

## EarthComm Correlations to Wisconsin Grade 12 Science Content Standards

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	V	PT	E	BG	RS	LU	O	SW	C	ER	MR	WR	A	CC	CL
<b>Standard A: Science Connections</b>															
A.12.1 Apply* the underlying themes* of science to develop defensible visions of the future	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A.12.2 Show* how conflicting assumptions about science themes* lead to different opinions and decisions about evolution*, health, population, longevity, education, and use of resources, and show* how these opinions and decisions have diverse effects on an individual, a community, and a country, both now and in the future	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A.12.3 Give examples that show* how partial systems*, models*, and explanations* are used to give quick and reasonable solutions that are accurate enough for basic needs	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
A.12.4 Construct* arguments that show* how conflicting models* and explanations* of events can start with similar evidence*	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
A.12.5 Show* how the ideas and themes* of science can be used to make real-life decisions about careers, work places, life-styles, and use of resources	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
A.12.6 Identify* and, using evidence* learned or discovered, replace inaccurate personal models* and explanations* of science-related events	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
A.12.7 Re-examine the evidence* and reasoning that led to conclusions drawn from investigations*, using the science themes*	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
<b>Standard B: Nature of Science</b>															
B.12.1 Show* how cultures and individuals have contributed to the development of major ideas in the earth and space, life and environmental, and physical sciences	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B.12.2 Identify* the cultural conditions that are usually present during great periods of discovery, scientific development, and invention	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B.12.3 Relate* the major themes* of science to human progress in understanding science and the world	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B.12.4 Show* how basic research and applied research contribute to new discoveries, inventions, and applications	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
B.12.5 Explain* how science is based on assumptions about the natural world and themes* that describe the natural world	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

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<b>Standard C: Scientific Inquiry</b>															
C.12.1 When studying science content, ask questions suggested by current social issues, scientific literature, and observations of phenomena, build hypotheses that might answer some of these questions, design possible investigations, and describe results that might emerge from such investigations	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
C.12.2 Identify issues from an area of science study, write questions that could be investigated, review previous research on these questions, and design and conduct responsible and safe investigations to help answer the questions	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
C.12.3 Evaluate the data collected during an investigation, critique the data-collection procedures and results, and suggest ways to make any needed improvements	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
C.12.4 During investigations, choose the best data-collection procedures and materials available, use them competently, and calculate the degree of precision of the resulting data	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
C.12.5 Use the explanations and models found in the earth and space, life and environmental, and physical sciences to develop likely explanations for the results of their investigations	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
C.12.6 Present the results of investigations to groups concerned with the issues, explaining the meaning and implications of the results, and answering questions in terms the audience can understand	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
C.12.7 Evaluate articles and reports in the popular press, in scientific journals, on television, and on the Internet, using criteria related to accuracy, degree of error, sampling, treatment of data, and other standards of experimental design	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>Standard D: Physical Science</b>															
<b>STRUCTURE OF ATOMS AND MATTER</b>															
D.12.1 Describe* atomic structure and the properties of atoms, molecules, and matter during physical and chemical interactions*	X	X							X	X	X				
D.12.2 Explain* the forces that hold the atom together and illustrate* how nuclear interactions* change the atom	X	X							X	X	X				
D.12.3 Explain* exchanges of energy* in chemical interactions* and exchange of mass and energy in atomic/nuclear reactions															
<b>CHEMICAL REACTIONS</b>															
D.12.4 Explain* how substances, both simple and complex, interact* with one another to produce new substances															

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D.12.5 Identify* patterns in chemical and physical properties and use them to predict* likely chemical and physical changes and interactions	X	X		X		X				X						
D.12.6 Through investigations*, identify* the types of chemical interactions*, including endothermic, exothermic, oxidations, photosynthesis, and acid/base reactions										XX						
<b>MOTIONS AND FORCES</b>																
D.12.7 Qualitatively and quantitatively analyze* changes in the motion of objects and the forces that act on them and represent analytical data both algebraically and graphically																
D.12.8 Understand* the forces of gravitation, the electromagnetic force, intermolecular force, and explain* their impact on the universal system													XX			
D.12.9 Describe* models* of light, heat, and sound and through investigations* describe* similarities and differences in the way these energy* forms behave			X				X			X			X			
<b>CONSERVATION OF ENERGY AND THE INCREASE IN DISORDER</b>																
D.12.10 Using the science themes*, illustrate* the law of conservation of energy* during chemical and nuclear reactions.										X			X			
<b>INTERACTIONS OF MATTER AND ENERGY</b>																
D.12.11 Using the science themes*, explain* common occurrences in the physical world	XX	XX	XX	X	X	X	XX	XX	X	XX	X	X	X	XX	X	
D.12.12 Using the science themes* and knowledge of chemical, physical, atomic, and nuclear interactions*, explain* changes in materials, living things, earth's features, and stars	X	X	X	X			X	X		XX	X	XX		XX		
<b>E. Earth and Space Science</b>																
<b>ENERGY IN THE EARTH SYSTEM</b>																
E. 12.1 Using the science themes, distinguish between internal energies (decay of radioactive isotopes, gravity) and external energies (sun) in the earth's systems and show how these sources of energy have an impact on those systems	X	X	X			X	X	X	X	XX		X	XX	X	X	
<b>GEOCHEMICAL CYCLES</b>																
E.12.2 Analyze the geochemical and physical cycles of the earth and use them to describe movements of matter	XX	X	X	XX				X	X	XX	XX	XX		XX		
<b>THE ORIGIN AND EVOLUTION OF THE EARTH SYSTEM</b>																

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E.12.3 Using the science themes, describe theories of the origins and evolution of the universe and solar system, including the earth system as a part of the solar system, and relate these theories and their implications to geologic time on earth													XX		
E.12.4 Analyze the benefits, costs, and limitations of past, present, and projected use of resources and technology and explain the consequences to the environment										XX	XX	XX			
<b>THE ORIGIN AND EVOLUTION OF THE UNIVERSE</b>															
E.12.5 Using the science themes, understand that the origin of the universe is not completely understood, but that there are current ideas in science that attempt to explain its origin													XX		
<b>F. Life and Environmental Science</b>															
<b>THE CELL</b>															
F.12.1 Evaluate* the normal structures and the general and special function* of cells in single-celled and multiple-celled organisms															
F.12.2 Understand* how cells differentiate and how cells are regulated															
<b>THE MOLECULAR BASIS OF HEREDITY</b>															
F.12.3 Explain* current scientific ideas and information about the															
F.12.4 State the relationships between functions* of the cell and functions of the organism as related to genetics and heredity															
<b>BIOLOGICAL EVOLUTION</b>															
F.12.5 Understand* the theory of evolution*, natural selection, and biological classification															X
F.12.6 Using the concepts of evolution* and heredity, account for changes* in species and the diversity of species, include the influence of these changes on science, e.g. breeding of plants or animals															X
<b>THE INTERDEPENDENCE OF ORGANISMS</b>															
F.12.7 Investigate* how organisms both cooperate and compete in ecosystems							X								
F.12.8 Using the science themes*, infer* changes in ecosystems prompted by the introduction of new species, environmental conditions, chemicals, and air, water, or earth pollution	X						X								

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<b>MATTER, ENERGY AND ORGANIZATION IN LIVING SYSTEMS</b>															
F.12.9 Using the science themes*, investigate* energy* systems* (related to food chains) to show* how energy is stored in food (plants and animals) and how energy is released by digestion and metabolism							X								
F.12.10 Understand* the impact of energy* on organisms in living systems*							X								
F.12.11 Investigate* how the complexity and organization* of organisms accommodates the need for obtaining, transforming, transporting, releasing, and eliminating the matter and energy* used to sustain an organism							X								
<b>THE BEHAVIOR OF ORGANISMS</b>															
F.12.12 Trace how the sensory and nervous systems* of various organisms react to the internal and external environment and transmit survival or learning stimuli to cause changes in behavior or responses															
<b>G. Science Applications</b>															
G.12.1 Identify* personal interests in science and technology, implications that these interests might have for future education, and decisions to be considered	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
G.12.2 Design, build, evaluate, and revise models* and explanations related to the earth and space, life and environmental, and physical sciences	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
G.12.3 Analyze* the costs, benefits, or problems resulting from a scientific or technological innovation, including implications for the individual and the community	X	X	X	X	X	X	X	X	X	X	XX	X	X	X	X
G.12.4 Show* how a major scientific or technological change has had an impact on work, leisure, or the home	X	X	X	X	X	X	X	X	X	X	XX	X	X	X	X
G.12.5 Choose a specific problem in our society, identify* alternative scientific or technological solutions to that problem and argue it merits	X	X	X			X		X		X	XX	X		X	
<b>H. Science in Personal and Social Perspectives</b>															

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H.12.1 Using the science themes* and knowledge of the earth and space, life and environmental, and physical sciences, analyze* the costs, risks, benefits, and consequences of a proposal concerning resource management in the community and determine the potential impact of the proposal on life in the community and the region										XX	XX	XX			
H.12.2 Evaluate* proposed policy recommendations (local, state, and/or national) in science and technology for validity, evidence, reasoning, and implications, both short and long-term			X			X				X	X	X			
H.12.3 Show* how policy decisions in science depend on social values, ethics, beliefs, and time-frames as well as considerations of science and technology			X			X				X	X	X		X	
H.12.4 Advocate a solution or combination of solutions to a problem in science or technology	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
H.12.5 Investigate* how current plans or proposals concerning resource management, scientific knowledge, or technological development will have an impact on the environment, ecology, and quality of life in a community or region			XX			X				XX	XX	XX		X	
H.12.6 Evaluate* data and sources of information when using scientific information to make decisions	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
H.12.7 When making decisions, construct a plan that includes the use of current scientific knowledge and scientific reasoning	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX