



Alignment Document State of South Dakota and Aventa Learning Biology

Biology

Goals	Indicators	Standards	Unit Name	Course Topic Description
1 Students will explore, evaluate, and communicate personal and scientific investigations to understand the nature of science.	1.1 Understand the nature and origin of scientific knowledge.	9-12.N.1.1 Students are able to evaluate a scientific discovery to determine and describe how societal, cultural, and personal beliefs influence scientific investigations and interpretations.	Genetics Evolution	Mendel and Heredity Descent With Modification
		9-12.N.1.1.a Recognize scientific knowledge is not merely a set of static facts but is dynamic and affords the best current explanations.	Genetics Evolution	Mendel and Heredity Descent With Modification
		9-12.N.1.1.b Discuss how progress in science can be affected by social issues.	Population Ecology	Community and Ecosystem Dynamics
		9-12.N.1.2 Students are able to describe the role of observation and evidence in the development and modification of hypotheses, theories, and laws.	The Nature of Science and Biology The Nature of Science and Biology	Science and the Scientific Method The Scientific Method Lab
		9-12.N.1.2.a Research, communicate, and support a scientific argument.	Evolution History of Life on Earth	Descent With Modification Birth of a Planet and Establishment of Life
		9-12.N.1.2.b Recognize and analyze alternative explanations and models.	Evolution History of Life on Earth	Descent With Modification Birth of a Planet and Establishment of Life
		9-12.N.1.2.c Evaluate the scientific accuracy of information relevant to a	Evolution	Evolution and Genetics

		specific issue (pseudo-science).		
1.2 Apply the skills necessary to conduct scientific investigations.		9-12.N.2.1 Students are able to apply science process skills to design and conduct student investigations.	The Nature of Science and Biology	The Scientific Method Lab
			Photosynthesis and Cellular Respiration	Enzyme Lab
		9-12.N.2.1.a Identify the questions and concepts to guide the development of hypotheses.	The Nature of Science and Biology	The Scientific Method Lab
			Photosynthesis and Cellular Respiration	Enzyme Lab
		9-12.N.2.1.b Analyze primary sources of information to guide the development of the procedure.		
		9-12.N.2.1.c Select and use appropriate instruments to extend observations and measurements.	The Nature of Science and Biology	The Scientific Method Lab
			Photosynthesis and Cellular Respiration	Enzyme Lab
		9-12.N.2.1.d Revise explanations and models based on evidence and logic.	The Nature of Science and Biology	The Scientific Method Lab
Photosynthesis and Cellular Respiration	Enzyme Lab			
9-12.N.2.1.e Use technology and mathematic skills to enhance investigations, communicate results, and defend conclusions.	The Nature of Science and Biology	The Scientific Method Lab		
9-12.N.2.2 Students are able to practice safe and effective laboratory techniques.	Photosynthesis and Cellular Respiration	Enzyme Lab		
	9-12.N.2.2.a Handle hazardous materials properly.	Photosynthesis and Cellular Respiration	Enzyme Lab	

		9-12.N.2.2.b Use safety equipment correctly.	The Nature of Science and Biology Photosynthesis and Cellular Respiration	The Scientific Method Lab Enzyme Lab
		9-12.N.2.2.c Practice emergency procedure.		
		9-12.N.2.2.d Wear appropriate attire.		
		9-12.N.2.2.e Practice safe behaviors.	The Nature of Science and Biology Photosynthesis and Cellular Respiration	The Scientific Method Lab Enzyme Lab
3 Students will describe structures and attributes of living things, processes of life, and interaction with each other and the environment.	3.1 Understand the fundamental structures, functions, classifications, and mechanisms found in living things.	9-12.L.1.1 Students are able to relate cellular functions and processes to specialized structures within cells.	Cell Structure	The Cell Membrane
			Cell Structure	Unit Exam
			Cell Structure	Chromosomes and Cell Reproduction
			Cell Structure	Meiosis and Sexual Reproduction
			Photosynthesis and Cellular Respiration	Photosynthesis
			Photosynthesis and Cellular Respiration	Respiration
		9-12.L.1.1.a Transport	Cell Structure	The Cell Membrane
	Cell Structure	Unit Exam		
	9-12.L.1.1.b Photosynthesis and respiration	Photosynthesis and Cellular Respiration	Photosynthesis	

			Photosynthesis and Cellular Respiration	Respiration
			Photosynthesis and Cellular Respiration	Unit Exam
		9-12.L.1.1.c Storage and transfer of genetic information	Cell Structure	Chromosomes and Cell Reproduction
			Cell Structure	Meiosis and Sexual Reproduction
			Genetics	The Chromosome Theory of Inheritance
		9-12.L.1.1.d Cell life cycles	Cell Structure	Chromosomes and Cell Reproduction
			Cell Structure	Meiosis and Sexual Reproduction
		9-12.L.1.2 Students are able to classify organisms using characteristics and evolutionary relationship of major taxa.	Biological Diversity	Plants Lab
			Biological Diversity	Microbiology Lab
			Biological Diversity	Animal Lab
		9-12.L.1.2.a Kingdoms	Biological Diversity	Plants Lab
			Biological Diversity	Microbiology Lab
			Biological Diversity	Animal Lab
		9-12.L.1.2.b Phyla	Biological Diversity	Plants Lab
			Biological Diversity	Microbiology Lab
			Biological Diversity	Animal Lab
		9-12.L.1.3 Students are able to identify structures and function relationships	Biological Diversity	Unit Exam

		within major taxa.		
	3.2 Analyze various patterns and products of natural and induced biological change.	9-12.L.2.1 Students are able to predict inheritance patterns using a single allele.	Genetics	Mendel and Heredity
		9-12.L.2.1.a Solve problems involving simple dominance, codominance, and sex-linked traits using Punnett squares for F1 and F2 generations.	Genetics	Mendel and Heredity
		9-12.L.2.1.b Discuss disorders resulting from alteration of a single gene.	Genetics	Human Genetic Traits
		9-12.L.2.2 Students are able to describe how genetic recombination, mutations, and natural selection lead to adaptations, evolution, extinction, or the emergence of new species.	Genetics	RNA Lab
			Evolution	Evolution Lab
		9-12.L.2.2.a Use comparative anatomy to support evolutionary relationships.	Evolution	Evolution Lab
3.3 Analyze how organisms are linked to one another and the environment.		9-12.L.3.1 Students are able to identify factors that can cause changes in stability of populations, communities, and ecosystems.	Population Ecology	Community and Ecosystem Dynamics
			Population Ecology	Unit Exam
		9-12.L.3.1.a Define populations, communities, ecosystems, niches and symbiotic relationships.	Population Ecology	Population Growth
			Population Ecology	Community and Ecosystem Dynamics
			Population Ecology	Unit Exam
		9-12.L.3.1.b Predict the results of biotic and abiotic interactions.	Population Ecology	Biomes Lab
Population Ecology	Community and Ecosystem Dynamics			
5 Students will identify and evaluate the relationships and ethical implications of science upon technology, environment, and society.	5.1 Analyze various implications/effects of scientific advancement within the environment and society.	9-12.S.1.1 Students are able to explain ethical roles and responsibilities of scientists and scientific research.		
		9-12.S.1.2 Students are able to evaluate and describe the impact of scientific discoveries on historical events and	Genetics	Biotechnology and the Genetics Revolution



		social, economic, and ethical issues.		
	5.2 Analyze the relationships/interactions among science, technology, environment, and society.	9-12.S.2.1 Students are able to describe immediate and long-term consequences of potential solutions for technological issues.	Genetics Population Ecology	Biotechnology and the Genetics Revolution The Biosphere and Mass Extinctions
		9-12.S.2.1.a Describe how the pertinent technological system operates.	Population Ecology	The Biosphere and Mass Extinctions
		9-12.S.2.2 Students are able to analyze factors that could limit technological design.		
		9-12.S.2.3 Students are able to analyze and describe the benefits, limitations, cost, and consequences involved in using, conserving, or recycling resources.		