



Saddlebrook Preparatory School

Curriculum Map - Scope and Sequence:
High School Physics

Purpose of Planning	Unit One Q1, W1 - 5	Unit Two Q1, W6 - 8	Unit Three Q1, W9 - Q2, W3	Unit Four Q2, W4 - 6	Unit Five Q2, W7 – W9
Unit Topic and Overview:	Kinematics	Forces	Energy and Momentum	Circular Motion	Fluid Mechanics
Prerequisite Student Knowledge *What should students have previously mastered prior to this unit?	Students should have a basic understanding of general scientific principles and motion from previous science courses and mathematical skills from Algebra 2.	Students should have a good understanding of motion from Unit 1 and mathematical skills from Algebra 2.	Students should know about kinematics and force from Units 1 and 2, and mathematical skills from Algebra 2.	Students should know about kinematics from Unit 1 and the mathematical skills from Algebra 2.	Students should know about forces and energy from Units 2 and 3, and mathematical skills from Algebra 2.
Essential Knowledge & Student Expectations *What are the anticipated learning outcomes for students?	Students will be able to understand and calculate displacement, velocity, speed, acceleration and direction of objects moving in one- and two-dimensions. Essential Question: What methods do we employ to determine the motion of objects in one- and two-dimensions?	Students will know what force is, be able to apply Newton’s Laws of Motion to cases involving mass, acceleration, and inertia, and understand weight, friction and normal force. Essential Question: How do we use Newton’s Laws of Motion to solve problems involving force?	Students will know the interrelation between energy, work, and power, the interrelation between mass, velocity, and momentum, conservation of momentum, and elastic and inelastic collisions. Essential Question: How do we solve problems involving the application of energy?	Students will be able to understand and calculate velocity, acceleration and force involved in rotational motion, apply Newton’s Law of Universal Gravitation, apply Kepler’s Laws of Planetary Motion, and understand torque. Essential Question: How can we solve problems involving circular motion?	Students will be able to solve problems involving buoyancy, hydrostatic pressure, and fluids in motion using Bernoulli’s Equation. Essential Question: How can we solve problems involving the motion of and the force applied by fluids?



Saddlebrook Preparatory School

Curriculum Map - Scope and Sequence:
High School Physics

<p>Anchor Text and Supplemental Texts *Illustrate texts used, and how students' knowledge builds across units.</p>	<p>Anchor Text: <i>Physics</i> by Serway/Faughn (Holt McDougal, 2012)</p>	<p>Anchor Text: <i>Physics</i> by Serway/Faughn (Holt McDougal, 2012)</p>	<p>Anchor Text: <i>Physics</i> by Serway/Faughn (Holt McDougal, 2012)</p>	<p>Anchor Text: <i>Physics</i> by Serway/Faughn (Holt McDougal, 2012)</p>	<p>Anchor Text: <i>Physics</i> by Serway/Faughn (Holt McDougal, 2012)</p>
<p>Multi-Media Links: *Videos, presentations, any and all supplemental online material.</p>	<p>Khan Academy http://my.hrw.com/ The Physics Classroom Teacher Facebook page</p>	<p>Khan Academy http://my.hrw.com/ The Physics Classroom Newton's Laws and Tennis Newton's Laws and Golf Teacher Facebook page</p>	<p>Khan Academy http://my.hrw.com/ The Physics Classroom Teacher Facebook page</p>	<p>Khan Academy http://my.hrw.com/ The Physics Classroom Teacher Facebook page</p>	<p>Khan Academy http://my.hrw.com/ The Physics Classroom Teacher Facebook page</p>
<p>Instructional Practices: * Various Instructional Modalities, including Technology used</p>	<p>-Lecture with examples with and without a graphing calculator -Examine essential questions -Class discussion -Bell work -Homework (Practice) -Labs</p>	<p>-Lecture with examples with and without a graphing calculator -Examine essential questions -Class discussion -Bell work -Homework (Practice) -Labs</p>	<p>-Lecture with examples with and without a graphing calculator -Examine essential questions -Class discussion -Bell work -Homework (Practice) -Labs</p>	<p>-Lecture with examples with and without a graphing calculator -Examine essential questions -Class discussion -Bell work -Homework (Practice) -Labs</p>	<p>-Lecture with examples with and without a graphing calculator -Examine essential questions -Class discussion -Bell work -Homework (Practice) -Labs</p>



Curriculum Map - Scope and Sequence: High School Physics

Saddlebrook Preparatory School

Assessments: *Types and Measurements of Mastery	Informal Assessments: Teacher questioning/class discussion, practice problems Formal Assessments: Unit test, quizzes, assignments, bell work, homework, class work, labs. 80% of students will average a score of 80% on unit assessments.	Informal Assessments: Teacher questioning/class discussion, practice problems Formal Assessments: Unit test, quizzes, assignments, bell work, homework, class work, labs. 80% of students will average a score of 80% on unit assessments.	Informal Assessments: Teacher questioning/class discussion, practice problems Formal Assessments: Unit test, quizzes, assignments, bell work, homework, class work, labs. 80% of students will average a score of 80% on unit assessments.	Informal Assessments: Teacher questioning/class discussion, practice problems Formal Assessments: Unit test, quizzes, assignments, bell work, homework, class work, labs. 80% of students will average a score of 80% on unit assessments.	Informal Assessments: Teacher questioning/class discussion, practice problems Formal Assessments: Unit test, quizzes, assignments, bell work, homework, class work, labs, final exam. 80% of students will average a score of 80% on unit assessments.
Interdisciplinary Lessons & Projects: *State additional content areas and title all lesson(s) and project(s)	Assignment: Three airline executives discuss a way to make flights more energy-efficient. Write a response to explain which executive is right and why. <div style="text-align: center;">Business, English</div>	Assignment: Read about how Newton's Laws of Motion apply to golf and tennis. <div style="text-align: center;">Sports</div>	Assignment: Examine and analyze the results of elastic and inelastic collisions using a simulation. <div style="text-align: center;">Engineering</div>	Assignment: Examine and analyze how centripetal forces are used to design roller coasters. <div style="text-align: center;">Engineering, Entertainment</div>	Assignment: Analyze how different shapes float experimentally and analytically. <div style="text-align: center;">Engineering, Geometry</div>
Honors Course Differentiation(s):	-Additional test questions involving higher order questioning to demonstrate mastery -Additional homework problems -Q1 project	-Additional test questions involving higher order questioning to demonstrate mastery -Additional homework problems -Q1 project	-Additional test questions involving higher order questioning to demonstrate mastery -Additional homework problems -Q1 project	-Additional test questions involving higher order questioning to demonstrate mastery -Additional homework problems -Q2 project	-Additional test questions involving higher order questioning to demonstrate mastery -Additional homework problems -Q2 project



Curriculum Map - Scope and Sequence: High School Physics

Saddlebrook Preparatory School

Integrated Common Core or NGSSS Standards (List): *See Below for Links	NGSSS SC.912.N.1.1 NGSSS SC.912.N.1.2 NGSSS SC.912.P.12.1 NGSSS SC.912.P.12.2 NGSSS SC.912.P.12.9	NGSSS SC.912.P.12.3 NGSSS SC.912.P.12.7	NGSSS SC.912.P.12.5 NGSSS SC.912.P.10.2 NGSSS SC.912.P.10.3 NGSSS SC.912.P.10.6 NGSSS SC.912.P.12.5 NGSSS SC.912.P.12.9 NGSSS SC.912.P.10.8	NGSSS SC.912.P.12.2 NGSSS SC.912.P.12.4	NGSSS SC.912.P.10.1 NGSSS SC.912.P.10.2 NGSSS SC.912.P.12.2 NGSSS SC.912.P.12.3
Integrated CCSS Writing Standards (List): *See Below for Links	CCSS.ELA-Literacy.W.9-10.1.d CCSS.ELA-Literacy.W.9-10.2.d	CCSS.ELA-Literacy.W.9-10.1.d CCSS.ELA-Literacy.W.9-10.2.d	CCSS.ELA-Literacy.W.9-10.1.d CCSS.ELA-Literacy.W.9-10.2.d	CCSS.ELA-Literacy.W.9-10.1.d CCSS.ELA-Literacy.W.9-10.2.d	CCSS.ELA-Literacy.W.9-10.1.d CCSS.ELA-Literacy.W.9-10.2.d
Links to CCSS/NGSSS Curriculum Standards:	<p>The following links will be used to incorporate the CCSS and other applicable standards:</p> <ul style="list-style-type: none"> • The Common Core State Standard expectations in high school • The K-12 English LA and Content Area Writing Standards • The K-12 Reading Standards • The K-12 Mathematics Standards • The K-12 NGSSS Science & Social Studies Standards 				
Purpose of Planning	Unit Six Q3, W1 - 3	Unit Seven Q3, W4 - 6	Unit Eight Q3, W7 - 9	Unit Nine Q4, W1 - 5	Unit Ten Q4, W6 - 9
Unit Topic and Overview:	Heat and Thermodynamics	Waves and Sound	Light	Electricity and Circuits	Magnetism
Prerequisite Student Knowledge *What should students have previously mastered prior to this unit?	Students should know about work and energy from Unit 3 and mathematical skills from Algebra 2.	Students should know about elastic and potential energy from Unit 3 and mathematical skills from Algebra 2.	Students should know that waves transfer energy from Unit 6 and mathematical skills from Algebra 2.	The student should know about force from Unit 2, potential energy and power from Unit 3, and mathematical skills from Algebra 2.	The student will know about force from Unit 2, Torque from Unit 4, electric current from Unit 9 and mathematical skills from Algebra 2.



Saddlebrook Preparatory School

Curriculum Map - Scope and Sequence: High School Physics

<p>Essential Knowledge & Student Expectations *What are the anticipated learning outcomes for students?</p>	<p>Students will know how heat is related to molecular motion and internal energy, how heat and energy are transferred, and how to apply the First and Second Laws of Thermodynamics.</p> <p>Essential Question: How do we solve problems involving the transfer of heat in a system?</p>	<p>Students will know the forces involved in simple harmonic motion, the concepts of wave motion, the concepts of pendulum motion, what the Doppler Effect is, how to measure sound intensity, and work with standing waves on a string or in pipes.</p> <p>Essential Question: How do we use principles of wave motion to solve problems involving sound and other waves?</p>	<p>Students will know the components of the electromagnetic spectrum, how light reflects in flat, concave and convex mirrors, the phenomenon of polarization, how light refracts in different media, and natural phenomena associated with light refraction.</p> <p>Essential Question: How do we use the nature of light to solve problems involving reflection and refraction?</p>	<p>Students will know about electric charge, electrical force, electrical fields, electrical energy and current, Ohm's Law, open and closed circuits, simple and complex circuits, and how to solve problems involving electricity and circuits</p> <p>Essential Question: How can we use the properties of electrical energy to solve circuits?</p>	<p>Students will know about magnetism, magnetization, magnetic fields, magnetic force, magnetic induction, electromagnetic induction, electromagnetic waves, generators and motors, AC circuits, and transformers.</p> <p>Essential Question: How can we use the concepts of magnetic and electromagnetic forces to solve problems?</p>
<p>Anchor Text and Supplemental Texts *Illustrate texts used, and how students' knowledge builds across units.</p>	<p>Anchor Text: <i>Physics</i> by Serway/Faughn (Holt McDougal, 2012)</p>	<p>Anchor Text: <i>Physics</i> by Serway/Faughn (Holt McDougal, 2012)</p>	<p>Anchor Text: <i>Physics</i> by Serway/Faughn (Holt McDougal, 2012)</p>	<p>Anchor Text: <i>Physics</i> by Serway/Faughn (Holt McDougal, 2012)</p>	<p>Anchor Text: <i>Physics</i> by Serway/Faughn (Holt McDougal, 2012)</p>
<p>Multi-Media Links: *Videos, presentations, any and all supplemental online material.</p>	<p>Khan Academy http://my.hrw.com/ The Physics Classroom Teacher Facebook page</p>	<p>Khan Academy http://my.hrw.com/ The Physics Classroom Teacher Facebook page</p>	<p>Khan Academy http://my.hrw.com/ The Physics Classroom Teacher Facebook page</p>	<p>Khan Academy http://my.hrw.com/ The Physics Classroom Teacher Facebook page</p>	<p>Khan Academy http://my.hrw.com/ The Physics Classroom Teacher Facebook page</p>



Curriculum Map - Scope and Sequence: High School Physics

Saddlebrook Preparatory School

Instructional Practices: * Various Instructional Modalities, including Technology used	-Lecture with examples with and without a graphing calculator -Examine essential questions -Class discussion -Bell work -Homework (Practice) -Labs	-Lecture with examples with and without a graphing calculator -Examine essential questions -Class discussion -Bell work -Homework (Practice) -Labs	-Lecture with examples with and without a graphing calculator -Examine essential questions -Class discussion -Bell work -Homework (Practice) -Labs	-Lecture with examples with and without a graphing calculator -Examine essential questions -Class discussion -Bell work -Homework (Practice) -Labs	-Lecture with examples with and without a graphing calculator -Examine essential questions -Class discussion -Bell work -Homework (Practice) -Labs
Assessments: *Types and Measurements of Mastery	Informal Assessments: Teacher questioning/class discussion, practice problems Formal Assessments: Unit test, quizzes, assignments, bell work, homework, class work, labs. 80% of students will average a score of 80% on unit assessments.	Informal Assessments: Teacher questioning/class discussion, practice problems Formal Assessments: Unit test, quizzes, assignments, bell work, homework, class work, labs. 80% of students will average a score of 80% on unit assessments.	Informal Assessments: Teacher questioning/class discussion, practice problems Formal Assessments: Unit test, quizzes, assignments, bell work, homework, class work, labs. 80% of students will average a score of 80% on unit assessments.	Informal Assessments: Teacher questioning/class discussion, practice problems Formal Assessments: Unit test, quizzes, assignments, bell work, homework, class work, labs. 80% of students will average a score of 80% on unit assessments.	Informal Assessments: Teacher questioning/class discussion, practice problems Formal Assessments: Unit test, quizzes, assignments, bell work, homework, class work, labs, final exam. 80% of students will average a score of 80% on unit assessments.
Interdisciplinary Lessons & Projects: *State additional content areas and title all lesson(s) and project(s)	Assignment: Examine the way in which a refrigerator operates by transferring heat. <div style="text-align: center;">Engineering</div>	Assignment: Use a simulator to examine how waves interact with each other to form a resultant wave. <div style="text-align: center;">Acoustics</div>	Assignment: Examine how a prism separates the electromagnetic spectrum into individual colors. <div style="text-align: center;">Engineering</div>	Assignment: Determine how a Van de Graaff generator works and use it to explore the nature of electric charging. <div style="text-align: center;">Engineering</div>	Assignment: Examine how guitar pickups, microphones and speakers work by magnetic induction. <div style="text-align: center;">Music, Engineering</div>
Honors Course Differentiation(s):	-Additional test questions involving higher order questioning to demonstrate mastery -Additional homework problems -Q3 project	-Additional test questions involving higher order questioning to demonstrate mastery -Additional homework problems -Q3 project	-Additional test questions involving higher order questioning to demonstrate mastery -Additional homework problems -Q3 project	-Additional test questions involving higher order questioning to demonstrate mastery -Additional homework problems -Q4 project	-Additional test questions involving higher order questioning to demonstrate mastery -Additional homework problems -Q4 project



Curriculum Map - Scope and Sequence: High School Physics

Saddlebrook Preparatory School

Integrated Common Core or NGSSS Standards (List): *See Below for Links	NGSSS SC.912.P.10.2 NGSSS SC.912.P.10.4 NGSSS SC.912.P.10.5 NGSSS SC.912.P.12.5 NGSSS SC.912.P.10.8	NGSSS SC.912.P.10.1 NGSSS SC.912.P.10.20 NGSSS SC.912.P.10.21	NGSSS SC.912.P.10.10 NGSSS SC.912.P.10.18 NGSSS SC.912.P.10.20 NGSSS SC.912.P.10.21 NGSSS SC.912.P.10.22 NGSSS SC.912.P.12.7	NGSSS SC.912.P.10.10 NGSSS SC.912.P.10.13 NGSSS SC.912.P.10.14 NGSSS SC.912.P.12.3	NGSSS SC.912.P.10.16 NGSSS SC.912.P.10.17 NGSSS SC.912.P.10.18 NGSSS SC.912.P.10.21
Integrated CCSS Writing Standards (List): *See Below for Links	CCSS.ELA-Literacy.W.9-10.1.d CCSS.ELA-Literacy.W.9-10.2.d	CCSS.ELA-Literacy.W.9-10.1.d CCSS.ELA-Literacy.W.9-10.2.d	CCSS.ELA-Literacy.W.9-10.1.d CCSS.ELA-Literacy.W.9-10.2.d	CCSS.ELA-Literacy.W.9-10.1.d CCSS.ELA-Literacy.W.9-10.2.d	CCSS.ELA-Literacy.W.9-10.1.d CCSS.ELA-Literacy.W.9-10.2.d
Links to CCSS/NGSSS Curriculum Standards:	The following links will be used to incorporate the CCSS and other applicable standards: <ul style="list-style-type: none"> • The Common Core State Standard expectations in high school • The K-12 English LA and Content Area Writing Standards • The K-12 Reading Standards • The K-12 Mathematics Standards • The K-12 NGSSS Science & Social Studies Standards 				

