



Alignment Document
State of Wyoming and Aventa Learning Biology

Biology

Standards	Topics	Benchmarks	Unit Name	Course Topic Description
<p>1 In the context of unifying concepts and processes, students develop an understanding of scientific content through inquiry. Science is a dynamic process; concepts and content are best learned through inquiry and investigation.</p>	<p>0 Life Systems</p>	<p>1.1 The Cell: Students explain the processes of life, which necessitates an understanding of relationship between structure and function of the cell and cellular differentiation. They identify activities taking place in an organism related to metabolic activities in cells, including growth, regulation, transport, and homeostasis. Students differentiate between asexual and sexual reproduction.</p>	Plant Structure	Flowering Plant Reproduction
			Photosynthesis and Cellular Respiration	Photosynthesis Lab
			Photosynthesis and Cellular Respiration	Enzyme Lab
			Cell Structure	Chromosomes and Cell Reproduction
			Cell Structure	Meiosis and Sexual Reproduction
		<p>1.2 Molecular Basis of Heredity: Students demonstrate an understanding that organisms ensure species continuity by passing genetic information from parent to offspring. They utilize genetic information to make predictions about possible offspring. Students apply concepts of molecular biology (DNA and genes) to recent discoveries.</p>	Genetics	The Chromosome Theory of Inheritance
			Genetics	Human Genetic Traits
			Genetics	Biotechnology and the Genetics Revolution
			Genetics	Biotechnology Lab
		<p>1.3 Biological Evolution: Students explain how species evolve over time. They understand that evolution is the consequence of various interactions, including the genetic variability of offspring due to mutation and</p>	Evolution	Evolution Lab
			Evolution	Descent With Modification
			Evolution	Evolution and Genetics

		<p>recombination of genes, and the ensuing selection by the environment of those offspring better able to survive and leave additional offspring. Students discuss natural selection and that its evolutionary consequences provide a scientific explanation for the great diversity of organisms as evidenced by the fossil record. They examine how different species are related by descent from common ancestors. Students are able to explain how organisms are classified based on similarities that reflect their evolutionary relationships, with species being the most fundamental unit of classification.</p>	<p>History of Life on Earth Biological Diversity Biological Diversity Biological Diversity</p>	<p>History of Life Lab Plant Lab Microbiology Lab Animal Lab</p>
		<p>1.4 Interdependence of Organisms: Students investigate the inter-relationships and interdependence of organisms, including the ecosystem concept, energy flow, competition for resources, and human effects on the environment.</p>	<p>Population Ecology Population Ecology Population Ecology Population Ecology</p>	<p>Population Growth Community and Ecosystem Dynamics The Biosphere and Mass Extinctions Biomes Lab</p>
		<p>1.5 Matter, Energy, and Organization in Living Systems: Students describe the need of living systems for a continuous input of energy to maintain chemical and physical stability. They explain the unidirectional flow of energy and organic matter through a series of trophic levels in living systems. Students investigate the distribution and abundance of organisms in ecosystems, which are limited by the availability of matter and energy and the ability of the living system to recycle materials.</p>		

		<p>1.6 Behavior and Adaptation: Students examine behavior as the sum of responses of an organism to stimuli in its environment, which evolves through adaptation, increasing the potential for species survival. They identify adaptations as characteristics and behaviors of an organism that enhance the chance for survival and reproductive success in a particular environment.</p>	<p>Evolution Evolution</p>	<p>Descent With Modification Evolution and Genetics</p>
<p>2 Students demonstrate knowledge, skills, and habits of mind necessary to safely perform scientific inquiry. Inquiry is the foundation for the development of content, teaching students the use of processes of science that enable them to construct and develop their own knowledge. Inquiry requires appropriate field, classroom, and laboratory experiences with suitable facilities and equipment.</p>		<p>2.1 Students research scientific information and present findings through appropriate means.</p>	<p>The Nature of Science and Biology Photosynthesis and Cellular Respiration Plant Structure</p>	<p>The Scientific Method Lab Enzyme Lab Flower Fruit Seed Lab</p>
		<p>2.2 Students use inquiry to conduct scientific investigations.</p>	<p>The Nature of Science and Biology Photosynthesis and Cellular Respiration Plant Structure</p>	<p>The Scientific Method Lab Enzyme Lab Flower Fruit Seed Lab</p>
		<p>2.2.A Pose problems and identify questions and concepts to design and conduct an investigation.</p>	<p>The Nature of Science and Biology Photosynthesis and Cellular Respiration Plant Structure</p>	<p>The Scientific Method Lab Enzyme Lab Flower Fruit Seed Lab</p>
		<p>2.2.B Collect, organize, analyze and appropriately represent data.</p>	<p>The Nature of Science and Biology Photosynthesis and Cellular Respiration</p>	<p>The Scientific Method Lab Enzyme Lab</p>

			Plant Structure	Flower Fruit Seed Lab
		2.2.C Give priority to evidence in drawing conclusions and making connections to scientific concepts.	The Nature of Science and Biology Photosynthesis and Cellular Respiration	The Scientific Method Lab Enzyme Lab
			Plant Structure	Flower Fruit Seed Lab
		2.2.D Clearly and accurately communicate the result of the investigation.	The Nature of Science and Biology Photosynthesis and Cellular Respiration	The Scientific Method Lab Enzyme Lab
			Plant Structure	Flower Fruit Seed Lab
		2.3 Students clearly and accurately communicate the result of their own work as well as information from other sources.	Genetics	DNA Lab
			Genetics	RNA Lab
		2.4 Students investigate the relationships between science and technology and the role of technological design in meeting human needs.	Genetics	Biotechnology Lab
		2.5 Students properly use appropriate scientific and safety equipment, recognize hazards and safety symbols, and observe standard safety procedures.	The Nature of Science and Biology Photosynthesis and Cellular Respiration	The Scientific Method Lab Enzyme Lab
3 Students recognize the nature of science, its history, and its connections to personal, social, economic, and political decisions. Historically, scientific events have had significant impacts on our cultural heritage.		3.1 Students examine the nature and history of science.		
		3.1.A As scientific knowledge evolves, it impacts personal, social, economic, and political decisions.	Genetics Genetics	DNA Lab Biotechnology Lab
			Evolution	Descent With Modification
		3.1.B The historical misuse of scientific		



		information to make personal, social, economic, and political decisions.		
		3.2 Students examine how scientific information is used to make decisions.		
		3.2.A Interdisciplinary connections of the sciences and connections to other subject areas and career opportunities.	The Nature of Science and Biology	Section 1: Who is a Biologist?
		3.2.B The role of science in solving personal, local, national, and global problems.	Genetics Population Ecology	Biotechnology and the Genetics Revolution The Biosphere and Mass Extinctions
		3.2.C The origins, limitations, and conservation of natural resources, including Wyoming examples.		