

EarthComm Correlations to New Hampshire

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	V	PT	E	BG	RS	LU	O	SW	C	ER	MR	WR	AST	CC	CL

Scientific Inquiry

1a. Curriculum Standard: Students will demonstrate an increasing understanding of how the scientific enterprise operates.

•Formulate questions and use appropriate concepts to guide scientific investigations and to solve real world problems	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
•Use ratios as a means of comparing very large/very small numbers, e.g. building scale models	XX	X	X		XX	XX			X	XX		XX	XX		
•Design and conduct a controlled scientific investigation	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
•Use technologies as tools in conducting investigations, e.g. microscopes, computer, calculator	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
•Construct and revise scientific explanations and models using logic and evidence	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
•Recognize and analyze alternative explanations and models for observed phenomena	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
•Select, communicate, and defend a scientific argument	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
•Compare and contrast how technology has shaped our lives both in the past and the present	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
•Select a science-related social problem and design a solution that reflects an understanding of basic science concepts and their application	XX	XX	XX		X	XX	X	X	X	XX	XX	XX	X	XX	X
•Demonstrate an understanding that science knowledge has, over time, accumulated most rapidly after acceptance of major new theories	X	XX	X	X	X	X	X	X	X	X	X	X	XX	X	X
•Explain how scientific knowledge is applied in the design and manufacture of products or technological processes, e.g., water purification systems, sewage treatment systems, microwave ovens, resistors			X			X		X		XX	XX	XX	X		

Science, Technology, and Society

2a. Curriculum Standard: Students will demonstrate an increasing ability to use measuring instruments to gather accurate and/or precise information.

•Measure with both analog and digital electronic devices, e.g., voltmeter, oscilloscope, and pH meters	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
•Estimate the error in measurements they make and use procedures to minimize those errors	X	X	X	X	X	XX	X	X	XX	X	X	X	X	X	X
•Describe ways in which technology has improved measuring instruments and their accuracy	X	XX	XX		X	XX	XX	XX		X	X	X	X	X	X

2b. Curriculum Standard: Students will demonstrate an increasing ability to use technology to observe nature.

•Explore nature with technology, e.g., microscopes, telescopes, computer probes, and spectrosopes	XX	XX	X	XX	XX	XX	X	XX	X	XX	X	XX	XX	XX	X	XX
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•Gather information that can only be obtained by using a technological tool, e.g., pH, voltage, amperage, blood pressure, etc.	X		X	X	X	X		X		X	X	X	X		X	
2c. Curriculum Standard: Students will demonstrate an increasing ability to analyze, synthesize, and communicate scientific information using technology.																
•Store data in an appropriate technological device	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
•Manipulate data on a database, e.g., rearranging, sorting, selecting, using a spreadsheet	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	
•Analyze data graphically with technological assistance, e.g., graphing calculator	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
•Communicate data through an electronic medium, e.g., camera, tape recorder, computer modem	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
•Quantitatively analyze experimental data	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	
2d. Curriculum Standard: Students will demonstrate an increasing ability to understand how technology is used to synthesize new products.																
•Plan and conduct a scientific research project using technology	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	
•Construct scientific models using common materials or standard laboratory equipment	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	
•Create a model by locating and utilizing appropriate software programs	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
2e. Curriculum Standard: Students will demonstrate an increasing ability to understand that science and technology can affect individuals, and that individuals in turn can affect science and technology.																
•Describe immediate and long-term consequences of various alternative solutions for science- and/or technology-related issues, e.g., natural catastrophes, interactions of populations, resources and environment, health and disease	XX	XX	XX	X	XX	XX	X	X	XX	XX	XX	XX	XX	XX	XX	
•Defend a personal decision made on a science- and/or technology-related issue	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
•Determine how technology affects their lives and predict how it might affect their future	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
2f. Curriculum Standard: Students will demonstrate an increasing ability to understand that progress in science and technology is controlled by societal attitudes and beliefs.																
•Illustrate, through example, that the knowledge produced through science and technology changes the way members of society think	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	
•Demonstrate, by giving examples, the relationships between the maintenance and progress of society and scientific and technological advancement	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Earth/Space Science																
4a. Curriculum Standard: Students will demonstrate an increasing ability to understand that the Earth is a unique member of our solar system, located in a galaxy, within the universe.																
•Use a model to describe the location and motion of the Earth and its Moon in the solar system															X	

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•Identify the other planets in the solar system on a diagram or in the night sky, and describe their motions, as well as the motion of the planetary moons and comets													XX		
•Describe the characteristics of Earth and other planets in the solar system in terms of their ability to support life													X		X
•Describe the current scientific theory relating to the origin and geologic evolution of the Earth and the solar system													XX		
•Explain phases of the Moon in terms of relative positions of the Earth, Moon, and Sun													XX		
•Draw inferences from celestial and terrestrial observations relating frames of reference for time and Earth motion													XX		
4b. Curriculum Standard: Students will demonstrate an increasing ability to understand that the Earth is a complex planet with five interacting systems, which consists of the solid Earth (lithosphere), air (atmosphere), water (hydrosphere), ice (cryosphere), and life (biosphere).															
•Use maps and globes to identify surface features of the Earth	XX	XX	XX	XX	XX	XX	X	X	XX	X	XX	XX		X	X
•Establish a correlation between different locations using rock and fossil evidence	X			X					X	X				X	X
•Identify common soil conservation methods						XX									
•Relate common cycles such as the water cycle, the nitrogen cycle, and the carbon cycle to each other	X			X	X		XX	X		XX	X	XX		XX	X
•Describe the motions of ocean waters and identify their causes and effects on climate							XX		X					XX	
•Identify the composition and physical characteristics of the atmosphere								XX							
•Explain the roles of water and weather in distributing the Sun's heat energy							X	XX		X			X		
•Explain weather-related phenomena such as thunderstorms, tornados, hurricanes, drought, or acid precipitation						X	XX	XX				XX		X	
•Use a variety of weather measurement instruments and recording methods such as barometers, anemometers, and charts								XX							
•Relate observed weather conditions to large and small scale weather systems,e.g. highs, lows, and fronts								XX							
•Demonstrate how living things alter the Earth's atmosphere, lithosphere, and hydrosphere						XX	XX			XX	XX	XX		XX	X
•Describe the relationship of plate tectonics to earthquakes and volcanism	XX	XX	XX	X											
4c. Curriculum Standard: Students will demonstrate an increasing ability to understand that the Earth contains a variety of renewable and non-renewable resources.															
•Investigate how human activities, such as reducing the amount of forest cover and increasing the amount and variety of chemicals released into the atmosphere have changed the Earth's land, ocean, and atmosphere					X	XX				XX	XX	XX		XX	
•Cite evidence that our fresh water supply is essential for life and also for most industrial processes												XX			

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•Describe possible consequences of reducing or eliminating some of the Earth's natural resources										XX	XX	XX			
•Identify natural, as well as human-induced, factors which contribute to changes in the Earth's systems	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

Unifying Themes and Concepts

6a. Curriculum Standard: Students will demonstrate an increasing ability to recognize parts of any object or system, and understand how the parts interrelate in the operation of that object or system.

•Demonstrate and describe how parts of a system influence each other, including feedback	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
•Demonstrate how systems include processes as well as parts, e.g., human body, telephone system, solar system	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
•Show how one system can be part of another system, and how systems influence each other	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
•Predict how certain changes in the system will/will not affect the operation of the system	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

6b. Curriculum Standard: Students will demonstrate their understanding of the meaning of stability and change and will be able to identify and explain change in terms of cause and effect.

•Distinguish among cyclic (e.g., seasons), linear (e.g. distance/time) and irregular (e.g. weather) changes and give examples of each	X	XX	X		XX	XX	X	XX	XX			X		XX	
•Identify and describe varying rates of change and measure selected rates	XX	XX	XX		XX	X	X	X	XX	X	X	X		X	X
•Recognize one form of stability as opposing changes occurring at the same rate (dynamic equilibrium) and cite several examples of that type of stability, e.g., homeostasis, saturated solutions, vapor pressure of liquids	X				X		X	X	X	X	X		X	X	X
•Quantify certain changes and use a mathematical expression to determine past or future states of the system, e.g., gas laws, Newton's laws of motion	X	X	X		X	X	X	X	X	X	X	X	X	X	X

6c. Curriculum Standard: Students will understand the meaning of models, their appropriate use and limitations, and how models can help them in understanding the natural world.

•Distinguish among physical (e.g., DNA), mathematical (e.g., D=RT), and conceptual (e.g. atom) models and give examples of each	X	X			X	X	X	XX	X	X	X	X	X	X	X
•Use different models to represent the same object or process	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
•Use a computer and mathematical model to determine values of variables beyond the range of phenomena observed in the laboratory	XX					X		X				X		X	
•Compare and explain differences in values obtained using a mathematical model and those obtained in the laboratory	XX					X		X				X		X	
•Illustrate how models allow scientists to better understand the natural world	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

6d. Curriculum Standard: Students will increasingly quantify their interactions with phenomena in the natural world, use these results to understand difference of scale in objects and systems, and determine how changes in scale affect various properties of those objects and systems.

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•Calculate from direct measurements, many of the derived measurements of objects such as density, velocity, inner and surface areas, volumes, perimeters, and changes in heat content	XX	XX		XX	XX		XX	XX	XX	XX	XX	XX	XX	X	
•Calculate averages and ranges of measurement values for certain properties or processes in a system	XX	XX	XX			X	XX	XX	XX	XX		XX	XX	XX	
•Correlate the mathematical relationships among length, area, volume, surface area, mass, etc.	XX				XX		X		XX	X	X	X	XX	X	X
•Convert data collected from measurements into graphs and derive mathematical relationships from the data and graphs	XX	XX	XX	X	X	XX	XX	XX	XX	XX	X	XX	XX	XX	X
•Determine the degree of error in any measurement given the accuracy of the instruments used	X	X	X	X	X	XX	X	X	XX	X	X	X	X	X	X
•Express relationships among measurements in the form of a ratio, proportion, or percentage when appropriate	XX	XX			XX	XX		XX	XX	XX	XX	XX	XX		X