



Alignment Document
State of Hawaii and Aventa Learning Biology

Biology
2005-2007 Benchmark Blueprint

Strand	Standard	Topic	Benchmark	Unit Name	Course Topic Description
The Scientific Process	BS.1 Discover, invent, and investigate using the skills necessary to engage in the scientific process	Scientific Inquiry	BS.1.1 Describe how a testable hypothesis may need to be revised to guide a scientific investigation	The Nature of Science and Biology	Science and the Scientific Method
			BS.1.2 Design and safely implement an experiment, including the appropriate use of tools and techniques to organize, analyze, and validate data		
			BS.1.3 Defend and support conclusions, explanations, and arguments based on logic, scientific knowledge, and evidence from data	Evolution	Descent With Modification
			BS.1.4 Determine the connection(s) among hypotheses, scientific evidence, and conclusions	The Nature of Science and Biology	Science and the Scientific Method
			BS.1.5 Communicate the components of a scientific investigation, using appropriate techniques	The Nature of Science and Biology	The Scientific Method Lab
				Photosynthesis and Cellular Respiration	Enzyme Lab

			<p>BS.1.6 Engage in and explain the importance of peer review in science</p> <p>BS.1.7 Revise, as needed, conclusions and explanations based on new evidence</p> <p>BS.1.8 Describe the importance of ethics and integrity in scientific investigation</p> <p>BS.1.9 Explain how scientific explanations must meet a set of established criteria to be considered valid</p>	<p>Evolution</p> <p>History of Life on Earth</p>	<p>Descent With Modification</p> <p>Birth of a Planet and Establishment of Life</p>
The Scientific Process	BS.2 Understand that science, technology, and society are interrelated	Science, Technology, and Society	<p>BS.2.1 Explain how scientific advancements and emerging technology have influenced society</p> <p>BS.2.2 Compare the risks and benefits of potential solutions to technological issues</p>	<p>Genetics</p> <p>Genetics</p>	<p>Biotechnology and the Genetics Revolution</p> <p>Biotechnology and the Genetics Revolution</p>
Life and Environmental Sciences	BS.3 Understand the unity, diversity, and interrelationships of organisms, including their relationship to cycles of matter and energy in the environment	Cycles of Matter and Energy	<p>BS.3.1 Describe biogeochemical cycles within ecosystems</p> <p>BS.3.2 Explain the chemical reactions that occur in photosynthesis and cellular respiration that result in cycling of energy</p> <p>BS.3.3 Explain how matter and energy flow through living systems and the physical environment</p> <p>BS.3.4 Explain dynamic equilibrium in organisms, populations, and ecosystems;</p>	<p>Population Ecology</p> <p>Photosynthesis and Cellular Respiration</p> <p>Photosynthesis and Cellular Respiration</p> <p>Population Ecology</p> <p>Photosynthesis and Cellular Respiration</p> <p>Population Ecology</p>	<p>The Biosphere and Mass Extinctions</p> <p>Photosynthesis: Food Production</p> <p>Cellular Respiration</p> <p>The Biosphere and Mass Extinctions</p> <p>Where Does Energy Come From?</p> <p>Population Growth</p>



			explain the effect of equilibrium shifts		
Life and Environmental Sciences	BS.4 Understand the structures and functions of living organisms and how organisms can be compared scientifically	Cells, Tissues, Organs, and Organ Systems	<p>BS.4.1 Describe different cell parts and their functions</p> <p>BS.4.2 Explain how cells are specialized into different tissues and organs</p> <p>BS.4.3 Differentiate between the processes of mitosis and meiosis</p> <p>BS.4.4 Describe how homeostatic balance occurs in cells and organisms</p> <p>BS.4.5 Describe the components and functions of a variety of macromolecules active in biological systems</p> <p>BS.4.6 Explain the organization of life on Earth using the modern classification system</p>	<p>Cell Structure</p> <p>Animal Organization</p> <p>Animal Organization</p> <p>Cell Structure</p> <p>Cell Structure</p> <p>Animal Organization</p> <p>The Nature of Science and Biology</p> <p>Biological Diversity</p> <p>Biological Diversity</p> <p>Biological Diversity</p> <p>Biological Diversity</p>	<p>Cell Features</p> <p>Animal Tissues</p> <p>Animal Organ Systems and Homeostasis</p> <p>Chromosomes and Cell Reproduction</p> <p>Meiosis and Sexual Reproduction</p> <p>Animal Organ Systems and Homeostasis</p> <p>The Chemistry of Life</p> <p>Taxonomy</p> <p>Plants Lab</p> <p>Microbiology Lab</p> <p>Animal Lab</p>
Life and Environmental Sciences	BS.5 Understand genetics and biological evolution and their impact on the unity and diversity of organisms	Biological Evolution	<p>BS.5.1 Explain the theory of evolution and describe evidence that supports this theory</p> <p>BS.5.2 Explain the theory of natural selection</p> <p>BS.5.3 Explain the structural properties of DNA and the role of DNA in heredity and protein synthesis</p>	<p>Evolution</p> <p>Evolution</p> <p>Genetics</p> <p>Genetics</p>	<p>Descent With Modification</p> <p>Evolution and Genetics</p> <p>How Proteins are Made</p> <p>Protein Synthesis</p>

			<p>BS.5.4 Explain how Mendel's laws of heredity can be used to determine the traits of possible offspring</p> <p>BS.5.5 Explain chromosomal mutations, their possible causes, and their effects on genetic variation</p>	<p>Genetics</p> <p>Genetics</p> <p>Genetics</p>	<p>Mendel and Heredity</p> <p>Mendel and Heredity</p> <p>RNA Lab</p>
Physical, Earth, and Space Sciences	BS.6 Understand the nature of matter and energy, forms of energy (including waves) and energy transformations, and their significance in understanding the structure of the universe		No benchmark for Biological Science		
Physical, Earth, and Space Sciences	BS.7 Understand the relationship between force, mass, and motion of objects; and know the major natural forces: gravitational, electric, and magnetic		No benchmark for Biological Science		
Physical, Earth, and Space Sciences	BS.8 Understand the Earth and its processes, the solar system, and the universe and its contents		No benchmark for Biological Science		