

**Standards-Based Unit of Study Template**

**1. Overview**

Teachers(s) Perry

Subject(s)/Course(s): Physics Grade/Level: 11&12

Unit Topic/Focus: Projectile motion

Integration with other content areas (if applicable): Chemistry

Estimated time for implementation: 10 days

**Connections to previous/future learning:**

Students have now been exposed to and applied the following concepts

- Vectors
- Force
- Velocity
- Speed
- Acceleration

**2. Standards** (see Combined Curriculum Documents and others):

<b>Academic Expectations</b>	<b>Program of Studies</b>	<b>Core Content for Assessment 4.0</b>
<p>2.3 Students identify and analyze systems and the ways their components work together or affect each other.</p> <p>2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.</p>	<p><b>Big Idea: Motion and Forces (Physical Science)</b></p> <p>Whether observing airplanes, baseballs, planets, or people, the motion of all bodies is governed by the same basic rules. At the middle level, qualitative descriptions of the relationship between forces and motion will provide the foundation for quantitative applications of Newton's Laws. These ideas are more fully developed at the high school level along with the use of models to support evidence of motion in abstract or invisible phenomena such as electromagnetism.</p>	<p>SC-HS-1.2.1 DOK3 SC-HS-1.2.1</p> <p>Students will:</p> <ul style="list-style-type: none"> <li>• select or construct accurate and appropriate representations for motion (visual, graphical and mathematical);</li> <li>• defend conclusions/explanations about the motion of objects and real-life phenomena from evidence/data.</li> </ul> <p>Objects change their motion only when a net force is applied. Newton's Laws of motion are used to describe the effects of forces on the motion of objects. Conservation of mechanical energy and conservation of momentum may also be used to predict motion.</p> <p>SC-HS-2.3.1 DOK3 SC-HS-2.3.1</p> <p>Students will:</p> <ul style="list-style-type: none"> <li>• explain phenomena (falling objects, planetary motion, satellite motion) related to gravity;</li> <li>• describe the factors that affect gravitational force.</li> </ul> <p>Gravity is a universal force that each mass exerts on every other mass.</p>