







Cornwall-Lebanon School District Curriculum Overview

Honors Physics (11 – 12)

 length of time in weeks	Concepts & Competencies	Common Assessments	Academic Standards (PA Core if applicable)
Unit 1  2	<u>One Dimensional Linear Motion</u> Students will analyze the motion of an object using graphs. Students will distinguish between vector and scalar quantities. Students will solve problems involving position, velocity, and acceleration.	<ul style="list-style-type: none"> ➤ Linear Motion Lab ➤ One-Dimensional Motion Test ➤ Marking Period 1 Exam ➤ Midterm Exam 	3.2.P.B1 3.2.P.B6 "Science as Inquiry"
Unit 2  2	<u>Two-Dimensional Linear Motion</u> Students will add and resolve vectors. Students will solve projectile motion problems. Students will recognize that motion in the x and motion in the y are independent	<ul style="list-style-type: none"> ➤ Marble Drop Lab ➤ Two-Dimensional Motion Test ➤ Marking Period 1 Exam ➤ Midterm Exam 	3.2.P.B1 3.2.P.B6 "Science as Inquiry"
Unit 3  3	<u>Forces</u> Students will use Newton's 1 st Law to analyze balanced force situations. Students will use Newton's 2 nd Law to analyze unbalanced force situations. Students will use Newton's 3 rd Law to analyze action/reaction force pairs. Students will properly identify and label all forces acting on a system.	<ul style="list-style-type: none"> ➤ Tension Lab ➤ Marking Period 1 Exam ➤ Midterm Exam 	3.2.P.B1 3.2.P.B6 3.2.12.B6 "Science as Inquiry"
Unit 4  2	<u>Energy</u> Students will identify and calculate the energies present in a given system. Students will apply the law of Conservation of Energy to solve problems. Students will recognize that Work is the change of energy in a system. Students will calculate the amount of Work done on a system. Students will recognize that Power is the rate of doing Work.	<ul style="list-style-type: none"> ➤ Energy Test ➤ Midterm Exam 	3.2.P.B2 3.2.12.B2 3.2.P.B6 3.2.12.B6 "Science as Inquiry"
Unit 5  2	<u>Momentum</u> Students will calculate the momentum of an object. Students will use the Law of Conservation of Momentum to solve problems. Students will recognize that the change in	<ul style="list-style-type: none"> ➤ Ballistic Pendulum Lab ➤ Momentum Test ➤ Midterm Exam 	3.2.P.B2 3.2.12.B2 3.2.P.B6 3.2.12.B6

		momentum is due to an impulse. Students will distinguish between Elastic and Inelastic collisions.		"Science as Inquiry"
Unit 6	2	<u>Rotational Motion Part 1</u> Students will distinguish between linear and rotational quantities. Students will solve problems involving angular position, velocity, and acceleration. Students will identify and use the centripetal force. Students will solve problems using Universal Gravitation.	<ul style="list-style-type: none"> ➤ Circular Motion Lab ➤ Rotational Motion Part 1 Test ➤ Midterm Exam 	3.2.P.B1 3.2.12.B1 3.2.P.B2 3.2.12.B2 3.2.P.B6 3.2.12.B6 "Science as Inquiry"
Unit 7	2	<u>Rotational Motion Part 2</u> Students will calculate the Torque acting on an object. Students will recognize and apply the conditions for Static Equilibrium. Students will identify the factors affecting the Moment of Inertia. Students will calculate and apply the Angular Momentum of an object. Students will classify Simple Machines and evaluate Mechanical Advantage.	<ul style="list-style-type: none"> ➤ Pulley Lab ➤ Rotational Motion Part 2 Test ➤ 3rd Marking Period Exam ➤ Final Exam 	3.2.P.B1 3.2.12.B1 3.2.P.B2 3.2.12.B2 3.2.P.B6 3.2.12.B6 "Science as Inquiry"
Unit 8	3	<u>Fluids</u> Students will recognize the properties of a fluid. Students will use Archimedes' Principle to solve problems involving Buoyant Force. Students will use Pascal's Principle to solve problems involving Pressure. Students will use Bernoulli's Principle to solve problems involving fluid flow. Students will use the Ideal Gas Law to solve problems.	<ul style="list-style-type: none"> ➤ Fluids Unit Test ➤ 3rd Marking Period Exam ➤ Final Exam 	3.2.P.B1 3.2.12.B6 "Science as Inquiry"
Unit 9	2	<u>Thermal Physics Part 1</u> Students will describe how heat affects a system. Students will convert temperatures between scales. Students will calculate the amount of heat used in a process. Students will recognize that the total amount of heat in a system is conserved.	<ul style="list-style-type: none"> ➤ Internal Energy Lab ➤ 3rd Marking Period Exam ➤ Final Exam 	3.2.P.B3 3.2.12.B3 3.2.12.B6
Unit 10	2	<u>Thermal Physics Part 2</u> Students will recognize the thermodynamic processes and the properties of each. Students will calculate the amount of work done on or by a gas. Students will use the First Law of Thermodynamics to solve problems. Students will recognize the Second Law of Thermodynamics and describe how entropy is related to it. Students will calculate efficiency.	<ul style="list-style-type: none"> ➤ Thermal Physics Exam ➤ Final Exam 	3.2.P.B3 3.2.12.B3 3.2.12.B6

Unit 11	4	<p><u>Electricity</u></p> <p>Students will recognize and calculate the amount of interaction between positive and negative electric charges. Students will differentiate between and calculate the Electrical Potential Energy, Electric Potential, and Potential Difference. Students will recognize and apply the properties of Voltage, Current, and Resistance. Students will solve problems using Ohm's Law and Watt's Law.</p>	<ul style="list-style-type: none"> ➤ Series, Parallel, and Complex Circuits Lab ➤ Electricity Unit Test ➤ Final Exam 	<p>3.2.P.B4 3.2.12.B4 3.2.12.B6 "Science as Inquiry"</p>
Unit 12	2	<p><u>Waves</u></p> <p>Students will identify the properties of a waves. Students will apply the properties of waves to sound. Students will apply the properties of waves to light. Students will use ray diagrams to solve problems.</p>	<ul style="list-style-type: none"> ➤ Sound Lab ➤ Refraction Lab ➤ Thin Lens Lab ➤ Final Exam 	<p>3.2.P.B5 "Science as Inquiry"</p>