



Alignment Document
State of Hawaii and Aventa Learning Physics

Physics
2005-2007 Benchmark Blueprint

Strand	Standard	Topic	Benchmark	Unit Name	Course Topic Description
The Scientific Process	PS.1 Discover, invent, and investigate using the skills necessary to engage in the scientific process	Scientific Inquiry	<p>PS.1.1 Describe how a testable hypothesis may need to be revised to guide a scientific investigation</p> <p>PS.1.2 Design and safely implement an experiment, including the appropriate use of tools and techniques to organize, analyze, and validate data</p> <p>PS.1.3 Defend and support conclusions, explanations, and arguments based on logic, scientific knowledge, and evidence from data</p> <p>PS.1.4 Determine the connection(s) among hypotheses, scientific evidence, and conclusions</p> <p>PS.1.5 Communicate the components of a scientific investigation, using appropriate techniques</p> <p>PS.1.6 Engage in and explain the importance of peer review in science</p>	<p>All labs</p> <p>All labs</p> <p>Physics and the Laws of Motion</p>	Motion in One Dimension

			<p>PS.1.7 Revise, as needed, conclusions and explanations based on new evidence</p> <p>PS.1.8 Describe the importance of ethics and integrity in scientific investigation</p> <p>PS.1.9 Explain how scientific explanations must meet a set of established criteria to be considered valid</p>	Magnetism and Atomic Physics	Atomic Physics
The Scientific Process	PS.2 Understand that science, technology, and society are interrelated	Science, Technology, and Society	<p>PS.2.1 Explain how scientific advancements and emerging technologies have influenced society</p> <p>PS.2.2 Compare the risks and benefits of potential solutions to technological issues</p>	<p>Magnetism and Atomic Physics</p> <p>Magnetism and Atomic Physics</p> <p>Electricity</p> <p>Electricity</p>	<p>Electromagnetic Induction</p> <p>Atomic Physics</p> <p>Electrical Energy and Current</p> <p>Circuits and Circuit Elements</p>
Life and Environmental Sciences	PS.3 Understand the unity, diversity, and interrelationships of organisms, including their relationship to cycles of matter and energy in the environment		No benchmark for Physical Science		
Life and Environmental Sciences	PS.4 Understand the structures and functions of living organisms and how organisms can be compared scientifically		No benchmark for Physical Science		
Life and Environmental Sciences	PS.5 Understand genetics and biological evolution and their impact on the unity and diversity of organisms		No benchmark for Physical Science		

Physical, Earth, and Space Sciences	PS.6 Understand the nature of matter and energy, forms of energy (including waves) and energy transformations, and their significance in understanding the structure of the universe	Energy and its Transformation	<p>PS.6.1 Describe endothermic and exothermic chemical reactions</p> <p>PS.6.2 Explain how the law of conservation of energy is applied to various systems</p> <p>PS.6.3 Describe different examples of the concept of entropy</p> <p>PS.6.4 Explain that changes in thermal energy can lead to a phase change of matter</p> <p>PS.6.5 Compare transverse and longitudinal waves and their properties</p> <p>PS.6.6 Explain and provide examples of electromagnetic radiation and sound using a wave model</p> <p>PS.6.7 Explain how elements are arranged in the periodic table and describe trends among elemental properties</p> <p>PS.6.8 Describe interactions among molecules</p> <p>PS.6.9 Describe the factors that affect the rate of chemical reactions</p> <p>PS.6.10 Explain how atoms bond using valence</p>	<p>Heat and Thermodynamics</p> <p>Energy and Motion</p> <p>Energy and Motion</p> <p>Heat and Thermodynamics</p> <p>Heat and Thermodynamics</p> <p>Heat and Thermodynamics</p> <p>Waves</p> <p>Waves</p> <p>Waves</p>	<p>Thermodynamics</p> <p>Work and Energy</p> <p>Conservation of Mechanical Energy Lab</p> <p>Thermodynamics</p> <p>Thermal Equilibrium Lab</p> <p>Thermodynamics</p> <p>Heat</p> <p>Vibrations and Waves</p> <p>Sound Lab</p> <p>Light</p>
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			<p>electrons</p> <p>PS.6.11 Describe a variety of chemical reactions</p> <p>PS.6.12 Describe nuclear reactions and how they produce energy</p>		
Physical, Earth, and Space Sciences	PS.7 Understand the relationship between force, mass, and motion of objects; and know the major natural forces: gravitational, electric, and magnetic	Forces and Motion	<p>PS.7.1 Apply the laws of motion to determine the effects of forces on the linear motion of objects</p> <p>PS.7.2 Use vectors to explain force and motion</p> <p>PS.7.3 Explain the relationship among the gravitational force, the mass of the objects, and the distance between objects</p> <p>PS.7.4 Explain the magnetic and electric forces in the universe</p>	<p>Physics and the Laws of Motion</p> <p>Physics and the Laws of Motion</p> <p>Physics and the Laws of Motion</p> <p>Physics and the Laws of Motion</p> <p>Energy and Motion</p> <p>Magnetism and Atomic Physics</p> <p>Electricity</p>	<p>Free-Fall Acceleration Lab</p> <p>Motion in One Dimension</p> <p>Motion in Two Dimensions</p> <p>Projectile Motion Lab</p> <p>Circular Motion and Gravitation</p> <p>Magnetism</p> <p>Electrical Forces and Fields</p>
Physical, Earth, and Space Sciences	PS.8 Understand the Earth and its processes, the solar system, and the universe and its contents		No benchmark for Physical Science		