

Science 6

State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
	Scientific Investigation, Reasoning, and Logic		
6.1	The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations in which		
6.1.a	observations are made involving fine discrimination between similar objects and organisms;	Unit 1	Introduction to the Scientific Method
6.1.b	precise and approximate measurements are recorded;		
6.1.c	scale models are used to estimate distance, volume, and quantity;		
6.1.d	hypotheses are stated in ways that identify the independent and dependent variables;		
6.1.e	a method is devised to test the validity of predictions and inferences;	Unit 2	Designing Controlled Experiments
		Unit 4	The Scientific Method Project
		Unit 13	Newton's Laws of Motion Project
6.1.f	one variable is manipulated over time, using many repeated trials;	Unit 2	Designing Controlled Experiments
		Unit 13	Newton's Laws of Motion Project
6.1.g	data are collected, recorded, analyzed, and reported using metric measurements and tools;	Unit 3	Analyze Results and Draw Conclusions
		Unit 13	Newton's Laws of Motion Project
6.1.h	data are analyzed and communicated through graphical representation;		
6.1.i	models and simulations are designed and used to illustrate and explain phenomena and systems; and		

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6.1.j	current applications are used to reinforce science concepts.	Throughout course	Research projects and labs
	Force, Motion, and Energy		
6.2	The student will investigate and understand basic sources of energy, their origins, transformations, and uses.		
6.2.a	potential and kinetic energy;	Unit 14	Introduction to Energy
6.2.b	the role of the sun in the formation of most energy sources on Earth;	Unit 15	Sources of Energy
		Unit 20	Energy Flow in the Environment
6.2.c	nonrenewable energy sources;	Unit 16	Renewable and Nonrenewable Energy
6.2.d	renewable energy sources; and	Unit 16	Renewable and Nonrenewable Energy
6.2.e	energy transformations.	Unit 15	Sources of Energy
		Unit 16	Renewable and Nonrenewable Energy
		Unit 17	Energy Problems
6.3	The student will investigate and understand the role of solar energy in driving most natural processes within the atmosphere, the hydrosphere, and on Earth's surface.		
6.3.a	Earth's energy budget;	Unit 17	Energy Problems
6.3.b	the role of radiation and convection in the distribution of energy;		
6.3.c	the motion of the atmosphere and the oceans;	Unit 32	Earth's Atmosphere

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6.3.d	cloud formation; and	Unit 22	The Water Cycle
6.3.e	the role of thermal energy in weather-related phenomena including thunderstorms and hurricanes.		
	Matter		
6.4	The student will investigate and understand that all matter is made up of atoms.		
6.4.a	atoms consist of particles, including electrons, protons, and neutrons;	Unit 5	Matter and the Periodic Table
6.4.b	atoms of a particular element are alike but are different from atoms of other elements;	Unit 5	Matter and the Periodic Table
6.4.c	elements may be represented by chemical symbols;	Unit 5	Matter and the Periodic Table
6.4.d	two or more atoms interact to form new substances, which are held together by electrical forces (bonds);	Unit 6	Elements, Molecules, and Chemical Reactions
6.4.e	compounds may be represented by chemical formulas;	Unit 6	Elements, Molecules, and Chemical Reactions
6.4.f	chemical equations can be used to model chemical changes; and	Unit 6	Elements, Molecules, and Chemical Reactions
6.4.g	a limited number of elements comprise the largest portion of the solid Earth, living matter, the oceans, and the atmosphere.		
6.5	The student will investigate and understand the unique properties and characteristics of water and its roles in the natural and human-made environment.		

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6.5.a	water as the universal solvent;		
6.5.b	the properties of water in all three phases;	Unit 7	States of Matter
6.5.c	the action of water in physical and chemical weathering;	Unit 31	The Rock Cycle
6.5.d	the ability of large bodies of water to store thermal energy and moderate climate;		
6.5.e	the importance of water for agriculture, power generation, and public health; and	Unit 22	The Water Cycle
6.5.f	the importance of protecting and maintaining water resources.		
6.6	The student will investigate and understand the properties of air and the structure and dynamics of Earth's atmosphere.		
6.6.a	air as a mixture of gaseous elements and compounds;	Unit 32	Earth's Atmosphere
6.6.b	pressure, temperature, and humidity;	Unit 33	Earth's Wind Patterns
6.6.c	atmospheric changes with altitude;	Unit 32	Earth's Atmosphere
6.6.d	natural and human-caused changes to the atmosphere and the importance of protecting and maintaining air quality;	Unit 17	Energy Problems
		Unit 32	Earth's Atmosphere
		Unit 33	Earth's Wind Patterns
6.6.e	the relationship of atmospheric measures and weather conditions; and	Unit 33	Earth's Wind Patterns
6.6.f	basic information from weather maps, including fronts, systems,		

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	and basic measurements.		
	Living Systems		
6.7	The student will investigate and understand the natural processes and human interactions that affect watershed systems.		
6.7.a	the health of ecosystems and the abiotic factors of a watershed;		
6.7.b	the location and structure of Virginia's regional watershed systems;		
6.7.c	divides, tributaries, river systems, and river and stream processes;		
6.7.d	wetlands;		
6.7.e	estuaries;		
6.7.f	major conservation, health, and safety issues associated with watersheds; and		
6.7.g	water monitoring and analysis using field equipment including hand-held technology.		
	Interrelationships in Earth/Space Systems		
6.8	The student will investigate and understand the organization of the solar system and the interactions among the various bodies that comprise it.		

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6.8.a	the sun, moon, Earth, other planets and their moons, dwarf planets, meteors, asteroids, and comets;	Unit 34	The Solar System
6.8.b	relative size of and distance between planets;	Unit 34	The Solar System
6.8.c	the role of gravity;		
6.8.d	revolution and rotation;		
6.8.e	the mechanics of day and night and the phases of the moon;		
6.8.f	the unique properties of Earth as a planet;	Unit 34	The Solar System
6.8.g	the relationship of Earth's tilt and the seasons;		
6.8.h	the cause of tides; and		
6.8.i	the history and technology of space exploration.	Unit 35	Space Exploration
	Earth Resources		
6.9	The student will investigate and understand public policy decisions relating to the environment.		
6.9.a	management of renewable resources;		
6.9.b	management of nonrenewable resources;		



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6.9.c	the mitigation of land-use and environmental hazards through preventive measures; and		
6.9.d	cost/benefit tradeoffs in conservation policies.		