



Alignment Document

State of Texas (TAKS) And Aventa Learning Physics

Physics 2005-2007 Benchmark Blueprint

State Standard Number	State Standard Area / Description	Unit Name	Course Topic Description
1	The student will demonstrate an understanding of the nature of science.		
1.1	The student, for at least 40% of instructional time, conducts field and laboratory investigations using safe, environmentally appropriate, and ethical practices.		
1.1.A	demonstrate safe practices during field and laboratory investigations.		
1.2	The student uses scientific methods during field and laboratory investigations.		
1.2.A	plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting equipment and technology;	Physics and the Laws of Motion	All labs fulfill this standard
		Physics and the Laws of Motion	Projectile Motion Lab
		Physics and the Laws of Motion	Forces and Friction Lab
		Energy and Motion	Conservation of Mechanical Energy 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	Wave Lab
		Waves	Sound Lab
		Electricity	Electrostatics Lab
		Electricity	Current and Resistance Lab
1.2.B	collect data and make measurements with precision;	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	Conservation of Mechanical Energy 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	Wave Lab
		Waves	Sound Lab
		Electricity	Electrostatics Lab
		Electricity	Current and Resistance Lab
1.2.C	organize, analyze, evaluate, make inferences, and predict trends from data; and	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	Conservation of Mechanical Energy 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	Wave Lab



		Waves	Sound Lab
		Electricity	Electrostatics Lab
		Electricity	Current and Resistance Lab
1.2.D	communicate valid 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	Conservation of Mechanical Energy 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	Wave Lab
		Waves	Sound Lab
		Electricity	Electrostatics Lab
		Electricity	Current and Resistance Lab
1.3	The student uses critical thinking and scientific problem solving to make informed decisions.		
1.3.A	analyze, review, [and critique] scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information; and		
1.3.B	draw inferences based on data related to [promotional materials for] products and services.		
2	The student will demonstrate an understanding of the organization of living systems.		
2.4	The student knows that cells are the basic structures of all living things and have specialized parts that perform specific functions, and that viruses are different from cells and have different properties and functions. The		



2.4.B	investigate and identify cellular processes including homeostasis, permeability, energy production, transportation of molecules, disposal of wastes, function of cellular parts, and synthesis of new molecules.		
2.6	The student knows the structures and functions of nucleic acids in the mechanisms of genetics.		
2.6.A	describe components of deoxyribonucleic acid (DNA), and illustrate how information for specifying the traits of an organism is carried in the DNA;		
2.6.B	explain replication, transcription, and translation using models of DNA and ribonucleic acid (RNA); and		
2.6.C	identify and illustrate how changes in DNA cause mutations and evaluate the significance of these changes.		
2.8	The student knows applications of taxonomy and can identify its limitations.		
2.8.C	identify characteristics of kingdoms including monerans, protists, fungi, plants, and animals.		
2.10	The student knows that, at all levels of nature, living systems are found within other living systems, each with its own boundary and limits.		
2.10.A	interpret the functions of systems in organisms including circulatory, digestive, nervous, endocrine, reproductive, integumentary, skeletal, respiratory, muscular, excretory, and immune; and		
2.10.B	compare the interrelationships of organ systems to each other and to the body as a whole.		
3	The student will demonstrate an understanding of the interdependence of organisms and the environment.		
3.4	The student knows that cells are the basic structures of all living things and have specialized parts that perform specific functions, and that viruses are different from cells and have different properties and functions.		



3.4.C	compare the structures and functions of viruses to cells and describe the role of viruses in causing diseases and conditions such as acquired immune deficiency syndrome, common colds, smallpox, influenza, and warts; and		
3.4.D	identify and describe the role of bacteria in maintaining health such as in digestion and in causing diseases such as in streptococcus infections and diphtheria.		
3.7	The student knows the theory of biological evolution.		
3.7.A	identify evidence of change in species using fossils, DNA sequences, anatomical similarities, physiological similarities, and embryology; and		
3.7.B	illustrate the results of natural selection in speciation, diversity, phylogeny, adaptation, behavior, and extinction.		
3.9	The student knows metabolic processes and energy transfers that occur in living organisms.		
3.9.D	analyze the flow of matter and energy through different trophic levels and between organisms and the physical environment.		
3.12	The student knows that interdependence and interactions occur within an ecosystem.		
3.12.B	interpret interactions among organisms exhibiting predation, parasitism, commensalism, and mutualism; and		
3.12.E	investigate and explain the interactions in an ecosystem including food chains, food webs, and food pyramids.		
3.13	The student knows the significance of plants in the environment.		
3.13.A	evaluate the significance of structural and physiological adaptations of plants to their environments.		
4	The student will demonstrate an understanding of the structures and properties of matter.		
4.7	The student knows relationships exist between properties of matter and its components.		
4.7.A	investigate and identify properties of fluids including density, viscosity, and buoyancy; and		



AVENTA LEARNING

4.7.D	relate the chemical behavior of an element including bonding, to its placement on the periodic table.		
4.8	The student knows that changes in matter affect everyday life.		
4.8.A	distinguish between physical and chemical changes in matter such as oxidation, digestion, changes in states, and stages in the rock cycle; and		
4.8.C	investigate and identify the law of conservation of mass.		
4.9	The student knows how solution chemistry is a part of everyday life.		
4.9.A	relate the structure of water to its function [as the universal solvent];		
4.9.B	relate the concentration of ions in a solution to physical and chemical properties such as pH, electrolytic behavior, and reactivity; and		
4.9.D	demonstrate how various factors influence solubility including temperature, pressure, and nature of the solute and solvent.		
5	The student will demonstrate an understanding of motion, forces, and energy.		
5.4	The student knows concepts of force and motion evident in everyday life.		
5.4.A	calculate speed, momentum, acceleration, work, and power in systems such as in the human body, moving toys, and machines;	Physics and the Laws of Motion	Two Dimensional Motion and Vectors
		Energy and Motion	Momentum and Collisions
		Energy and Motion	Work and Energy
5.4.B	investigate and describe applications of Newton's laws such as in vehicle restraints, sports activities, geological processes, and satellite orbits; and	Energy and Motion	Circular Motion and Gravitation
		Physics and the Laws of Motion	Forces and Friction Lab
		Physics and the Laws of Motion	Forces and the Laws of Motion
5.4.D	investigate and demonstrate [mechanical advantage and] efficiency of various machines such as levers, motors, wheels and axles, pulleys, and ramps.	Energy and Motion	Machines and Efficiency Lab
5.5	The student knows the effects of waves on everyday life.		



AVENTA LEARNING

5.5.B	demonstrate wave interactions including interference, polarization, reflection, refraction, and resonance within various materials.		
5.6	The student knows the impact of energy transformations in everyday life.		
5.6.A	describe the law of conservation of energy;	Physics and the Laws of Motion	Work and Energy
5.6.B	investigate and demonstrate the movement of heat through solids, liquids, and gases by convection, conduction, and radiation; and	Heat and Thermodynamics	Heat
		Heat and Thermodynamics	Thermodynamics
		Heat and Thermodynamics	Thermal Equilibrium Lab
5.6.D	investigate and compare economic and environmental impacts of using various energy sources such as rechargeable or disposable batteries and solar cells.	Electricity	Circuits and Circuit elements
		Electricity	Electrical Energy and Current