



Content Area: Science  
Grade Level: 8th Grade

Curriculum Map/Scope & Sequence (2021)

<u>Unit Name/Time Period</u>	<u>BIG Ideas/Skills</u>	<u>IL Priority Learning Standards</u>	<u>I CAN Statements</u>	<u>Assessments</u>
<b>August</b> <b>September</b> <b>October</b>  Introduction to Physics Newton's Law of Motion Simple Machines	Simple Machines Newton's 3 Laws of Motion Mouse Trap Physics	MS-ETS1 Engineering Design MS-PS2 Motion and Stability: Forces and Interactions MS-PS3 Energy	<ul style="list-style-type: none"><li>* I can explain how air resistance and gravity affect the acceleration of falling objects.</li><li>* I can state and apply Newton's Laws of Motion to real life situations.</li><li>* I can state and apply the Law of Conservation of Momentum.</li><li>* I can describe the forces that affect the motion of matter.</li><li>* I can compare balanced and unbalanced forces.</li><li>* I can explain what causes friction and how it affects motion.</li><li>* I can describe and give examples of the 4 types of friction.</li><li>* I can identify the 2 factors that determine speed.</li><li>* I can understand that motion is relative and based on a reference point.</li><li>* I can explain how velocity and speed are different.</li><li>* I can describe acceleration as a change in velocity.</li><li>* I can calculate the average speed and acceleration.</li><li>* I can recognize speed and acceleration on motion graphs.</li></ul>	<b>Quizzes</b> <b>Project</b> <b>Presentations</b>

<p>November December January</p>	<p>Chemistry</p>	<p>MS-PS1 Matter and Its Interactions MS-PS3 Energy</p>	<ul style="list-style-type: none"> <li>* I can define physical science as the study of matter and energy.</li> <li>* I can describe the components of a good controlled experiment.</li> <li>* I can define terms associated with controlled experiments (independent variable, dependent variable, constants, and control).</li> <li>* I can read about a scientific experiment and determine the independent variable, dependent variable, constants, and control.</li> <li>* I can interpret data on a scientific graph and describe data trends using proper terms (e.g. linear, nonlinear, directly proportional, and inversely proportional).</li> <li>* I can use SI units to measure length, mass, and volume.</li> <li>* I can use a standard science reference sheet to find SI units and equations for calculating things such as volume or density.</li> <li>* I can convert between units in the metric system (e.g. cm à km) using the goal-post method.</li> <li>* I can describe the difference between physical and chemical properties.</li> <li>* I can describe the difference between physical and chemical changes.</li> <li>* I can interpret a data table of common physical properties (e.g. density, melting / boiling point, malleability) and chemical properties (reactivity, flammability, corrosivity).</li> <li>* I can differentiate between elements, compounds and mixtures based on their composition and understanding how they can or cannot be separated.</li> <li>* I can describe different methods for separating mixtures including filtering, centrifuge, and distillation..</li> <li>* I can describe the 6 changes of state (melting, sublimation, vaporization, condensation, deposition, and freezing) in terms of what happens to the energy and spacing of the particles.</li> <li>* I can describe the differences between endothermic and exothermic changes of state.</li> </ul>	<p>Quizzes Project Presentations</p>
<p>February</p>	<p>Bonding- Ionic, Covalent and Metallic Balancing Equations</p>	<p>MS-PS1 Matter and Its Interactions MS-PS3 Energy</p>	<ul style="list-style-type: none"> <li>I can describe chemical bonding.</li> <li>* I can identify the number of valence electrons in an atom.</li> <li>* I can describe the properties associated with ionic, covalent, and metallic bonds.</li> <li>* I can diagram how ionic and covalent bonds form.</li> </ul>	<p>Quizzes Project Presentations Unit Test</p>

March	Biology	MS-LS2 Ecosystems: Interactions, Energy, and Dynamics MS-LS3 Heredity: Inheritance and Variation of Traits MS-LS4 Biological Evolution: Unity and Diversity	Design and solution to a problem involving a collision of two objects. <ul style="list-style-type: none"> <li>• Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object</li> <li>• Use evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.</li> <li>• Graph data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.</li> <li>• Use evidence to support the claim that when kinetic energy of an object changes, energy is transferred to or from the object.</li> <li>• Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.</li> </ul>	Quizzes Presentations Unit Test
April May	Water Rockets Physics Speed Acceleration Payload Force	MS-ETS1 Engineering Design MS-PS2 Motion and Stability: Forces and Interactions MS-PS3 Energy	<ul style="list-style-type: none"> <li>* I can explain how air resistance and gravity affect the acceleration of falling objects.</li> <li>* I can state and apply Newton's Laws of Motion to real life situations.</li> <li>* I can state and apply the Law of Conservation of Momentum.</li> <li>* I can describe the forces that affect the motion of matter.</li> <li>* I can compare balanced and unbalanced forces.</li> <li>* I can explain what causes friction and how it affects motion.</li> <li>* I can describe and give examples of the 4 types of friction.</li> <li>* I can identify the 2 factors that determine speed.</li> <li>* I can understand that motion is relative and based on a reference point.</li> <li>* I can explain how velocity and speed are different.</li> <li>* I can describe acceleration as a change in velocity.</li> <li>* I can calculate the average speed and acceleration.</li> <li>* I can recognize speed and acceleration on motion graphs.</li> </ul>	Quizzes Project Presentations Unit Test