Cornwall-Lebanon School District Curriculum Overview

Principles of Physics – 12th

length of time in weeks	Concepts & Competencies	Common Assessments	Academic Standards (PA Core if applicable)
Unit 1 — 3	<u>Units</u> Recognize why science needs a standard form of measurement Recognize and apply Metric Prefixes to solve problems. Make unit conversions between the Metric and English systems of measurement.	➢ Standard Unit Lab ➢ Unit 1 Test	3.2.P.B1. 3.2.P.B6.
Unit 2 — 4	<u>1 D Motion</u> Distinguish between Distance and Displacement. Distinguish between Speed and Velocity, and apply to solve problems. Distinguish between Speed and Acceleration, and apply to solve problems. Define a Vector and apply it in terms of Velocity and Acceleration.	➢ VASCAR Lab ➢ Speed Acceleration graphing Lan ➢ Unit 2 Test ➢ First MP Test	3.2.P.B1. 3.2.P.B6
Unit 3 — 3	<u>Gravity</u> Define Gravity in terms of acceleration and as an attractive force. Recognize that gravity changes with mass. Recognize that gravity only works in the vertical direction. Solve problems using vertical and horizontal components of velocity and acceleration	➢ Bullseye Lab ➢ Gravity Quiz ➢ Unit 3 Test	3.2.P.B1. 3.2.P.B6
Unit 4 — 3	<u>Forces</u> Use Newton's 1st Law to analyze balanced force situations. Use Newton's 2nd Law to analyze unbalanced force situations. Use Newton's 3rd Law to analyze action/reaction force pairs. Properly identify and label all forces acting on a system	➢ Newton's Law Demonstration Lab ➢ Friction Lab ➢ Collision Lab ➢ Newton's Law Qui ➢ Friction Quiz ➢ Unit 4 Test	3.2.P.B1. 3.2.P.B6. 3.2.12.B6

Unit 5 — 4	<u>Circular Motion</u> Use Newton's 1st Law to analyze balanced force situations. Use Newton's 2nd Law to analyze unbalanced force situations. Use Newton's 3rd Law to analyze action/reaction force pairs. Properly identify and label all forces acting on a system	➢ Center of Gravity Quiz ➢ PhET Torque Lab ➢ Walk the Plank Lab ➢ Unit 5 Test included in Mid-Term 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.
Unit 6 — 3	<u>Current Electricity</u> Recognize and apply the properties of Voltage, Current, and Resistance. Solve problems using Ohm's Law and Watt's Law. Distinguish between the components and properties of a Series and a Parallel circuit	➢ Circuit Lab ➢ Resistor Lab ➢ Unit 6 test	3.2.P.B4. 3.2.12.B4. 3.2.12.B6.
Unit 7 — 4	<u>Energy</u> Identify and calculate the energies present in a given system. Apply the law of Conservation of Energy to solve problems. Recognize that Work is the change of energy in a system. Calculate the amount of Work done on a system. Recognize that Power is the rate of doing Work.	➢ Energy Quiz ➢ Slowest Rollercoaster Lab	3.2.P.B2. 3.2.12.B2. 3.2.P.B6. 3.2.12.B6.
Unit 8 — 3	<u>Simple Machines</u> Identify 6 simple machines Distinguish between Input force/distance and Output force/distance Calculate the Mechanical Advantage of simple machines	➢ Lever Lab ➢ Pulley Lab ➢ Rube Goldberg Lab ➢ Unit 8 Test ➢ 3rd Marking Period Test	3.2.P.B2. 3.2.12.B2. 3.2.P.B6. 3.2.12.B6.
Unit 9 — 3	<u>Pressure</u> Calculate the pressure acting on an object. Recognize the properties of a fluid. Use Archimedes' Principle to solve problems involving Buoyant Force. Use Pascal's Principle to solve problems involving Pressure. Use Bernoulli's Principle to solve problems involving fluid flow.	➢ Pressure Guys Quiz ➢ Unit 9 Test	3.2.P.B1. 3.2.12.B6.

Unit 10 2	**Waves** Describe the difference between a Transverse and a Longitudinal Wave. Identify the parts of a wave and how they affect sound. Calculate wave speed, period and frequency.	➢ Assessed with Final Exam	3.2.P.B2. 3.2.12.B2. 3.2.P.B6. 3.2.12.B6. 3.2.12.B5