AVENTA LEARNING

Alignment Document

State of Alaska
And
Aventa Learning Biology

Biology
2005-2007 Benchmark Blueprint

State Standard Number	State Standard Area / Description	Unit Name	Course Topic Description
A1	Science as Inquiry and Process		
SA	Students develop an understanding of the processes and applications of scientific inquiry.		
SA1	Students develop an understanding of the processes of science used to investigate problems, design and conduct repeatable scientific investigations, and defend scientific arguments.	The Nature of Science and Biology	Science and the Scientific Method
		The Nature of Science and Biology	The Scientific Method Lab
SA2	Students develop an understanding that the processes of science require integrity, logical reasoning, skepticism, openness, communication, and peer review.		
SA3	Students develop an understanding that culture, local knowledge, history, and interaction with the environment contribute to the development of scientific knowledge, and local applications provide opportunity for understanding scientific concepts and global issues	The Nature of Science and Biology	Science and the Scientific Method

SA1.1	asking questions, predicting, observing, describing, measuring, classifying, making generalizations, analyzing data, developing models, inferring and communicating.	The Nature of Science and Biology	The Scientific Method Lab
		Photosynthesis and Cellular Respiration	Enzyme Lab
		Photosynthesis and Cellular Respiration	Photosynthesis Lab
		Cell Structure	Mitosis Lab
		Cell Structure	Meiosis Lab
		Genetics	DNA Lab
		Genetics	RNA Lab
		Genetics	Biotechnology Lab
		Evolution	Evolution Lab
		History of Life on Earth	History of Life Lab
		Biological Diversity	Plants Lab
		Biological Diversity	Microbiology Lab
		Biological Diversity	Animals Lab
		Plant Structure	Plant Structure Lab
		Plant Structure	Flower Fruit Seed Lab
		Animal Organization	Virtual Pig Dissection Lab
		Population Ecology	Biomes Lab
SA1.2	reviewing pertinent literature, hypothesizing, making qualitative and quantitative observations, controlling experimental variables, analyzing data statistically (i.e., mean, median, mode), and using this information to draw conclusions, compare results to others, suggest further experimentation, and apply their conclusions to other problems.		
SA2.1	examining methodology and conclusions to identify bias and determining if evidence logically supports the conclusions.	The Nature of Science and Biology	Science and the Scientific Method
C1	Concepts of Life Science		
SC	Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science.		

SC1	Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution.	Genetics	Mendel and Heredity
		Evolution	Descent with Modification
		Evolution	Evolution and Genetics
		Biological Diversity	Kingdom Animalia
SC2	Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms.	Plant Structure	Plant Organs, Tissues, and Cells
		Plant Structure	Flowering Plant Reproduction
		Animal Organization	Animal Organ Systems and Homeostasis
		Animal Organization	The Reproductive System and Human Development
SC3	Students develop an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy.	Photosynthesis and Cellular Respiration	Where does energy come from?
SC1.1	identifying that progress in science and invention is highly interrelated to what else is happening in society.	Genetics	Biotechnology and the Genetics Revolution
		Genetics	Human Genetic Traits
SC1.2	explaining how the processes of natural selection can cause speciation and extinction.	Evolution	Evolution and Genetics
SC1.3	examining issues related to genetics	Genetics	Biotechnology and the Genetics Revolution
		Genetics	Human Genetic Traits
SC2.1	describing the structure-function relationship (i.e., joints, lungs).	Photosynthesis and Cellular Respiration	Photosynthesis
		Animal Organization	The Lymphatic System and Immunity
SC2.2	explaining that cells have specialized structures in which chemical reactions occur.	Photosynthesis and Cellular Respiration	The Chloroplast
		Photosynthesis and Cellular Respiration	The Electron Transport System
SC2.3	explaining the functions of organs of major systems (i.e., respiratory, digestive, circulatory, reproductive, nervous, musculoskeletal, and excretory).	Animal Organization	Animal Organ Systems and Homeostasis

SC2.4	tracing the pathways of the digestive, circulatory, and excretory systems.	Animal Organization	The Digestive System
		Animal Organization	The Circulatory System
		Animal Organization	Respiration and Excretion
SC3.1	relating the carbon cycle to global climate change.	Population Ecology	The Biosphere and Mass Extinctions
SC3.2	exploring ecological relationships (e.g., competition, niche, feeding relationships, symbiosis).	Population Ecology	Community and Ecosystem Dynamics
		Population Ecology	Biomes Lab
E1	Science and Technology		
SE	Students develop an understanding of the relationships among science, technology, and society.		
SE1	Students develop an understanding of how scientific knowledge and technology are used in making decisions about issues, innovations, and responses to problems and everyday events.	Genetics	Biotechnology and the Genetics Revolution
SE2	Students develop an understanding that solving problems involves different ways of thinking, perspectives, and curiosity that lead to the exploration of multiple paths that are analyzed using scientific, technological, and social merits.	Evolution	Descent with Modification
		History of Life on Earth	Birth of a Planet and Establishment of Life
SE3	Students develop an understanding of how scientific discoveries and technological innovations affect and are affected by our lives and cultures.	Genetics	Biotechnology and the Genetics Revolution
SE1.1	identifying that progress in science and invention is highly interrelated to what else is happening in society.	Genetics	Biotechnology and the Genetics Revolution
SE2.1	questioning, researching, modeling, simulating, and testing multiple solutions to a problem.		
SE3.1	researching a current problem, identifying possible solutions, and evaluating the impact of each solution.		
F1-F3	Cultural, Social, Personal Perspectives, and Science		
SF	Students develop an understanding of the dynamic relationships among scientific, cultural, social, and personal perspectives.		

SF1	Students develop an understanding of the interrelationships among individuals, cultures, societies, science, and technology.	Evolution	Descent with Modification
		Population Ecology	Community and Ecosystem Dynamics
SF2	Students develop an understanding that some individuals, cultures, and societies use other beliefs and methods in addition to scientific methods to describe and understand the world.	Evolution	Descent with Modification
		History of Life on Earth	Birth of a Planet and Establishment of Life
SF3	Students develop an understanding of the importance of recording and validating cultural knowledge.		
SF1.1	analyzing the competition for resources by various user groups to describe these interrelationships.	Population Ecology	Population Growth
SF2.1	analyzing the competition for resources by various user groups to describe these interrelationships.	Population Growth	
SF3.1	analyzing the competition for resources by various user groups to describe these interrelationships.	Population Growth	
G1	History and Nature of Science		
SG	Students develop an understanding of the history and nature of science.		
SG1	Students develop an understanding that historical perspectives of scientific explanations demonstrate that scientific knowledge changes over time, building on prior knowledge.	Evolution	Descent with Modification
		History of Life on Earth	Birth of a Planet and Establishment of Life
SG2	Students develop an understanding that the advancement of scientific knowledge embraces innovation and requires empirical evidence, repeatable investigations, logical arguments, and critical review in striving for the best possible explanations of the natural world.	The Nature of Science and Biology	Science and the Scientific Method
SG3	Students develop an understanding that scientific knowledge is ongoing and subject to change as new evidence becomes available through experimental and/or observational confirmation(s).	The Nature of Science and Biology	Science and the Scientific Method

SG4	Students develop an understanding that advancements in science depend on curiosity, creativity, imagination, and a broad knowledge base.		
SG1.1	describing how those perspectives (i.e., cultural, political, religious, philosophical) have impacted the advancement of science.	Evolution	Descent with Modification
SG2.1	using an account of an event to recognize the processes of science used by historically significant scientists (e.g., Goodall, Watson & Crick, Newton).	Evolution	Descent with Modification
SG3.1	using experimental or observational data to evaluate a hypothesis.	The Nature of Science and Biology	The Scientific Method Lab
		Photosynthesis and Cellular Respiration	Enzyme Lab
		Photosynthesis and Cellular Respiration	Photosynthesis Lab
SG4.1	recognizing the role of these factors on scientific advancements.		