

## Physics Curriculum Bundle # 4

<b>Title</b>	<b>Suggested Dates</b>
Force Applications	10/26 – 11/13 (12 days)

<b>Big Idea/Enduring Understanding</b>	<b>Guiding Questions</b>
The change in motion of an object is dependent on the mass of the object and the amount of force applied.	How are unbalanced forces and the acceleration of an object related?

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the district curriculum.

<b>Knowledge &amp; Skills with Student Expectations</b>	<b>Specificity &amp; Examples</b>	<b>Suggested Resources (Read the note above)</b>
<p><b>4 The student knows the laws governing motion.</b></p> <p>4B Analyze examples of uniform and accelerated motion including linear, projectile, and circular.</p>	<p>Including</p> <p>--- Circular (uniform)</p> <ul style="list-style-type: none"> <li>• Characteristics of circular motion                             <ul style="list-style-type: none"> <li>Including                                     <ul style="list-style-type: none"> <li>○ Period</li> <li>○ Radius</li> <li>○ Frequency</li> <li>○ Centripetal acceleration</li> </ul> </li> </ul> </li> </ul>	<p>Circular Motion Lab – finding centripetal acceleration by measuring period of uniform circular motion. (phys_1_circularmotionlab)</p> <p>Physlets website – <a href="http://webphysics.davidson.edu/physlet_resources/semester1/index.html">http://webphysics.davidson.edu/physlet_resources/semester1/index.html</a></p> <p>Circular motion website – <a href="http://www.glenbrook.k12.il.us/gbssci/phys/Class/circles/circtoc.html">http://www.glenbrook.k12.il.us/gbssci/phys/Class/circles/circtoc.html</a></p>
<p><b>4 The student knows the laws governing motion.</b></p> <p>4C Demonstrate the effects of forces on the motion of objects</p>	<p>Including</p> <ul style="list-style-type: none"> <li>• Solve problems involving force, mass and acceleration</li> <li>• Forces on a single object                             <ul style="list-style-type: none"> <li>○ Situations involving friction</li> <li>○ Objects on inclined planes</li> </ul> </li> </ul>	<p>Newton’s Second Law Inclined Plane – force sensor and motion detector with cart on a ramp. (phys_3_Newt2ndLawInclPlane)</p> <p>Horizontal pulley acceleration – cart on dynamics track accelerated by falling weight. (phys_3_newton 21 level track I)</p> <p>Spring stretch lab – building spring scale to measure forces with Hooke’s Law. (phys_3_HookesLawLab)</p> <p>Robert Hooke’s treatise on springs—see last pages of document. (phys_3_Hooke’sTreatise)</p>
<p><b>4 The student knows the laws governing motion.</b></p> <p>4D Develop and interpret a free-body diagram for force</p>	<p>Including</p> <ul style="list-style-type: none"> <li>• Represent interactions between objects through free-body diagrams</li> </ul>	<p>Friction Lab – determine force of friction w/ spring scale. (phys_3_FrictionLab)</p>

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analysis		Suggested Equipment – whirligig, friction block, spring scales, Hooke’s Law apparatus, pulley, cart & ramp.
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