



Alignment Document
State of Texas (TAKS)
And
Aventa Learning Chemistry

Chemistry
 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.	Labs	Labs Throughout Course
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;	Labs	Labs Throughout Course
1.2.B	collect data and make measurements with precision;	Labs	Labs Throughout Course
1.2.C	organize, analyze, evaluate, make inferences, and predict trends from data; and	Labs	Labs Throughout Course
1.2.D	communicate valid conclusions.	Labs	Lab Reports Throughout Course
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	The Scientific Method	The Scientific Method
		Labs	Labs Throughout Course



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.		



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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	The Scientific Method	Accuracy and Precision
4.7.D	relate the chemical behavior of an element including bonding, to its placement on the periodic table.	Atoms/Period Table	Group Names
		Atoms/Period Table	Trends in The Periodic Table
		Ionic Compounds	Ionic and Covalent Compounds
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	Chemistry Fundamentals	Physical Change
		Chemistry Fundamentals	Chemical Change
		Chemistry Fundamentals	Chemical Versus Physical Properties
4.8.C	investigate and identify the law of conservation of mass.	Chemical Reactions	What is a Chemical Reaction?
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];	Water, Solutions and the Acid-Base Relation	Introduction
4.9.B	relate the concentration of ions in a solution to physical and chemical properties such as pH, electrolytic behavior, and reactivity; and	Water, Solutions and the Acid-Base Relation	Properties of Solutions
4.9.D	demonstrate how various factors influence solubility including temperature, pressure, and nature of the solute and solvent.	Water, Solutions and the Acid-Base Relation	The Solution Process
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;		



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5.4.B	investigate and describe applications of Newton's laws such as in vehicle restraints, sports activities, geological processes, and satellite orbits; and		
5.4.D	investigate and demonstrate [mechanical advantage and] efficiency of various machines such as levers, motors, wheels and axles, pulleys, and ramps.		
5.5	The student knows the effects of waves on everyday life.		
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;	The Scientific Method	Energy
5.6.B	investigate and demonstrate the movement of heat through solids, liquids, and gases by convection, conduction, and radiation; and	Solids, Liquids, and Gases	Properties of Gases
		Solids, Liquids, and Gases	Change of State
5.6.D	investigate and compare economic and environmental impacts of using various energy sources such as rechargeable or disposable batteries and solar cells.		