

WV CSO Curriculum Planning Tool

Science 9

Standard	Obj.#	Objective	Projected Date	Date Taught	Date Assessed	Date Re-Taught	Date Re-Assessed
Standard 1: History and the Nature of Science	SC.9.1.1	formulate scientific explanations based on the student's observational and experimental evidence, accounting for variability in experimental results.					
	SC.9.1.2	recognize that science has practical and theoretical limitations.					
	SC.9.1.3	recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.					
	SC.9.1.4	conclude that science is a blend of creativity, logic and mathematics.					
	SC.9.1.5	trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist's contributions.					
Standard 2: Science as Inquiry	SC.9.2.1	model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity).					
	SC.9.2.2	demonstrate ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review).					
	SC.9.2.3	apply scientific approaches to seek solutions for personal & societal issues.					
	SC.9.2.4	properly & safely manipulate equipment, materials, chemicals, organisms & models.					
	SC.9.2.5	conduct explorations in a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations).					
	SC.9.2.6	use appropriate technology solutions (e.g., computer, CBL, probe interfaces, software) to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and to present and communicate conclusions.					
	SC.9.2.7	demonstrate science processes within a problem solving setting (e.g., observing, measuring, calculating, communicating, comparing, ordering, categorizing, classifying, relating, hypothesizing, predicting, inferring, considering alternatives and applying).					
	SC.9.2.8	design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations; communicate and defend a scientific argument).					
Standard 3: Unifying Themes	SC.9.3.1	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.					
	SC.9.3.2	apply evidence from models to make predictions about interactions and changes in systems.					
	SC.9.3.3	measure changes in systems using graphs and equations relating these to rate, scale, patterns, trends and cycles.					
	SC.9.3.4	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	SC.9.4.1	demonstrate an understanding of the interconnections of biological, earth/space and physical science concepts.					
	SC.9.4.2	analyze and explain the principles of genetics (e.g., monohybrid and dihybrid crosses, mutations, genotypes, phenotypes, X and Y chromosomes, multiple alleles, DNA, probability, diversity).					
	SC.9.4.3	illustrate meiosis and mitosis and relate to chromosome number and production of sperm, egg and body cells.					
	SC.9.4.4	mathematically illustrate changes in populations of organisms.					
	SC.9.4.5	identify and describe microscopic organisms and foreign substances in the environment and their harmful effects					
	SC.9.4.6	design an environment that demonstrates the interdependence of plants and animals					
	SC.9.4.7	explain how excretory, digestive systems work together in the human body.					
	SC.9.4.8	identify and compare the structure and function of cell, tissues and systems of different organisms.					
	SC.9.4.9	identify the organisms and the chemical processes involved in the decay of materials.					
	SC.9.4.10	trace the transfer of matter and energy in the chemical/molecular processes of photosynthesis, respiration and fermentation.					
	SC.9.4.11	using the element's position on the Periodic Table, predict physical and chemical properties.					
	SC.9.4.12	describe the characteristics of radioactivity substances including alpha particles, beta particles and gamma rays; the half life of a radioactive					

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		isotope; a chain reaction; and differentiate between fission and fusion.					
	SC.9.4.13	investigate the relationship between the density of an object, its mass, and its volume.					
	SC.9.4.14	investigate physical states of matter including descriptions of the behavior of atoms and molecules in terms of the Kinetic Molecular Theory.					
	SC.9.4.15	write formulas and name compounds given oxidation numbers of monatomic and polyatomic ions.					
	SC.9.4.16	identify the various types of chemical bonds & resulting compounds formed					
	SC.9.4.17	experimentally determine the products of chemical reactions; write balanced chemical equations; classify type of reaction; and describe energy changes.					
	SC.9.4.18	identify, describe and differentiate various forms of energy and energy transformations.					
	SC.9.4.19	relate absorption and dissipation of heat to the composition of a material.					
	SC.9.4.20	demonstrate and diagram a magnetic field using bar magnets.					
	SC.9.4.21	hypothesize and experiment when different components are substituted in an electrical circuit; define and solve electrical problems involving potential difference, Ohm's Law and power.					
	SC.9.4.22	relate the forces between charged objects to the charge on the objects and the distance between them.					
	SC.9.4.23	review foundational concepts of kinematics (e.g., speed-distance-time relationships, graphs) and dynamics (e.g., Newton's Laws, simple machines).					
	SC.9.4.24	experiment with a pendulum to determine which variables (amplitude, mass, length) will affect the motion of the pendulum.					
	SC.9.4.25	investigate types of waves and their properties including interference, diffraction, refraction, resonance; differences and similarities between transverse and longitudinal waves; wave equation to determine the relationships among speed, wavelength and frequency.					
	SC.9.4.26	investigate formation and destruction of landforms.					
	SC.9.4.27	demonstrate the relationships of temperature, air pressure, wind speed, wind direction and humidity as elements of weather.					
	SC.9.4.28	compare and analyze the characteristics of oceans, including their lateral and vertical motions.					
	SC.9.4.29	employ a variety of tests to identify common rock-forming minerals.					
	SC.9.4.30	analyze and describe common rock samples using grain size and shape, and mineral composition.					
	SC.9.4.31	use models to describe interactive cycles such as the water, the nitrogen and the carbon dioxide cycles.					
	SC.9.4.32	examine how scientists use seismographic evidence in determining structure and composition of the Earth's interior.					
	SC.9.4.33	determine the relative age of materials using time-stratigraphic and bio-stratigraphic relationships.					
	SC.9.4.34	estimate the absolute age of materials using existing radio isotopic data.					
	SC.9.4.35	describe the effects of the movement of subsurface water.					
	SC.9.4.36	relate changes in the Earth's surface to the motion of lithospheric plates.					
	SC.9.4.37	summarize and discuss the evidentiary basis for Theory of Plate Tectonics.					
	SC.9.4.38	research and describe the life cycles of various stellar types.					
	SC.9.4.39	interpret topographic maps, weather maps and charts, and astronomical models such as solar systems, galaxies, constellations, stellar types and stellar evolution.					
Standard 5: Scientific Design and Application	SC.9.5.1	identify the scientific concepts underlying simple technological innovations.					
	SC.9.5.2	cite examples of the interdependence of science and technology (e.g., new technologies have lead to development of new scientific knowledge).					
	SC.9.5.3	apply scientific skills and technological tools to design a solution that addresses a personal or societal need.					
	SC.9.5.4	analyze the consequences of imposed constraints on an engineering solution.					
Standard 6: Science in Personal and Social Perspectives	SC.9.6.1	research uses and values of natural resources.					
	SC.9.6.2	research current environmental issues (e.g., effects of pollution, solid waste management, local, national, and global issues).					
	SC.9.6.3	describe the impact of cultural, technological, and economic influences on the evolving nature of scientific thought and knowledge.					
	SC.9.6.4	explore occupational opportunities in science and technology including the academic preparation necessary.					
	SC.9.6.5	engage in decision making activities and actions to resolve science-technology-society issues.					