

EarthComm Correlations to the Idaho Achievement Standards Grades 9-12

<p>“X” = Coverage Secondary concept of the activity or problem. Students gain a basic understanding or introduction of the concept.</p> <p>“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.</p>				Earth's Dynamic Geosphere			Understanding Your Environment			Earth's Fluid Spheres			Earth's Natural Resources			Earth System Evolution		
	G1	G2	G3	U1	U2	U3	F1	F2	F3	N1	N2	N3	E1	E2	E3			

648. UNIFYING CONCEPTS OF SCIENCE.

01. Understand systems, order, and organization.

a. Know the scientific meaning and application of the concepts of system, order, and organization.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
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02. Understand concepts and processes of evidence, models, and explanation.

a. Know that observations and data are evidence on which to base scientific explanations.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
b. Use models to explain how things work.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
c. Develop scientific explanations based on scientific knowledge, logic, and analysis.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

03. Understand constancy, change, and measurement.

a. Identify constancy in some concepts in science that do not change with time such as the speed of light.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
b. Recognize that change occurs in and among systems and change can be measured.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
c. Measure in both the metric and U.S. customary system.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

04. Understand the theory that evolution is a process that relates to the gradual changes in the universe and of equilibrium as a physical state.

a. Know that the present arises from materials and forms of the past.	X	X		XX	XX	X	XX	X	XX	XX	XX	XX	XX	XX	XX	XX
b. Understand evolution as a series of changes, some gradual and some sporadic, that account for present form and function of objects, organisms, and natural or mechanical systems.	XX	XX	XX	XX	XX	XX	X		X	XX	XX	XX	XX	XX	XX	XX
c. Know that equilibrium is a physical state in which forces and changes occur in opposite and offsetting directions.	XX	XX	XX	XX	X	X	X	X	X	X	XX	XX	XX	XX	XX	XX

05. Understand concepts of form and function.

a. Know that form refers to function and function refers to form.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
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649. CONCEPTS OF SCIENTIFIC INQUIRY.

01. Understand scientific inquiry and develop critical thinking skills

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	G1	G2	G3	U1	U2	U3	F1	F2	F3	N1	N2	N3	E1	E2	E3
a. Identify questions and concepts that guide scientific investigations.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
b. Design and conduct scientific investigations	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
c. Use technology and mathematics to improve investigations and communication.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
d. Formulate 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
e. Recognize and analyze alternative explanations and models.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
f. Communicate and defend a scientific argument.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
g. Know the differences among observations, hypotheses, and theories.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

652. INTERDEPENDENCE OF ORGANISMS AND BIOLOGICAL CHANGE.

01. Understand the theory of biological evolution.

a. Know that the theory of evolution explains how species evolve over time and how evolution is the consequence of interactions of: <ul style="list-style-type: none"> - Potential of a species to increase its numbers; - Genetic variability; - A finite supply of resources; - Selection by the environment of those offspring better able to survive and leave offspring. 											XX	XX	XX	XX	XX	XX
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b. Know that natural selection and its evolutionary consequences provide a scientific explanation for the fossil record of ancient life forms, as well as for the striking molecular similarities observed among the diverse species of organisms.											X				X	X
c. Know that the theory of evolution explains how different species of plants, animals, and microorganisms that live on earth today are related by descent from common ancestors.														X		XX
d. Know that biological classifications are based on similarities, which reflect their evolutionary relationships.																XX
02. Understand the interdependence of organisms.																
a. Know that atoms and molecules cycle among the living and nonliving components of the biosphere.				XX		X	X		X	X	X	X	X	X	X	
b. Trace energy flows through ecosystems in one direction, from photosynthetic organisms to herbivores to carnivores and decomposers.											X		X			XX
c. Know that organisms both cooperate and compete in ecosystems.																X
d. Know that living organisms have the capacity to produce populations of infinite size, but environments and resources are finite.											XX	XX	XX			X
e. Know that human beings live within the world's ecosystems. Increasingly, humans modify ecosystems as a result of population growth, technology, and consumption.				X	X	XX	X	X			XX	XX	XX		X	X
654. EARTH AND SPACE SYSTEMS																
01. Understand scientific theories of origin and subsequent changes in the universe and earth systems.																

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a. Know that current scientific theory suggests that the Sun, the Earth, and the rest of the solar system formed from a nebular cloud of dust and gas.													XX	X	
b. Know methods used to estimate geologic time (observing rock sequences and using fossils to correlate the sequences at various locations).				XX							X			XX	XX
c. Know that interactions among the solid earth, the oceans, the atmosphere, and organisms have resulted in the ongoing change of the earth system. Some activities are observable (earthquakes and volcanic eruptions) but many take place over hundreds of millions of years.				XX	X	X	X	X	XX	XX	XX	XX	X	XX	X
d. Know that the development of life caused dramatic changes in the composition of the earth's atmosphere.										X	X	X		XX	X
e. Know that the universe is constantly expanding.													XX		
f. Know the life history of stars and galaxies.													XX		
02. Understand geo-chemical cycles and energy in the earth system.															
a. Know that earth systems have internal and external sources of energy, both of which create heat. The sun is the major external source of energy.	XX	XX	XX	X	X	X	X	XX	X	X	X	X	XX	XX	X
b. Know that the two primary sources of internal energy are the decay of radioactive isotopes and the gravitational energy from the earth's original formation.	X			XX						X	X		X	X	
c. Know that the outward transfer of earth's internal heat drives convection circulation in the mantle that propels the plates comprising the earth's surface across the face of the globe.	XX	XX	XX				X		X		X			X	
d. Know that the heating of the earth's surface and atmosphere by the sun drive convection within the atmosphere and oceans, producing winds and ocean currents.					X		XX	XX	X			XX		XX	X
e. Know that global climate is determined by energy transfer from the sun at and near the earth's surface.	X				X	X	XX	X	XX	X	X	X	XX	X	X

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f. Know that the movement of matter through the solid earth, oceans, and atmosphere is driven by the earth's internal and external sources of energy. These movements are often accompanied by a change in the physical and chemical properties of matter.	XX	XX	XX	X	X	X	XX	XX	XX		X	XX	X	XX	X

655. TECHNOLOGY.

01. Understand the relationship between science and technology and develop the abilities of technological design and application.

a. Know the ways that science advances technology and technology advances science.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
b. Recognize that science and technology are pursued for different purposes and that scientific inquiry is driven by the desire to understand the natural world and technological design is driven by the need to meet human needs and solve human problems.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
c. Know that critical thinking, creativity, imagination, and a good knowledge base are all required in the work of science and engineering.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
d. Know the elements of technological design, which include the following: - Identify a problem or design an opportunity; - Propose designs and choose between alternative solutions; - Implement a proposed solution; - Evaluate the solution and its consequences; - Communicate the problem, process, and solution.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
e. Use available technology to assist in solving problems.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

656. PERSONAL AND SOCIAL PERSPECTIVES.

01. Understand common environmental quality issues, both natural and human induced.

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a. Identify issues, including but not limited to: - Water quality; - Air quality; - Hazardous waste; - Forest health.	X		X			XX	XX	X	X		XX	XX	XX	X	X	X
02. Understand the causes and effects of population change.																
a. Understand the impact of technological development and the growth of human population on the living and nonliving environment.	X	X	X	X	X	X	X	X	X	X	XX	XX	XX		X	X
b. Understand the impact of population change on natural resources and community infrastructure.					X	XX	X	X	X	X	X	X		X	X	
03. Understand the importance of natural resources and the need to manage and conserve them.																
a. Understand the differences between renewable and nonrenewable resources.				X	X	X	X		X	XX	XX	X	X	XX	X	
b. Understand the differences between preservation and conservation.				X	X	X				XX	XX	XX			X	
c. Understand the role and effect of management of natural resources.				X	X	X	X	X	X	XX	XX	XX		X	X	
04. Understand different uses of technology in science and how they affect our standard of living.																
a. Identify examples of technologies used in scientific fields, including but not limited to: - Weather forecasting; - Food production; - Environmental cleanup; - Advances in medicine; - Communications; - The space program.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
657. HISTORY OF SCIENCE.																
01. Understand the significance of major scientific milestones.																
a. Understand the social and economic impact of historical scientific events.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
b. Understand the contributions of notable scientists.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
658. INTERDISCIPLINARY CONCEPTS.																

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01. Understand that interpersonal relationships are important in scientific endeavors.															
a. Know the importance of working in interdisciplinary teams to solve scientific problems.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
02. Understand technical communication.															
a. Read for information.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
b. Write and articulate technical information.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX