

WV CSO Curriculum Planning Tool

Biology

Standard	Obj.#	Objective	Projected Date	Date Taught	Date Assessed	Date Re-Taught	Date Re-Assessed
Standard 1: History and the Nature of Science	BTC.1.1	formulate scientific explanations based on the student's observational and experimental evidence, accounting for variability in experimental results.					
	BTC.1.2	recognize that science has practical and theoretical limitations.					
	BTC.1.3	recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.					
	BTC.1.4	conclude that science is a blend of creativity, logic and mathematics.					
	BTC.1.5	trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist's contributions.					
	BTC.1.6	integrate the history of science with cultural history to demonstrate that scientists work within their historical surroundings and are affected by them.					
Standard 2: Science as Inquiry	BTC.2.1	model and exhibit the skills, attitudes and/or values of scientific inquiry					
	BTC.2.2	demonstrate ethical practices for science					
	BTC.2.3	apply scientific approaches to seek solutions for personal and societal issues.					
	BTC.2.4	properly and safely manipulate equipment, materials, chemicals, organisms and models.					
	BTC.2.5	conduct explorations in a variety of environments					
	BTC.2.6	use appropriate technology solutions					
	BTC.2.7	demonstrate science processes within a problem solving setting					
	BTC.2.8	design, conduct, evaluate and revise experiments					
Standard 3: Unifying Themes	BTC.3.1	analyze systems to understand the natural and designed world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.					
	BTC.3.2	apply evidence from models to make predictions about interactions and changes in systems.					
	BTC.3.3	measure changes in systems using graphs and equations relating these to rate, scale, patterns, trends and cycles.					
	BTC.3.4	understand that different characteristics, properties or relationships within a system might change as its dimensions are increased or decreased (e.g., scale up, scale down).					
Standard 4: Science Subject Matter/Concepts	BTC.4.1	trace matter and energy transfers occurring during photosynthesis, cell respiration, and fermentation.					
	BTC.4.2	explore material transport in and out of cells					
	BTC.4.3	investigate the nature of light in relation to energy transformation in photosynthesis.					
	BTC.4.4	compare and describe the properties of sound waves and how they affect organisms					
	BTC.4.5	investigate how electric and magnetic forces affect life.					
	BTC.4.6	review of foundational chemical concepts including atomic structure, bonding, chemical reactions, water and pH as they relate to living systems.					
	BTC.4.7	investigate the molecules of life and their function in the living systems.					
	BTC.4.8	estimate molecular weight through the diffusion of biological stains.					
	BTC.4.9	explain common problems related to conservation, use, supply and quality of water.					
	BTC.4.10	investigate recycling in relation to human consumption of natural resources.					
	BTC.4.11	describe landfills and sewage treatment facilities and how they work.					
	BTC.4.12	investigate and analyze the impact that humans have on the quality of the biosphere					

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	BTC.4.13	use topographic maps and Geographic Information Systems (GIS) to investigate biological systems and patterns (e.g., land use).					
	BTC.4.14	examine global change over time					
	BTC.4.15	investigate interspecific and intraspecific competition.					
	BTC.4.16	apply sampling techniques to the study of ecosystems.					
	BTC.4.17	investigate variations in ecosystem productivity.					
	BTC.4.18	investigate population biology.					
	BTC.4.19	investigate soil and soil organisms.					
	BTC.4.20	explain the mechanics of composting.					
	BTC.4.21	evaluate the effects of large scale use of fungicides and pesticides on the diversity of organisms.					
	BTC.4.22	discuss and categorize chemical hazards and how they impact life. (e.g., flammable, reactive, poisons, corrosive).					
	BTC.4.23	review the structure and function of cell membranes.					
	BTC.4.24	review DNA as it relates to mitosis, meiosis and protein synthesis.					
	BTC.4.25	review basic genetics including incomplete dominance, gene interactions, co-dominance, multiple-alleles, crossing over, genetic recombinations, environmental influences, development, sex and age					
	BTC.4.26	analyze karyotypes and pedigrees as diagnostic tools.					
	BTC.4.27	research genetic engineering through current DNA technology and the social and ethical issues that it raises					
	BTC.4.28	analyze gene expression and embryonic development.					
	BTC.4.29	compare and contrast hydrophytic, mesophytic and xerophytic plants.					
	BTC.4.30	investigate the diversity of plants, their habitat, transport system, reproduction and life cycle.					
	BTC.4.31	investigate methods of plant propagation					
	BTC.4.32	research forest-management practices					
	BTC.4.33	research and evaluate the importance of cultivated and wild plants to human society, economics and the environment.					
	BTC.4.34	investigate and analyze animal distribution.					
	BTC.4.35	research variations in animal reproductive strategies.					
	BTC.4.36	explain animal behavior.					
	BTC.4.37	compare the characteristics, structures and life cycles of simple to complex organisms.					
	BTC.4.38	apply techniques of biotechnology to phylogenetics, forensics, paleontology, and human genetics.					
Standard 5: Scientific Design and Application	BTC.5.1	summarize technological advances in the biological sciences.					
	BTC.5.2	investigate and analyze the interdependence of science and technology.					
	BTC.5.3	apply scientific skills and technological tools to design solutions that address personal and societal needs.					
	BTC.5.4	describe the scientific concepts underlying technological innovations.					
	BTC.5.5	use appropriate technology solutions to measure and gather data; interpret data; analyze data; and to present and communicate conclusions.					
Standard 6: Science in Personal and Social Perspectives	BTC.6.1	research current environmental issues pertaining to biology.					
	BTC.6.2	describe the impact of cultural, technological and economic influences on the evolving nature of scientific thought and knowledge.					
	BTC.6.3	explore occupational opportunities in science and technology including the academic preparation necessary.					
	BTC.6.4	engage in decision making activities and actions to resolve science-technology-society issues.					