

Earth Science

State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
0	Scientific processes.		
112.49.1	The student, for at least 40% of instructional time, conducts field and laboratory investigations using safe, environmentally appropriate, and ethical practices.		
112.49.1.A	demonstrate safe practices during field and laboratory investigations;		
112.49.1.B	make wise choices in the use and conservation of resources and the disposal or recycling of materials.		
112.49.2	The student uses scientific methods during field and laboratory investigations.		
112.49.2.A	plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting equipment and technology;		
112.49.2.B	collect data and make measurements with precision;		
112.49.2.C	organize, analyze, evaluate, make inferences, and predict trends from data;		
112.49.2.D	communicate valid conclusions.	Intro to Earth Science	Naked Egg Lab
112.49.3	The student uses critical thinking and scientific problem solving to make informed decisions.		
112.49.3.A	analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information;		

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112.49.3.B	draw inferences based on data related to promotional materials for products and services;		
112.49.3.C	evaluate the impact of research on scientific thought, society, and the environment;		
112.49.3.D	describe the connections between geology, meteorology, oceanography, and future careers;		
112.49.3.E	research and describe the history of geology, meteorology, oceanography, and contributions of scientists.		
0	Science concepts.		
112.49.4	The student knows the Earth's unique characteristics and conditions.	Astronomy	Section 2, Part I
112.49.4.A	research and describe the Earth's unique placement in the solar system;	Astronomy	Section 2, Parts B (tutorial) and I

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112.49.4.B	analyze conditions on Earth that enable organisms to survive.	Astronomy	Section 2, Part I
112.49.5	The student knows about the formation and history of the Earth.		
112.49.5.A	research and describe the historical development of scientific theories of the Earth's formation;		
112.49.5.B	use current theories to design and construct a geologic time scale.		
112.49.6	The student knows the processes of plate tectonics.		
112.49.6.A	research and describe the historical development of the theories of plate tectonics including continental drift and sea-floor spreading;	Interior of the Earth	Section 1, Parts D-I
112.49.6.B	analyze the processes that power the movement of the Earth's continental and oceanic plates and identify the effects of this movement including faulting, folding, earthquakes, and volcanic activity;	Interior of the Earth	All of Sections 2 and 3
112.49.6.C	analyze methods of tracking continental and oceanic plate movement.		
112.49.7	The student knows the origin and composition of minerals and rocks and the significance of the rock cycle.	Earth's Materials	All of Sections 2 and 3

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112.49.7.A	demonstrate the density, hardness, streak, and cleavage of particular minerals;	Earth's Materials	Section 2, Parts I-L and N (lab)
112.49.7.B	identify common minerals and describe their economic significance;	Earth's Materials	Section 2, Parts G and O
112.49.7.C	classify rocks according to how they are formed during a rock cycle;	Earth's Materials	Section 3, Parts B-N
112.49.7.D	examine and describe conditions such as depth of formation, rate of cooling, and mineral composition that are factors in the formation of rock types.	Earth's Materials	Section 3, Parts B-N
112.49.8	The student knows the processes and end products of weathering.	Surface of the Earth	Section 2, Parts B-G
112.49.8.A	distinguish chemical from mechanical weathering and identify the role of weathering agents such as wind, water, and gravity;	Surface of the Earth	Section 2, Parts C-E
112.49.8.B	identify geologic formations that result from differing weathering processes;		
112.49.8.C	illustrate the role of weathering in soil formation.	Surface of the Earth	Section 2, Parts H-K

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112.49.9	The student knows the role of natural energy resources.		
112.49.9.A	research and describe the origin of fossil fuels such as coal, oil, and natural gas;		
112.49.9.B	analyze issues regarding the use of fossil fuels and other renewable, non-renewable, or alternative energy resources;		
112.49.9.C	analyze the significance and economic impact of the use of fossil fuels and alternative energy resources.		
112.49.10	The student knows the interactions that occur in a watershed.		
112.49.10.A	identify the characteristics of a local watershed such as average annual rainfall, run-off patterns, aquifers, locations of river basins, and surface water reservoirs;		
112.49.10.B	analyze the impact of floods, droughts, irrigation, and industrialization on a watershed;		
112.49.10.C	describe the importance and sources of surface and subsurface water.		

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112.49.11	The student knows characteristics of oceans.		
112.49.11.A	identify physical characteristics of ocean water including salinity, solubility, heat capacity, colligative properties, and density;	World's Water	Section 2, Parts B-E
112.49.11.B	evaluate the effects of tides, tidal bores, and tsunamis;		
112.49.11.C	compare the topography of the ocean floor to the topography of the continents.	World's Water	Section 3, Parts B-G (including tutorial)
112.49.12	The student knows the characteristics of the atmosphere.		
112.49.12.A	identify the atmosphere as a mixture of gases, water vapor, and particulate matter;	Atmosphere and Climate	Section 1, Parts B-C
112.49.12.B	analyze the range of atmospheric conditions that organisms will tolerate including types of gases, temperature, particulate matter, and moisture;	Atmosphere and Climate	Section 3, Parts B-I
112.49.12.C	determine the impact on the atmosphere of natural events and human activity.	Atmosphere and Climate	Section 3, Parts J-O

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112.49.13	The student knows the role of energy in governing weather and climate.		
112.49.13.A	describe the transfer of heat energy at the boundaries between the atmosphere, land masses, and oceans resulting in layers of different temperatures and densities in both the ocean and atmosphere;		
112.49.13.B	identify, describe, and compare climatic zones;		
112.49.13.C	describe the effects of phenomena such as El Niño and the Jet Stream on local weather.		