AVENTA LEARNING

Alignment Document

State of Texas
And
Aventa Learning Biology

Biology
2005-2007 Benchmark Blueprint

State Standard Number	State Standard Area / Description	Unit Name	Course Topic Description
112.43	Biology		
0	Scientific processes.		
112.43.1	The student, for at least 40% of instructional time, conducts field and laboratory investigations using safe, environmentally appropriate, and ethical practices.	The Nature of Science	The Nature of Science
112.43.1.A	demonstrate safe practices during field and laboratory investigations;	The Nature of Science	The Nature of Science
112.43.1.B	make wise choices in the use and conservation of resources and the disposal or recycling of materials.	The Nature of Science	The Nature of Science
112.43.2	The student uses scientific methods during field and laboratory investigations.	The Nature of Science	Science and the Scientific Method
112.43.2.A	plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting equipment and technology;	The Nature of Science	Science and the Scientific Method
112.43.2.B	collect data and make measurements with precision;	The Nature of Science	Science and the Scientific Method
112.43.2.C	organize, analyze, evaluate, make inferences, and predict trends from data;	The Nature of Science	Science and the Scientific Method
112.43.2.D	communicate valid conclusions.	The Nature of Science	Science and the Scientific Method
112.43.3	The student uses critical thinking and scientific problem solving to make informed decisions.	The Nature of Science	Science and the Scientific Method

112.43.3.A	analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information;	The Nature of Science	Science and the Scientific Method
112.43.3.B	evaluate promotional claims that relate to biological issues such as product labeling and advertisements;		
112.43.3.C	evaluate the impact of research on scientific thought, society, and the environment;	The Nature of Science	Characteristics of Life
112.43.3.D	describe the connection between biology and future careers;	The Nature of Science	Who is a Biologist
112.43.3.E	evaluate models according to their adequacy in representing biological objects or events;	The Nature of Science	The Nature of Science
112.43.3.F	research and describe the history of biology and contributions of scientists.	The Nature of Science	Who is a Biologist
0	Science concepts.		
112.43.4	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.	Cell Structure	Cell Features
112.43.4.A	identify the parts of prokaryotic and eukaryotic cells;	Cell Structure	Cell Features
112.43.4.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;	Photosynthesis	Photosynthesis and Cellular Respiration
112.43.4.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;		
112.43.4.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.	Biological Diversity	Prokaryotes
112.43.5	The student knows how an organism grows and how specialized cells, tissues, and organs develop.	Animal Organization	The Reproductive System and Human Development

112.43.5.A	compare cells from different parts of plants and animals including roots, stems, leaves, epithelia, muscles, and bones to show specialization of structure and function;	Plant Structure	Plant Organs, Tissues, and Cells
112.43.5.B	identify cell differentiation in the development of organisms;	Animal Organization	The Reproductive System and Human Development
112.43.5.C	sequence the levels of organization in multicellular organisms to relate the parts to each other and to the whole.	Biological Diversity	The Kingdoms and Domains of Life
112.43.6	The student knows the structures and functions of nucleic acids in the mechanisms of genetics.	Genetics	How Proteins are Made
112.43.6.A	describe components of deoxyribonucleic acid (DNA), and illustrate how information for specifying the traits of an organism is carried in the DNA;	Genetics	How Proteins are Made
112.43.6.B	explain replication, transcription, and translation using models of DNA and ribonucleic acid (RNA);	Genetics	Protein Synthesis
112.43.6.C	identify and illustrate how changes in DNA cause mutations and evaluate the significance of these changes;	Genetics	How Proteins are Made
112.43.6.D	compare genetic variations observed in plants and animals;	Evolution	Evolution and Genetics
112.43.6.E	compare the processes of mitosis and meiosis and their significance to sexual and asexual reproduction;	Cell Structure	Chromosomes and Cell Reproduction
112.43.6.F	identify and analyze karyotypes.	Genetics	Human Genetic Traits
112.43.7	The student knows the theory of biological evolution.	Evolution	Descent with Modification
112.43.7.A	identify evidence of change in species using fossils, DNA sequences, anatomical similarities, physiological similarities, and embryology;	Evolution	Descent with Modification
112.43.7.B	illustrate the results of natural selection in speciation, diversity, phylogeny, adaptation, behavior, and extinction.	Evolution	Descent with Modification
112.43.8	The student knows applications of taxonomy and can identify its limitations.	Biological Diversity	Taxonomy
112.43.8.A	collect and classify organisms at several taxonomic levels such as species, phylum, and kingdom using dichotomous keys;	Biological Diversity	Taxonomy

112.43.8.B	analyze relationships among organisms and develop a model of a hierarchical classification system based on similarities and differences using taxonomic nomenclature;	Biological Diversity	Taxonomy
112.43.8.C	identify characteristics of kingdoms including monerans, protists, fungi, plants, and animals.	Biological Diversity	Taxonomy
112.43.9	The student knows metabolic processes and energy transfers that occur in living organisms.	Photosynthesis	Photosynthesis and Cellular Respiration
112.43.9.A	compare the structures and functions of different types of biomolecules such as carbohydrates, lipids, proteins, and nucleic acids;	The Nature of Science	Chemistry of Life
112.43.9.B	compare the energy flow in photosynthesis to the energy flow in cellular respiration;	Photosynthesis	Photosynthesis and Cellular Respiration
112.43.9.C	investigate and identify the effects of enzymes on food molecules;	Animal Organization	The Digestive System
112.43.9.D	analyze the flow of matter and energy through different trophic levels and between organisms and the physical environment.	Population Ecology	Community and Ecosystem Dynamics
112.43.10	The student knows that, at all levels of nature, living systems are found within other living systems, each with its own boundary and limits.	Population Ecology	Community and Ecosystem Dynamics
112.43.10.A	interpret the functions of systems in organisms including circulatory, digestive, nervous, endocrine, reproductive, integumentary, skeletal, respiratory, muscular, excretory, and immune;	Animal Organization	Animal Organ Systems and Homeostasis
112.43.10.B	compare the interrelationships of organ systems to each other and to the body as a whole;	Animal Organization	Animal Organ Systems and Homeostasis
112.43.10.C	analyze and identify characteristics of plant systems and subsystems.	Biological Diversity	The Plant Kingdom
112.43.11	The student knows that organisms maintain homeostasis.	The Nature of Science	Characteristics of Life
112.43.11.A	identify and describe the relationships between internal feedback mechanisms in the maintenance of homeostasis;	Animal Organization	Animal Organ Systems and Homeostasis
112.43.11.B	investigate and identify how organisms, including humans, respond to external stimuli;	Animal Organization	The Integumentary System

112.43.11.C	analyze the importance of nutrition, environmental conditions, and physical exercise on health;	Animal Organization	The Digestive System
112.43.11.D	summarize the role of microorganisms in maintaining and disrupting equilibrium including diseases in plants and animals and decay in an ecosystem.	Plant Structure	Plant Hormones, Nutrition, and Transport
112.43.12	The student knows that interdependence and interactions occur within an ecosystem.	Population Ecology	Community and Ecosystem Dynamics
112.43.12.A	analyze the flow of energy through various cycles including the carbon, oxygen, nitrogen, and water cycles;	Population Ecology	The Biosphere and Mass Extinctions
112.43.12.B	interpret interactions among organisms exhibiting predation, parasitism, commensalism, and mutualism;	Population Ecology	Community and Ecosystem Dynamics
112.43.12.C	compare variations, tolerances, and adaptations of plants and animals in different biomes;	Population Ecology	Community and Ecosystem Dynamics
112.43.12.D	identify and illustrate that long-term survival of species is dependent on a resource base that may be limited;	Population Ecology	Population Growth
112.43.12.E	investigate and explain the interactions in an ecosystem including food chains, food webs, and food pyramids.	Population Ecology	Community and Ecosystem Dynamics
112.43.13	The student knows the significance of plants in the environment.	Biological Diversity	The Plant Kingdom
112.43.13.A	evaluate the significance of structural and physiological adaptations of plants to their environments;	Biological Diversity	The Plant Kingdom
112.43.13.B	survey and identify methods of reproduction, growth, and development of various types of plants.	Biological Diversity	The Plant Kingdom