

Stockton Unified School District
2014 – 2015 Instructional Guide for Physics
Semester 1, Traditional Schedule

<i>Instructional Window</i>	<i>Content Standards (abbreviated) with Tier</i>	<i>Academic & Content Vocabulary</i>	<i>Curriculum: If unavailable check Moodle. Contact your Dept Chair for Moodle codes.</i>	<i>Resources for Struggling Readers/EL</i>
<p>Chapter 2 <i>Representing Motion</i></p> <p>and</p> <p>Chapter 3 <i>Accelerated Motion</i></p> <p>Instructional Days 15 Days</p> <p>Review Day 1 day</p>	<p>Motion and Forces</p> <p>1. Newton's laws predict the motion of most objects. As a basis for understanding this concept:</p> <p>1a. Tier 1 – Students know how to solve problems that involve constant speed and average speed.</p> <p>Assess, review and reteach standards Standard and vocabulary review</p>	<p><u>Chapter 2</u> Motion diagram, p 32 Particle model, p 33 Coordinate system, p 34 Origin, p34 Position, p 34 Distance, p 34 Magnitude & direction, p 35 Vector & Scalar Quantities, p 35 Resultant, p 35 Time interval, p3 6 Displacement, p 36 Position –time graphs, p 38 Velocity, p 43-46 Unit: m/s, p 43 Velocity-time graphs, p 46 Speed, p 44-45</p> <p><u>Chapter 3</u> Acceleration, p 57 -59 Unit: m/s², p 59 Average and instantaneous acceleration, p 59-60 Positive and negative acceleration, p 61- 64 Constant acceleration, p 65-71 Free fall, pp 72-75 Acceleration due to gravity, p 72-75</p>	<p><i>Physics Principles and Problems</i></p> <p><i>Supplemental Problems, pg. 3& 4</i></p> <p><i>Additional Challenge Problems, pg 2</i></p> <p><i>Supplemental Problems, pg. 5 & 6</i></p> <p><i>Additional Challenge Problems, pg 3</i></p>	<p><i>Chapters 1-5 Resource Book, pg 39-52</i></p> <p><i>Chapters 1-5 Resource Book, pg 75-108</i></p>

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<p>Chapter 4</p> <p><i>Forces in One Dimension</i></p> <p>and</p> <p>Chapter 5</p> <p><i>Forces in Two Dimension</i></p> <p>Instructional Days 14 Days</p> <p>Review Days 2 days</p>	<p>Motion and Forces</p> <p>1b. Tier 1 – Students know that when forces are balanced, no acceleration occurs; thus an object continues to move at a constant speed or stays at rest (Newton's first law).</p> <p>1c. Tier 1 – Students know how to apply the law $F=ma$ to solve one-dimensional motion problems that involve constant forces (Newton's second law).</p> <p>1d. Tier 1 – Students know that when one object exerts a force on a second object, the second object always exerts a force of equal magnitude and in the opposite direction (Newton's third law).</p> <p><i>1j * Students know how to resolve two-dimensional vectors into their components and calculate the magnitude and direction of a vector from its components.</i></p> <p><i>1k * Students know how to solve two-dimensional problems involving balanced forces (statics).</i></p> <p>Quarter 1 Assessment: Review and reteach standards</p> <p><i>®Italicized topics may be abbreviated due to time constraints.</i></p>	<p><u>Chapter 4</u></p> <p>Force, pp 87-88</p> <p>Contact and field forces, p 88</p> <p>Free-body diagram, p 89</p> <p>Newton's first law of motion, pp 90-91, 94-95</p> <p>Inertia, p 95</p> <p>Equilibrium, p 95</p> <p>Net force, p 92</p> <p>Newton's second law of motion, p 93 and p 96</p> <p>Weight, p 98 Drag force, p 100</p> <p>Terminal velocity, p 100</p> <p>Newton's third law, pp 102-103</p> <p>Interact pair, p102</p> <p>Tension, p105</p> <p>Normal force, p107</p> <p><u>Chapter 5</u></p> <p>Vector resolution, p 122</p> <p>Vector addition, p 123</p> <p>Static and kinetic friction, p 126-127,</p> <p>Coefficient of friction, p 127</p> <p>Equilibrant, p 131-135</p>	<p><i>Physics Principles and Problems</i></p> <p><i>Supplemental Problems, pg. 7 & 8</i></p> <p><i>Additional Challenge Problems, pg 4</i></p> <p><i>Supplemental Problems, pg. 9 & 10</i></p> <p><i>Additional Challenge Problems, pg 5</i></p>	<p><i>Chapters 1-5 Resource Book, pg 111-144</i></p> <p><i>Chapters 1-5 Resource Book, pg 147-180</i></p>
Quarter 1 Assessment	<p>Quarter 1 Assessment Standards: IE a, b, c, f and 1 a - d</p>			

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<p>Chapter 6 <i>Motion in Two Dimensions</i></p> <p>and</p> <p>Chapter 7, section 2 <i>Circular Motion</i></p> <p>Instructional Days 13 Days</p> <p>Review Day within Instruction window</p>	<p>Motion and Forces</p> <p>1e. Tier 1 – Students know the relationship between the universal law of gravitation and the effect of gravity on an object at the surface of Earth.</p> <p>1f. Tier 2 – Students know applying a force to an object perpendicular to the direction of its motion causes the object to change direction but not speed (e.g., Earth’s gravitational force causes a satellite in a circular orbit to change direction but not speed).</p> <p>1g. Tier 2 – Students know circular motion requires the application of a constant force directed toward the center of the circle.</p> <p><i>1i * Students know how to solve two-dimensional trajectory problems.</i></p> <p><i>1l* Students know how to solve problems in circular motion by using the formula for centripetal acceleration in the following form: $a=v^2/r$.</i></p> <p><i>1m* Students know how to solve problems involving the forces between two electric charges at a distance (Coulomb’s law) or the forces between two masses at a distance (universal gravitation).</i></p> <p>Assess, review and reteach standards</p> <p><i>ⓈItalicized topics may be abbreviated due to time constraints.</i></p>	<p><u>Chapter 6</u></p> <p>Projectile motion, pp 147-151</p> <p>Projectile, p 147</p> <p>Trajectory, p 147, and p 152</p> <p>Relative velocity, pp 157-159</p> <p>Uniform circular motion, p 153</p> <p>Centripetal acceleration, p 154</p> <p>Centripetal force, p 154</p> <p>Gravitational force, p 175</p> <p>Law of Universal Gravitation, p 175 and p 182-183</p>	<p><i>Physics Principles and Problems</i></p> <p><i>Supplemental Problems, pg. 11 & 12</i></p> <p><i>Additional Challenge Problems, pg 6</i></p> <p><i>Supplemental Problems, pg. 13 & 14</i></p> <p><i>Additional Challenge Problems, pg 7</i></p>	<p><i>Chapters 5-10 Resource Book, pg 5-36</i></p> <p><i>Chapters 6-10 Resource Book, pg 39-70</i></p>

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<p>Chapter 10, Section 1</p> <p><i>Energy and Work</i></p> <p>and</p> <p>Chapter 11</p> <p><i>Energy and Conservation</i></p> <p>Instructional Days 12 Days</p> <p>Review Day 1 day</p>	<p>Conservation of Energy and Momentum</p> <p>2. The laws of conservation of energy and momentum provide a way to predict and describe the movement of objects. As a basis for understanding this concept:</p> <p>2d. Tier 2 – Students know how to calculate momentum as the product mv.</p> <p>2e. Tier 2 – Students know momentum is a separately conserved quantity different from energy.</p> <p>2f. Tier 1 – Students know an unbalanced force on an object produces a change in its momentum.</p> <p>2g. Tier 1 – Students know how to solve problems involving elastic and inelastic collisions in one dimension by using the principles of conservation of momentum and energy.</p> <p>Assess, review and reteach standards Standards and vocabulary review</p>	<p><u>Chapter 10</u> Work, pp 258-260 Energy, p 258 Kinetic energy, p 258 Work –energy theorem, p 259</p> <p><u>Chapter 11</u> Forms of energy, pp 285-286 Kinetic energy, p 287 Gravitational potential energy, p 288 Elastic potential energy, p291 Conservation of energy, p 293 Conservation of mechanical energy, pp 293-295</p>	<p><i>Physics Principles and Problems</i></p> <p><i>Supplemental Problems, pg. 19 & 20</i></p> <p><i>Additional Challenge Problems, pg 10</i></p> <p><i>Supplemental Problems, pg. 21 & 22</i></p> <p><i>Additional Challenge Problems, pg 11</i></p>	<p><i>Chapters 5-10 Resource Book, pg 145-176</i></p> <p><i>Chapters 11-15 Resource Book, pg 3-32</i></p>

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<p>Chapter 9 <i>Momentum and Its Conservation</i></p> <p>and</p> <p>Chapter 11, Section 2 <i>Conservation of Energy</i></p> <p>Instructional Days 9 Days</p> <p>Review Days 2 days</p>	<p>Conservation of Energy and Momentum</p> <p>2a. Tier 1 – Students know how to calculate kinetic energy by using the formula $E=(1/2)mv^2$.</p> <p>2b. Tier 1 – Students know how to calculate changes in gravitational potential energy near Earth by using the formula (change in potential energy) =mgh (h is the change in the elevation).</p> <p>2c. Tier 1 – Students know how to solve problems involving conservation of energy in simple systems, such as falling objects.</p> <p>2h*.<i>Students know how to solve problems involving conservation of energy in simple systems with various sources of potential energy, such as springs.</i></p> <p>Semester 1 Assessment: Review and reteach standards as needed</p> <p>[Ⓢ]<i>Italicized topics may be abbreviated due to time constraints.</i></p>	<p><u>Chapter 9</u> Momentum, p 229-230 Impulse, pp 229-230 Impulse-momentum theorem, pp 230-213 Conservation of momentum, p 236 Closed and Isolated systems, pp 236-237 Law of conservation of momentum, p 237 Recoil, p238</p> <p><u>Chapter 11</u> Elastic and inelastic collision, pp 298-301</p>	<p><i>Physics Principles and Problems</i></p> <p><i>Supplemental Problems, pg. 17 & 18</i></p> <p><i>Additional Challenge Problems, pg 9</i></p> <p><i>Supplemental Problems, pg. 21 & 22</i></p> <p><i>Additional Challenge Problems, pg 11</i></p>	<p><i>Chapters 6-10 Resource Book, pg 113-142</i></p> <p><i>Chapters 11-15 Resource Book, pg 3-32</i></p>
<p>Semester 1 Assessment 12/19</p>	<p>Semester 1 Assessment Standards: IE d & g, 1 a – e, 2 a – f</p>			