

Biology CR

State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
SC.S.B.1	Students will demonstrate an understanding of history and nature of science as a human endeavor encompassing the contributions of diverse cultures and scientists. demonstrate the ability to use the inquiry process to solve problems.		
SC.O.B.1.1	formulate scientific explanations based on historical observations and experimental evidence, accounting for variability in experimental results.	Nature of Science	Scientific Method Lab
SC.O.B.1.3	relate societal, cultural and economic issues to key scientific innovations.		
SC.O.B.1.4	conduct and/or design investigations that incorporate the skills and attitudes and/or values of scientific inquiry (e.g., established research protocol, accurate record keeping, replication of results and peer review, objectivity, openness, skepticism, fairness, or creativity and logic).	Nature of Science	Scientific Method Lab
SC.O.B.1.5	implement safe procedures and practices when manipulating equipment, materials, organisms, and models.	Nature of Science	Scientific Method Lab
SC.O.B.1.6	use appropriate technology solutions within a problem solving setting to measure and collect data, interpret data, analyze and/or report data, interact with simulations, conduct research, and present and communicate conclusions.		
SC.O.B.1.7	design, conduct, evaluate and revise experiments (e.g., compose a question to be investigated, design a controlled investigation that produces numeric data,		

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	evaluate the data in the context of scientific laws and principles, construct a conclusion based on findings, propose revisions to investigations based on manipulation of variables and/or analysis of error, or communicate and defend the results and conclusions).		
SC.O.B.1.8	draw conclusions from a variety of data sources to analyze and interpret systems and models (e.g., use graphs and equations to measure and apply variables such as rate and scale, evaluate changes in trends and cycles, or predict the influence of external variances such as potential sources of error, or interpret maps).		
SC.S.B.2	Students will demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories, and models as delineated in the objectives; demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences. apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.		
SC.O.B.2.1	correlate the properties of biological molecules to their function in biochemical pathways.	Nature of Science	Section 2, Parts 15-21
SC.O.B.2.2	relate the structure of cellular organelles to their functions and interactions in eukaryotic cells.	Cell Structure	Section 1, Parts 8-9
SC.O.B.2.3	analyze the chemistry and fluid mosaic model of the cell membrane as it relates to import and export of molecules necessary for life including osmosis, diffusion, active	Cell Structure	Section 2, Parts 2-4 and 6

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	and passive transport and dialysis.		
SC.O.B.2.4	compare and contrast cell types (e.g., prokaryotic/eukaryotic, plant/animal, nerve/muscle, archaea/bacteria).	Cell Structure	Section 3, Parts 10-11 Section 1, Parts 8-9
SC.O.B.2.5	analyze the flow of energy through cellular processes such as photosynthesis, cellular respiration and fermentation.	Photosynthesis and Cellular Respiration	Section 1, Parts 1-4 Section 2, Part 11
SC.O.B.2.6	outline mechanisms of homeostasis in living systems (negative and positive feedback).	Animal Organization	Section 2, Part 3
SC.O.B.2.7	analyze meiosis and the cell cycle and relate the processes to the number of chromosomes and production of gametes and somatic cells.	Cell Structure	Section 4, Parts 2-4
SC.O.B.2.8	predict phenotypic ratios by applying Mendel's Laws of Genetics (e.g., complete and incomplete dominance, codominance, sex-linked, crossing over).	Genetics	Section 1, Parts 7-11 Section 2, Parts 6-8
SC.O.B.2.9	explore the discovery of DNA and examine the molecular structure of the double helix.	Genetics	Section 4, Part 3

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SC.O.B.2.10	distinguish the structure and function of messenger, transfer and ribosomal RNA in the process of transcription and translation.	Genetics	Section 5, Parts 2-4
SC.O.B.2.11	research and debate the application of DNA technology in the context of social, ethical and political issues.		
SC.O.B.2.12	evaluate the evidence for natural selection including speciation, fossil record evidence, molecular similarities and homologous structures.	Evolution	Section 1, Parts 5-7
SC.O.B.2.13	evaluate the influence of the historical social context on the development of evolutionary theory.	Evolution	Section 1, Parts 1-4
SC.O.B.2.14	compare morphological, cladistic and other classification systems including domains, kingdoms and other taxa.	Biological Diversity	Section 1, Parts 4-9
SC.O.B.2.15	interpret the placement of viruses in the current classification systems.		
SC.O.B.2.16	incorporate the structure and function of individual body systems to the overall functioning of the organism.	Animal Organization	Each of the body systems is described in this way throughout all 10 sections of this unit.

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SC.O.B.2.17	assess responses of organisms to internal and environmental stimuli.		
SC.O.B.2.18	evaluate environmental factors that affect succession, populations and communities.	Ecology	Section 1, Parts 3-7
SC.O.B.2.19	propose ecosystem models that incorporate interactions of biotic and abiotic environmental variables (e.g., biogeochemical cycles).	Ecology	Section 3, Parts 2-5
SC.O.B.2.20	diagram changes in energy as it flows through an ecosystem to illustrate conservation of energy (e.g., energy pyramid, food web, food chain).	Ecology	Section 2, Parts 7-9
SC.O.B.2.21	characterize interrelationships of organisms within an ecosystem (e.g., symbiosis, competition, predation, mutualism, parasitism, commensalism).		
SC.O.B.2.22	analyze graphs, GIS data and traditional maps reflecting changes in population to predict limiting factors in ecosystems as they determine carrying capacity.		
SC.S.B.3	Students will demonstrate the ability to use inquiry process to explore systems, models and changes. demonstrate an understanding of the interdependence between science and technology. demonstrate an understanding of the utilization of		

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	technology to gather data and communicate designs, results and conclusions. demonstrate the ability to evaluate personal and societal benefits, the impact of different points of view, predict the long-term societal impact and an understanding of public policy decisions as related to health, population, resource and environmental issues.		
SC.O.B.3.1	synthesize concepts across various science disciplines to better understand the natural world (e.g., form and function, systems, and change over time.	Evolution	Section 1, Part 6
SC.O.B.3.2	investigate, compare and design scientific and technological solutions to address personal and societal problems.		
SC.O.B.3.3	communicate experimental designs, results and conclusions using advanced technology tools.		
SC.O.B.3.4	collaborate to present research on current environmental and technological issues to predict possible solutions.		
SC.O.B.3.5	explore occupational opportunities in science, engineering and technology and evaluate the required academic preparation.		



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SC.O.B.3.6	given current science-technology-societal issues, construct and defend potential solutions.		
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