AVENTA LEARNING

Alignment Document

State of Nevada
And
Aventa Learning Physics

Physics
2005-2007 Benchmark Blueprint

State Standard Number	State Standard Area / Description	Unit Name	Course Topic Description
N.12	Nature of Science		
0	Scientific inquiry is the process by which humans systematically examine the natural world. Scientific inquiry is a human endeavor and involves observation, reasoning, insight, energy, skill, and creativity. Scientific inquiry is used to formulate and test explanations of nature through observation, experiments, and theoretical or mathematical models. Scientific explanations and evidence are constantly reviewed and examined by others. Questioning, response to criticism and open communication are integral to the process of science.		
N.12.A	Students understand that a variety of communication methods can be used to share scientific information.	Physics and the Laws of Motion	Free Fall Acceleration Lab
		Physics and the Laws of Motion	Projectile Motion Lab
		Heat and Thermodynamics	Thermal Equilibrium Lab
		Heat and Thermodynamics	Piston Lab
		Waves	Simple Harmonic Motion Lab
		Electricity	Current and Resistance Lab

0	Using Data		
N.12.A.1	Students know tables, charts, illustrations and graphs can be used in making arguments and claims in oral and written presentations.	Physics and the Laws of Motion	Free Fall Acceleration Lab
		Physics and the Laws of Motion	Projectile Motion Lab
		Heat and Thermodynamics	Thermal Equilibrium Lab
		Heat and Thermodynamics	Piston Lab
		Waves	Simple Harmonic Motion Lab
		Electricity	Current and Resistance Lab
0	Record-keeping		
N.12.A.2	Students know scientists maintain a permanent record of procedures, data, analyses, decisions, and understandings of scientific investigations.	Introduction	Lab Activities
0	Accuracy		
N.12.A.3	Students know repeated experimentation allows for statistical analysis and unbiased conclusions.	Physics and the Laws of Motion	Free Fall Acceleration Lab
		Physics and the Laws of Motion	Projectile Motion Lab
		Physics and the Laws of Motion	Forces and Friction Lab
		Energy and Motion	Momentum Lab
		Energy and Motion	Machines and Efficiency Lab
		Heat and Thermodynamics	Thermal Equilibrium Lab
		Heat and Thermodynamics	Piston Lab
		Waves	Simple Harmonic Motion Lab
		Waves	Waves Lab
		Waves	Sound Lab
		Waves	Converging Lenses Lab
		Electricity	Electrostatics Lab
		Electricity	Current and Resistance Lab
		Electricity	Resistors in Series and Parallel Lab
		Magnetism and Atomic Physics	Magnetic Field of a Solenoid Lab

		Magnetism and Atomic Physics	Electromagnetic Induction Lab
		Magnetism and Atomic Physics	Photoelectric Effect Lab
0	Safe Experimentation		
N.12.A.4	Students know how to safely conduct an original scientific investigation using the appropriate tools and technology.		
0	Models		
N.12.A.5	Students know models and modeling can be used to identify and predict cause-effect relationships.	Introduction	Lab Activities
N.12.A.6	Students know organizational schema can be used to represent and describe relationships of sets.	Heat and Thermodynamics	Thermodynamics
0	Technology defines a society or era. It can shape the environment in which people live, and it has increasingly become a larger part of people's lives. While many of technology's effects on society are regarded as desirable, other effects are seen as less desirable. These concepts are shared across subject areas such as science, math, technology, social studies and language arts. The development and use of technology affects society and the environment in which we live, and, at the same time, society influences the development of technology and its impact on culture.		
N.12.B	Students understand the impacts of science and technology in terms of costs and benefits to society.	Electricity	Light Pollution Discussion
		Electricity	High Voltage Discussion
		Electricity	Hybrid Vehicles Discussion
0	Risks and Benefits		
N.12.B.1	Students know science, technology, and society influenced one another in both positive and negative ways.	Electricity	Light Pollution Discussion
		Electricity	High Voltage Discussion
		Electricity	Hybrid Vehicles Discussion
0	Ethical Behavior		
N.12.B.2	Students know consumption patterns, conservation efforts, and cultural or social practices in countries have varying environmental impacts.	Electricity	High Voltage Discussion
		Electricity	Hybrid Vehicles Discussion

N.12.B.3	Students know the influence of ethics on scientific enterprise.	Electricity	Hybrid Vehicles Discussion
0	Collaboration		
N.12.B.4	Students know scientific knowledge builds on previous information.	Magnetism and Atomic Physics	Atomic Physics
P.12	Physical Science		
0	Matter has various states with unique properties that can be used as a basis for organization. The relationship between the properties of matter and its structure is an essential component of study in the physical sciences. The understanding of matter and its properties leads to practical applications, such as the capability to liberate elements from ore, create new drugs, manipulate the structure of genes and synthesize polymers.		
P.12.A	Students understand that atomic structure explains the properties and behavior of matter.		
0	Properties of Matter		
P.12.A.1	Students know different molecular arrangements and motions account for the different physical properties of solids, liquids, and gases.	Heat and Thermodynamics	Heat
P.12.A.2	Students know elements in the periodic table are arranged into groups and periods by repeating patterns and relationships.		
0	Mixtures and Compounds		
P.12.A.3	Students know identifiable properties can be used to separate mixtures.		
P.12.A.4	Students know atoms bond with one another by transferring or sharing electrons.		
P.12.A.5	Students know chemical reactions can take place at different rates, depending on a variety of factors (i.e. temperature, concentration, surface area, and agitation).		
P.12.A.6	Students know chemical reactions either release or absorb energy.		
P.12.A.7	Students know that, in chemical reactions, elements combine in predictable ratios, and the numbers of atoms of each element do not change.		
0	Atomic Structure		
P.12.A.8	Students know most elements have two or more isotopes, some of which have practical applications.		

P.12.A.9	Students know the number of electrons in an atom determines whether the atom is electrically neutral or an ion.		
0	The laws of motion are used to describe the effects of forces on the movement of objects.		
P.12.B	Students understand the interactions between force and motion.	Physics and the Laws of Motion	Forces and the Laws of Motion
0	Motion		
P.12.B.1	Students know laws of motion can be used to determine the effects of forces on the motion of objects.	Physics and the Laws of Motion	Forces and the Laws of Motion
0	Forces		
P.12.B.2	Students know magnetic forces and electric forces can be thought of as different aspects of electromagnetic force.	Electricity	Electric Forces and Fields
		Magnetism and Atomic Physics	Magnetism
P.12.B.3	Students know the strength of the electric force between two objects increases with charge and decreases with distance.	Electricity	Electric Forces and Fields
P.12.B.4	Students know the strength of the gravitational force between two objects increases with mass and decreases rapidly with distance.	Energy and Motion	Circular Motion and Gravitation
0	The total energy of the universe is constant. All events involve the transfer of energy in one form or another. In all energy transfers, the overall effect is that the energy is spread out uniformly.	Energy and Motion	Work and Energy
		Heat and Thermodynamics	Thermodynamics
P.12.C	Students understand that there are interactions between matter and energy.	Magnetism and Atomic Physics	Atomic Physics
0	Waves		
P.12.C.1	Students know waves (I.e. sound, seismic, electromagnetic) have energy that can be transferred when the waves interact with matter.	Waves	Vibrations and Waves
		Waves	Light

0	Forms and Uses of Energy		
P.12.C.2	Students know energy forms can be converted.	Energy and Motion	Work and Energy
		Heat and Thermodynamics	Thermodynamics
		Electricity	Electrical Energy and Current
		Magnetism and Atomic Physics	Atomic Physics
P.12.C.3	Students know nuclear reactions convert a relatively small amount of material into a large amount of energy.		
P.12.C.4	Students know characteristics, applications and impacts of radioactivity.		
P.12.C.5	Students know the relationship between heat and temperature.	Heat and Thermodynamics	Heat
0	Electricity		
P.12.C.6	Students know electricity is transferred from generating sources for consumption and practical uses.	Electricity	Electrical Energy and Current
		Electricity	Appliances Discussion