

# EarthComm Correlation to Core Content for Science Assessment in Kentucky

## Grades 8 through 11 with Assessment at Grade 11

### Conceptual Understandings: Earth and Space Science, Scientific Inquiry, and Applications/Connections

<b>Correlation Key:</b> "X" = Coverage Secondary concept of the activity or problem. Students gain a basic understanding or introduction of the concept. "XX" = In-depth Coverage Primary concept that is the focus of the activity or problem. Students gain thorough understanding of the concept. Coverage in Student Edition and/or Teacher Edition supports the development of the concept	<b>Earth's Dynamic Geosphere</b>			<b>Understanding Your Environment</b>			<b>Earth's Fluid Spheres</b>			<b>Earth's Natural Resources</b>			<b>Earth System Evolution</b>		
	V	PT	E	BG	RS	LU	O	SW	C	ER	MR	WR	AST	CC	CL
<b>Conceptual Understandings: Earth and Space Science</b>															
<b>Energy in the Earth System</b>															
<b>SC-H-2.1.1</b> Earth systems have sources of energy that are internal and external to the Earth. The Sun is the major external source of energy. Two primary sources of internal energy are the decay of radioactive isotopes and the gravitational energy from Earth's original formation.	X	X	X			X	X	X	X	XX		X	XX	X	X
<b>SC-H-2.1.2</b> The outward transfer of Earth's internal heat drives convection circulation in the mantle. This causes the crustal plates to move on the face of the Earth.	XX	XX	XX	X										X	
<b>SC-H-2.1.3</b> Heating of Earth's surface and atmosphere by the Sun drives convection within the atmosphere and oceans, producing winds and ocean currents.							XX	X		X					
<b>SC-H-2.1.4</b> Global climate is determined by energy transfer from the Sun at and near Earth's surface. This energy transfer is influenced by dynamic processes such as cloud cover and the Earth's rotation, and static conditions such as the position of mountain ranges and oceans.							X	X					XX	XX	
<b>Geochemical Cycles</b>															
<b>SC-H-2.2.1</b> Earth is a system containing essentially a fixed amount of each stable chemical atom or element. Each element can exist in several different reservoirs. Each element on Earth moves among reservoirs in the solid Earth, oceans, atmosphere, and organisms as part of geochemical cycles.	X						X			XX		X		X	

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<b>SC-H-2.2.2</b> Movement of matter between reservoirs is driven by Earth's internal and external sources of energy. These movements are often accompanied by a change in physical and chemical properties of the matter. Carbon, for example, occurs in carbonate rocks such as limestone, in the atmosphere as carbon dioxide gas, in water as dissolved carbon dioxide, and in all organisms as complex molecules that control the chemistry of life.	X	X	X	X			X	X		XX	X	XX		XX	
<b>The Formation and Ongoing Changes of the Earth System</b>															
<b>SC-H-2.3.1</b> The Sun, Earth, and the rest of the solar system formed approximately 4.6 billion years ago from a nebular cloud of dust and gas.													XX		
<b>SC-H-2.3.2</b> Techniques used to estimate geological time include using radioactive dating, observing rock sequences, and comparing fossils to correlate the rock sequences at various locations.	X			XX						X			X		XX
<b>SC-H-2.3.3</b> Interactions among the solid Earth, the oceans, the atmosphere, and living things have resulted in the ongoing development of a changing Earth system. Earthquakes and volcanic eruptions can be observed on a human time scale, but many processes, such as mountain building and plate movements, take place over hundreds of millions of years.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
<b>SC-H-2.3.4</b> Evidence for one-celled forms of life, the bacteria, extends back more than 3.5 billion years. The changes in life over time caused dramatic changes in the composition of the Earth's atmosphere, which did not originally contain oxygen.															X
<b>The Formation and Ongoing Changes of the Universe</b>															
<b>SC-H-2.4.1</b> The Big Bang theory and observational measurements that support it place the origin of the universe at a time between 10 and 20 billion years ago, when the universe began in a hot, dense state. According to this theory, the universe has been expanding since then.													XX		

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<b>SC-H-2.4.2</b> Early in the history of the universe, the first atoms to form were mainly hydrogen and helium. Over time, these elements clump together by gravitational attraction to form trillions of stars.													<b>XX</b>		
<b>SC-H-2.4.3</b> Stars have life cycles of birth through death that are analogous to those of living organisms. During their lifetimes, stars generate energy from nuclear fusion reactions that create successively heavier chemical elements. Some stars explode at the end of their lives, and the heavy elements they have created are blasted out into space to form the next generation of stars and planets.													<b>XX</b>		

**Scientific Inquiry**

**Academic Expectation: 2.1 Scientific Ways of Thinking and Working**

**Students will:**

Formulate testable hypotheses and demonstrate the logical connections between the scientific concepts guiding a hypothesis and the design of an experiment.	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>
Use equipment, tools, techniques, technology, and mathematics to improve scientific investigations and communications.	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>
Use evidence, logic, and scientific knowledge to develop and revise scientific explanations and models.	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>
Design and conduct different kinds of scientific investigations.	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>
Communicate and defend the designs, procedures, observations, and results of scientific investigations.	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>
Review and analyze scientific investigations and explanations of other investigators, including peers.	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>

**Applications/Connections**

**Academic Expectations: 2.2 Patterns of Change, 2.3 Systems, 2.4 Scale and Models, 2.5 Constancy, and 2.6 Change Over Time**

**Science and Technology**

**Students will:**

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Apply scientific theory and conceptual understandings to solve problems of technological design and examine the interaction between science and technology	XX	XX	XX	X	X	XX	X	XX	X	XX	XX	XX	X	X	X
<b>Science in Personal and Social Perspectives</b>															
Explore the impact of scientific knowledge and discoveries on personal and community health; recognize how science influences human population growth, use science to analyze the use of natural resources by an increasing human population; investigate how science can be used to solve environmental quality problems, use science to investigate natural and human-induced hazards; and analyze how science and technology are necessary but not sufficient for solving local, national, and global issues.	XX	XX	XX	X	XX	XX	XX	XX	XX	XX	XX	XX	X	XX	XX
<b>History and Nature of Science</b>															
Analyze the role science plays in everyday life and compare different careers in science; recognize that scientific knowledge comes from empirical standards, logical arguments, and skepticism, and is subject to change as new evidence becomes available; and investigate advances in science and technology that have important and long-lasting effects on science and society.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX