

Earth Materials Power Standards and Benchmarks

Power Standard 1: Understands and applies principles of scientific inquiry				
<i>Concepts: Scientific Reasoning, Conducting Scientific Investigations, Safety</i>				
Course Level Benchmarks	Vocabulary	Knowledge	Skills	Classroom Resources
A. Formulates and revises scientific explanations and models	<ul style="list-style-type: none"> • scientific explanation • scientific model • data • within tolerance • scientific method 	<ul style="list-style-type: none"> • Knows scientific explanations and models are based on data • Know new data may lead to the modification of scientific explanations and models 	<ul style="list-style-type: none"> • Analyzes data with respect to scientific explanations and models. • Adjusts scientific explanations and models based on data. 	<p>Earth Materials Curriculum Guide</p> <p>Emphasized throughout the entire curriculum</p>
B. Understands how scientific knowledge changes with new evidence	<ul style="list-style-type: none"> • scientific knowledge • evidence • influence • 	<ul style="list-style-type: none"> • Knows examples of scientific knowledge that changed when new evidence was presented • Knows that science is an ongoing process and is always open to new ideas 	<ul style="list-style-type: none"> • Describes how earth materials concepts have evolved with the discovery of new evidence. • Hypothesizes how current earth materials concepts and practices will influence future societies. 	
C. Uses technology and mathematics to perform accurate scientific investigations and communications	<ul style="list-style-type: none"> • technology • mathematics • accuracy • scientific investigations • scientific communication 	<ul style="list-style-type: none"> • Knows how technology can help scientific investigations and communications • Knows mathematical computations and formulas are essential to scientific investigations 	<ul style="list-style-type: none"> • Determines technologies most appropriate to use given a particular situation. • Uses the necessary mathematics for a particular situation. • Calculates results with a given degree of accuracy. 	
D. Demonstrates safe handling procedures	<ul style="list-style-type: none"> • OSHA • EPA • MSDS • Right to Know • hazardous • safety procedures 	<ul style="list-style-type: none"> • Knows appropriate safety procedures for a given situation • Knows where safety devices are located in the classroom • Understands the process of waste disposal 	<ul style="list-style-type: none"> • Follows required safety procedures. • Recognizes, reports, and corrects safety problems. • Follows waste disposal procedures 	

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Power Standard 2: Understands and applies principles of earth science				
<i>Concepts: Descriptive Earth</i>				
Course Level Benchmarks	Vocabulary	Knowledge	Skills	Classroom Resources
A. Uses the five senses to learn about and process information about the earth	•	•	<ul style="list-style-type: none"> • Names the major divisions of the Earth's structure • Describes the various branches of earth science • Understands the use of the scientific method of problem solving 	Earth Materials Curriculum Guide

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<i>Concepts: Descriptive Earth</i>				
Course Level Benchmarks	Vocabulary	Knowledge	Skills	Classroom Resources
B. Uses the International system of measuring to learn about the earth	<ul style="list-style-type: none"> • measurement • mapping • cartographer • topologist 	•	<ul style="list-style-type: none"> • Understands and uses the International System of Units • Understands how earth measurements are calculated • Collects, organizes information, and draws conclusions from data 	Earth Materials Curriculum Guide

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<i>Concepts: Descriptive Earth</i>				
Course Level Benchmarks	Vocabulary	Knowledge	Skills	Classroom Resources
C. Uses maps and other representatives of the earth to study the earth	<ul style="list-style-type: none"> • latitude • longitude • topographic map 	•	<ul style="list-style-type: none"> • Uses latitude and longitude to describe locations • Identify map symbols • Reads and interprets a topographic map • Does research using library skills and community resources 	Earth Materials Curriculum Guide

Power Standard 2: Understands and applies principles of earth science (con't)				
<i>Concepts: Descriptive Earth</i>				
Course Level Benchmarks	Vocabulary	Knowledge	Skills	Classroom Resources
D. Understands the relationship between chemistry earth's materials	<ul style="list-style-type: none"> • minerals • rocks • usage • mineralogist • petrologist • geologist • petroleum geologist 	•	<ul style="list-style-type: none"> • Distinguishes between minerals and non-minerals • Describes the characteristics of a mineral • Understands how crystals form • Identifies mineral specimens • Knows atomic structure • Distinguishes between compounds, elements, and mixtures 	Earth Materials Curriculum Guide

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Power Standard 2: Understands and applies principles of earth science (con't)				
<i>Concepts: Descriptive Earth</i>				
Course Level Benchmarks	Vocabulary	Knowledge	Skills	Classroom Resources
E. Develops an awareness of the types of materials in the earth's crust and the ongoing changes with these materials	<ul style="list-style-type: none"> • igneous • sedimentary • metamorphic • rock process 	•	<ul style="list-style-type: none"> • Understands how the major classes of rock form • Understands how rocks can change form one class to another • Recognizes rock texture and mineral composition of rocks • Recognizes igneous, sedimentary, and metamorphic rocks • Understands rock processes related to human usage 	Earth Materials Curriculum Guide

Power Standard 2: Understands and applies principles of earth science (con't)				
<i>Concepts: Descriptive Earth</i>				
Course Level Benchmarks	Vocabulary	Knowledge	Skills	Classroom Resources
F. Understands the water cycle and the role of fresh water in and on the earth	<ul style="list-style-type: none"> • fresh water • states of water • hydrologist • cavernologist • water quality specialist 	•	<ul style="list-style-type: none"> • Understands major states of water • Understands how water can change from one state to another • Recognizes water texture and mineral composition of water • Recognizes states of water • Understands water processes related to human usage 	Earth Materials Curriculum Guide

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Power Standard 2: Understands and applies principles of earth science (con't)				
<i>Concepts: Dynamic Earth</i>				
Course Level Benchmarks	Vocabulary	Knowledge	Skills	Classroom Resources
G. Understands the processes of weathering/erosion and the role of various weathering, erosional and depositional agents	<ul style="list-style-type: none"> • weathering • erosion • deposition • soil profile • Army Corps of Engineers • Soil and Water Conservationist • glaciologist 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Distinguishes between physical and chemical weathering • Identifies the factors that affect rates of weathering • Distinguishes layers in soil profile • Relates soil information to physical and chemical weathering 	Earth Materials Curriculum Guide

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Power Standard 2: Understands and applies principles of earth science (con't)				
Concepts: Dynamic Earth				
Course Level Benchmarks	Vocabulary	Knowledge	Skills	Classroom Resources
H. Understands the process and effects of moving water, ice, and wind	•	•	<ul style="list-style-type: none"> • Identifies features of erosion by running water and resulting effects • Identifies characteristics of deposits left by running water • Relates drainage basin, rivers, and tributaries • Identifies erosion by glaciation • Identifies features of wind erosion • Compares and contrasts main types of glaciers and associated land forms • Discusses conditions that might lead to the formation of glaciers and the onslaught of a new Ice Age 	Earth Materials Curriculum Guide

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Power Standard 2: Understands and applies principles of earth science (con't)				
<i>Concepts: Dynamic Earth</i>				
Course Level Benchmarks	Vocabulary	Knowledge	Skills	Classroom Resources
I. Understands the concept of evolution and be able to interpret for themselves evidence presented to support the various current theories	<ul style="list-style-type: none"> • theory • evolution • geologic time • era • period • Parade of Life • archeologist • paleontologist • anthropologist 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Relates Darwin's theory of evolution by natural selection to the record of life forms found in the earth's rocks • Makes a fossil mold • Identifies eras and period of geologic time • Identifies major changes among life forms that occurred in earth history • Understands how various forms of fossils were formed 	Earth Materials Curriculum Guide

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<i>Concepts: Dynamic Earth</i>				
Course Level Benchmarks	Vocabulary	Knowledge	Skills	Classroom Resources
J. Understands vulcanism – causes and effects	<ul style="list-style-type: none"> • vulcanism • vulcanologist • seismologist • planetary geologist • volcano 	•	<ul style="list-style-type: none"> • Identifies types of volcanoes and eruptions • Identifies the features of volcanic eruptions • Identifies three basic types of volcanic mountains • Relates volcanic activity to certain areas of the world • Draws inferences from specimens of igneous rocks • Identifies factors which affect violence of volcanic eruptions 	Earth Materials Curriculum Guide

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Power Standard 2: Understands and applies principles of earth science (con't)				
<i>Concepts: Dynamic Earth</i>				
Course Level Benchmarks	Vocabulary	Knowledge	Skills	Classroom Resources
K. Understands earthquakes – causes and effects	<ul style="list-style-type: none"> • seismologist • planetary geologist • tectonics • quakes 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Locates areas of earthquake activity • Determines the epicenter and time of occurrence of earthquakes • Compares the Richter Scale and Mercali Scale • Relates seismic sea waves to earthquakes and traces the path of seismic sea waves • Relates earthquakes to volcanism and plate tectonic theory • Relates theories of structure of earth to earthquake waves 	Earth Materials Curriculum Guide

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Power Standard 2: Understands and applies principles of earth science (con't)				
<i>Concepts: Environmental Earth</i>				
Course Level Benchmarks	Vocabulary	Knowledge	Skills	Classroom Resources
L. Develops an understanding and awareness for the environment and man's impact upon the environment	<ul style="list-style-type: none"> • preservation • stewardship • impact • ecology • conservationist • preservationist • logging specialist 	<ul style="list-style-type: none"> • Knows the earth resources are limited • Knows the use of earth's resources affect the balance of nature 	<ul style="list-style-type: none"> • Understands earth materials and how they relate to the environment • Understands factors that create pollution • Describe the effects of farming, mining, and lumbering on the landscape • Describes the ways of disposing of waste materials • Considers the economics and ethics of recycling • Lists the careers available in ecology 	Earth Materials Curriculum Guide