</b>	<b>Performance Skills</b>	<b>Product Examples</b>
<ul style="list-style-type: none"> <li>● Understand that energy is conserved and often changes forms.</li> <li>● Energy comes in many forms like sound, thermal, chemical, electromagnetic.</li> <li>● Kinetic energy is the energy of motion which</li> </ul>	<ul style="list-style-type: none"> <li>● Compare and contrast potential and kinetic energy.</li> <li>● Reason why energy is transferred continuously between kinetic and potential in a roller coaster.</li> </ul>	<ul style="list-style-type: none"> <li>● Create a model to describe and demonstrate a form of energy.</li> <li>● Create a model or presentation that demonstrates energy transfer.</li> </ul>	<ul style="list-style-type: none"> <li>● Model</li> <li>● Diagram</li> <li>● Presentation</li> <li>● Paragraph or Essay</li> </ul>

<p>depends on the object's mass and velocity.</p> <ul style="list-style-type: none"><li>● Potential energy is stored energy such as position or chemical bonds.</li></ul>		<ul style="list-style-type: none"><li>● Present about alternative forms of renewable resources.</li></ul>	
<p><b>Resources:</b> Physical Science Textbook <a href="https://www.teachengineering.org/curricularunits/view/ucd_energy_unit">https://www.teachengineering.org/curricularunits/view/ucd_energy_unit</a></p>			