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	Communication			Home			Medicine			Predictions			Sports			Transportation			Earth's Dynamic Geosphere			Understanding Your Environment			Earth's Fluid Spheres			Earth's Natural Resources			Earth System Evolution			Movie Special Effects	Periodic Table	Cool Chemistry			
	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	G1	G2	G3	U1	U2	U3	F1	F2	F3	N1	N2	N3	E1	E2	E3	Chapter 1	Chapter 2	Chapter 3			
Recognize that a knowledge of the study of scientific explanations throughout history demonstrates how scientific knowledge changes and evolves over time, building on earlier knowledge.	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	X			X	X	X
CONTENT STANDARD 7: The Earth Students will understand the processes and forces that shape the structure and composition of the Earth. Educational experiences in Grades 9 - 12 will assure that students:																																							
Illustrate how the formation, weathering, sedimentation and reformation of rock constitute a continuing "rock cycle."																			X	X	X	XX	X	X				X	X	X	X			X	X				
Explain that the lithosphere consists of separate plates that ride on a denser, hot, gradually deformable layer of the Earth that releases energy and brings new materials to the Earth's surface.																			X	XX	X																		
Explain that plate tectonics is supported by geophysical, structural and paleontological evidence																			X	XX	X	X					X							X	XX				
Describe how geological time can be determined using evidence from fossils, rock sequences and radiometric dating.																			X	XX		XX						X	X					X	X	XX			
Interpret geological features within the community and state (e.g., road cuts, rivers, shorelines).																			XX	X	XX	XX	XX	XX				X	XX	XX	X						X		
Explain interactions between the Earth's lithosphere, hydrosphere, atmosphere and biosphere.																			XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX			
Analyze the costs, benefits, alternatives and consequences of natural resource exploration, development and consumption.																			X			X						XX	XX	XX				XX					
CONTENT STANDARD 8: Water Students will understand the water cycle, including energy transfers, the distribution and characteristics of water, and its influences on Educational experiences in Grades 9 - 12 will assure that students:																																							
Recognize that the ocean is a complex system of important chemicals which cycle through other Earth systems over various periods of time.																			X						XX	X		X			X			X					
Recognize that fresh water is limited in supply and can be depleted or polluted, becoming unavailable or unsuitable for life.																							X	XX	X	X		X			XX						X		

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Explain interactions between water and other Earth systems (e.g., the biosphere, lithosphere and atmosphere).																				X	X		X	XX	X	XX	XX	XX	X	X	XX		X	X				
Recognize that water is an erosional force that can rapidly and slowly change the landscape.																				X			X	XX	X	X	X	X			X							
Describe how the oceans absorb and release heat energy that moderates the Earth's climate.																							X	XX	X	X	X				XX							
Describe how the physical and chemical properties of water affect the environment and life.																				X			X		X	X	X	X		X	X							
CONTENT STANDARD 9: The Earth's Atmosphere Students will understand the composition and structure of the atmosphere, including energy transfers, the nature of weather and climate, and the effect of the atmosphere on human activity. Educational experiences in Grades 9 - 12 will assure that students:																																						
Describe heat and energy transfer as they are related to radiation, conduction and convection/advection.				XX																X	XX				X	X	X		XX			X						
Understand that, as water condenses, evaporates, melts or freezes, this heat energy transfer impacts weather phenomena.																									X	XX	X					X						
Recognize and understand why rising air expands and decreases in temperature, while sinking air compresses and increases in temperature, and that this phenomenon has an impact on local weather and global climates.																										XX						X						
Describe fronts as boundaries between air masses and recognize their association with different weather patterns.																			X						XX													
Explain the patterns and distributions of different climates as a function of the Earth's physical features (e.g., oceans and mountains) and latitude.																						X		X								XX	XX					
Explain how the inclination of the Earth's axis affects the seasons, amount of daylight, and the altitude of the sun in the sky.				X																										X	XX							
Explain the impact on human activities of global phenomena, such as El Niño, global warming and the depletion of ozone in the atmosphere.																				X	X				XX	X	X	X	X	X		XX	X					

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Describe the nature of atoms and how atoms combine to form molecules;																																		X	XX	XX	
Explain how the chemical and physical properties of substances are related to their atomic and molecular structures;																																		XX	XX	XX	
Use the Periodic Table to predict common properties of elements;																																			XX	X	
Use chemical formulas and equations to obtain and communicate information about chemical changes;																																		X	XX	XX	
Recognize that the ability of a reaction to occur and the extent to which it proceeds depends on the relative stability of the reactants compared to the products and the conditions under which the reaction occurs;																																		X	XX	XX	
Understand and apply mathematical concepts, including dimensional analysis, to explore and describe chemical changes.																																			X	XX	
CONTENT STANDARD 12: Energy Students will know that energy is conserved, transferred, transformed, and appears in different forms. Educational experiences in Grades 9 - 12 will assure that students:																																					
Classify various forms of energy as either kinetic or potential.					X								X	XX	XX	XX																					
Recognize that heat energy is related to the disordered motion of atoms or molecules.				X	X																																
Understand that the total amount of disorder in the universe is increasing.																																					
Explain that, although energy changes into different forms within a closed system, the total amount of energy remains unchanged, while the amount of useful energy is decreased.		X		X	X	X									XX	XX	XX																				
Describe the nature of different types of waves, how they are produced, and how they transfer energy.	XX	XX	XX	X			XX	X	X				XX																						X		
Understand that every object exerts a gravitational force on every other object.													XX	X	X	XX																			X		
Interpret the physical characteristics of sound, (including pitch and loudness) in terms of wave theory.	XX	X	X				XX		XX																											X	
CONTENT STANDARD 13: Interaction Of Matter And Energy Students will know that interactions between matter and energy can produce changes in a system, although the total quantities of matter and energy are conserved. Educational experiences in Grades 9 - 12 will assure that students:																																					

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Explain how the interactions between various energy forms and matter can produce physical, chemical, and nuclear transformations.																																			X	X	X
Observe, measure and represent mathematically the changes in the various energy forms taking place during the physical and chemical transformation of substances.																																				XX	
Describe how energy changes can be related to structural processes and modifications at the atomic and molecular levels.																																			X	X	
Recognize that energy changes in atoms and molecules occur in fixed increments.																																			XX	X	
Recognize that energy and new particles are released when the nuclei of heavy atoms (e.g., uranium, plutonium) split.																																		X	X		
Explain how radiation and matter interact in terms of the absorption and emission of energy by individual atoms, molecules and their aggregates.																																	X	XX	X		
Recognize that waves may interact with the materials they enter.	XX	X	X	XX	X	X	XX	X	XX																												
Recognize the types of radiation (e.g., light, radio, microwave, X-ray) which comprise the electromagnetic spectrum.		X	XX	X	X	X																												X	X		
Understand the differences in the flow of electrical energy in conductors, semi-conductors and insulators.				X	X																																
Recognize that accelerating electrical charges produce electromagnetic waves.		X	X			XX																															
CONTENT STANDARD 14: Science And Technology																																					
Students will understand the relationships among mathematics, science and technology and the way they affect and are affected by society.																																					
Educational experiences in Grades 9 - 12 will assure that students:																																					
Analyze benefits and limit costs and consequences involved in using technology or resources (e.g., X-rays, agricultural chemicals, natural gas reserves).			XX	XX	XX		XX	XX	XX								XX		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Analyze how the introduction of new technology has affected or could affect human activity (e.g., invention of the telescope, applications of modern telecommunications and bioengineering).		XX	XX		XX		XX	XX	XX							XX		X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Recognize that technological innovations (e.g., the automobile) may produce unanticipated problems of their own.																XX							X	X			X	X	X			X	X	X			

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Apply their knowledge and understanding of chemical and physical interactions to explain present and anticipated technologies (e.g., lasers, ultrasound, superconducting materials, photocopy machines).		XX							XX	XX							XX			XX	X	X			X	X		X	X	X	X	X	X								
Recognize that science and technology often develop faster than society can comprehend their ethical implications.			XX																X	X	X				X	X	X	X	X	X	X	X	X	X	X	X					
Explore the scientific and technological aspects of contemporary problems (e.g., issues related to nutrition, air quality, natural resources).	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	X	X	XX		X	XX	X	XX	XX	XX	XX	X	XX	X	X	X	X	X	X				
Understand that science strives to understand the natural world and seeks explanations for natural phenomena, while technology seeks solutions to human problems and needs.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
Understand that science, mathematics and technology are interdependent human endeavors with strengths and limitations.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Recognize that technological problems often create a demand for new scientific knowledge, while new technologies make it possible for scientists to extend their research or to undertake entirely new lines of research.		XX	XX	XX					XX	XX							XX			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				