

**SAUSD 6<sup>th</sup> Grade Earth Science Curriculum 2014-2015**

**Unit 1 • Earth Systems**

*\*For additional details, see NGSS and full curriculum map*

Big Idea	The Earth’s crust changes over time.		
Essential Questions	1. How does energy flow and matter cycle within and among different Earth systems?		
Time Frame 6-8 Weeks	2. How does the movement of tectonic plates impact the surface of the Earth through natural hazards such as earthquakes and volcanoes that present risks to society?		
	3. How does water influence the shape of Earth’s surface?		
Common Core Language Standards	<p><b>L.6.1.</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p><b>L.6.2.</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <p><b>L.6.3.</b> Use knowledge of language and its conventions when writing, speaking, reading, or listening.</p> <p><b>L.6.4.</b> Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies.</p> <p><b>L.6.6.</b> Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p>		
ELD Standards	NGSS Performance Task	NGSS Clarification Statement	Lab Activities
<p><b>Part IC-9.</b> Express information and ideas in formal oral presentations on academic topics</p> <p><b>Part IC-10.</b> Write literary and informational texts to present, describe, and explain ideas and information, using appropriate technology</p> <p><b>Part IC-11.</b> Justify opinions or persuade others by making connections and distinctions between ideas and texts and articulating sufficient, detailed, and relevant textual evidence or background knowledge, using appropriate register.</p>	<p><b>MS-ESS2-1.</b> Develop a model to describe the cycling of Earth’s materials and the flow of energy that drives this process.</p> <p><b>MS-ESS2-4.</b> Develop a model to describe the cycling of water through Earth’s systems driven by energy from the sun and the force of gravity.</p> <p><b>MS-ESS3-1.</b> Construct a scientific explanation based on evidence for how the uneven distributions of Earth’s mineral, energy, and groundwater resources are the result of past and current geoscience processes.</p>	<p><b>MS-ESS2-1.</b> Emphasis is on the processes of melting, crystallization, weathering, deformation, and sedimentation, which act together to form minerals and rocks through the cycling of Earth’s materials. [<i>Assessment Boundary: Assessment does not include the identification and naming of minerals.</i>]</p> <p><b>MS-ESS2-4.</b> Emphasis is on the ways water changes its state as it moves through the multiple pathways of the hydrologic cycle. Examples of models can be conceptual or physical. [<i>Assessment Boundary: A quantitative understanding of the latent heats of vaporization and fusion is not assessed.</i>]</p> <p><b>MS-ESS3-1.</b> Emphasis is on how these resources are limited and typically non-renewable, and how their distributions are significantly changing as a result of removal by humans. Examples of uneven distributions of resources as a result of past processes include but are not limited to petroleum (locations of the burial of organic marine sediments and subsequent geologic traps), metal ores (locations of past volcanic and hydrothermal activity associated with subduction zones), and soil (locations of active weathering and/or deposition of rock).]</p>	<ul style="list-style-type: none"> <li>• Construct a physical model of the layers of Earth which includes energy flow.</li> <li>• Make a poster or brochure that describes how geosciences processes cause earthquakes or volcanoes and their effect on society.</li> <li>• Plan and do an investigation that shows how water changes the surface of the earth.</li> <li>• FOSS Landforms Kit</li> <li>• Holt Earth Science             <ul style="list-style-type: none"> <li>• (P. 82-110, 188-216, 230-250, 264-285, 366-379)</li> </ul> </li> </ul>

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### Unit 2 • *\*For additional details, see NGSS and full curriculum map*

Big Idea	Geologic events have affected the history of the Earth.		
Essential Questions	1. How can evidence from the rock strata be used to organize Earth's 4.6 billion year old history?		
Time Frame 7 Weeks	2. How can the distribution of fossils and rocks, continental shape, and seafloor structures be used as evidence of past tectonic plate motions?		
Common Core Language Standards	<p><b>L.6.5.</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p><b>L.6.6.</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <p><b>L.6.7.</b> Use knowledge of language and its conventions when writing, speaking, reading, or listening.</p> <p><b>L.6.8.</b> Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies.</p> <p><b>L.6.6.</b> Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p>		
ELD Standards	NGSS Performance Task	NGSS Clarification Statement	Lab Activities
<p><b>Part IC-9.</b> Express information and ideas in formal oral presentations on academic topics</p> <p><b>Part IC-10.</b> Write literary and informational texts to present, describe, and explain ideas and information, using appropriate technology</p> <p><b>Part IC-11.</b> Justify opinions or persuade others by making connections and distinctions between ideas and texts and articulating sufficient, detailed, and relevant textual evidence or background knowledge, using appropriate register.</p>	<p><b>MS-ESS1-4.</b> Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old History.</p> <p><b>MS-ESS2-2.</b> Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.</p> <p><b>MS-ESS2-3.</b> Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate tectonics.</p>	<p><b>MS-ESS1-4.</b> Emphasis is on how analyses of rock formations and the fossils they contain are used to establish relative ages of major events in Earth's history. Examples of Earth's major events could range from being very recent (such as the last Ice Age or the earliest fossils of homo sapiens) to very old (such as the formation of Earth or the earliest evidence of life). Examples can include the formation of mountain chains and ocean basins, the evolution or extinction of particular living organisms, or significant volcanic eruptions. [<i>Assessment Boundary: Assessment does not include recalling the names of specific periods or epochs and events within them.</i>]</p> <p><b>MS-ESS2-2.</b> Emphasis is on how processes change Earth's surface at time and spatial scales that can be large (such as slow plate motions or the uplift of large mountain ranges) or small (such as rapid landslides or microscopic geochemical reactions), and how many geoscience processes (such as earthquakes, volcanoes, and meteor impacts) usually behave gradually but are punctuated by catastrophic events. Examples of geoscience processes include surface weathering and deposition by the movements of water, ice, and wind. Emphasis is on geoscience processes that shape local geographic features, where appropriate.</p> <p><b>MS-ESS2-3.</b> Examples of data include similarities of rock and fossil types on different continents, the shapes of the continents (including continental shelves), and the locations of ocean structures (such as ridges, fracture zones, and trenches). [<i>Assessment Boundary: Paleomagnetic anomalies in oceanic and continental crust are not assessed.</i>]</p>	<ul style="list-style-type: none"> <li>• Create a timeline that illustrates the 4.6 billion year history of the earth.</li> <li>• Write an essay that uses evidence to explain past tectonic plate motions.</li> <li>• Holt Earth Science (P. 193-196)</li> <li>• Holt Life Science (P. 262-282)</li> </ul>

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### Unit 3 • Space Systems *\*For additional details, see NGSS and full curriculum map*

#### CC Unit of Study on Cycles

Big Idea	Cyclic patterns can be found in the solar system, Milky Way galaxy, and universe. Cycles are never-ending patterns (CC UNIT OF STUDY)		
Essential Questions	<ol style="list-style-type: none"> <li>1. What is meant by cyclic patterns?</li> <li>2. What does daylight savings time say about human relationships with the seasons?</li> <li>3. How might it feel to experience an interruption in a cycle?</li> <li>4. Do the seasons follow the same cycle in different regions around the planet?</li> <li>5. Where do cycles exist on Earth and in your daily life?</li> <li>6. How can the tilt of Earth explain seasons?</li> </ol>		
Time Frame 5-7 Weeks			
Common Core Language Standards	<p>L.6.1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p>L.6.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <p>L.6.3. Use knowledge of language and its conventions when writing, speaking, reading, or listening.</p> <p>L.6.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies.</p> <p>L.6.6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p>		
ELD Standards	NGSS Performance Task	NGSS Clarification Statement	Lab Activities
<p><b>Part IC-9.</b> Express information and ideas in formal oral presentations on academic topics</p> <p><b>Part IC-10.</b> Write literary and informational texts to present, describe, and explain ideas and information, using appropriate technology</p> <p><b>Part IC-11.</b> Justify opinions or persuade others by making connections and distinctions between ideas and texts and articulating sufficient, detailed, and relevant textual evidence or background knowledge, using appropriate register.</p>	<p><b>MS-ESS1-1.</b> Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.</p> <p><b>MS-ESS1-2.</b> Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.</p> <p><b>MS-ESS1-3.</b> Analyze and interpret data to determine scale properties of objects in the solar system.</p>	<p><b>MS-ESS1-1.</b> Examples of models can be physical, graphical, or conceptual.</p> <p><b>MS-ESS1-2.</b> Emphasis for the model is on gravity as the force that holds together the solar system and Milky Way galaxy and controls orbital motions within them. Examples of models can be physical (such as the analogy of distance along a football field or computer visualizations of elliptical orbits) or conceptual (such as mathematical proportions relative to the size of familiar objects such as students' school or state.) [<i>Assessment Boundary: Assessment does not include Kepler's Laws of orbital motion or the apparent retrograde motion of the planets as viewed from Earth.</i>]</p> <p><b>MS-ESS1-3.</b> Emphasis is on the analysis of data from Earth-based instruments, space-based telescopes, and spacecraft to determine similarities and differences among solar system objects. Examples of scale properties include the sizes of an object's layers (such as crust and atmosphere), surface features (such as volcanoes), and orbital radius. Examples of data include statistical information, drawings and photographs, and models.] [<i>Assessment Boundary: Assessment does not include recalling facts about properties of the planets and other solar system bodies.</i>]</p>	<ul style="list-style-type: none"> <li>• Write an essay that uses evidence to explain the reason for the seasons.</li> <li>• Make a poster or brochure that describes one object in the solar system using analysis of data from Earth-based instruments, space-based telescopes, and spacecraft.</li> <li>• Holt Earth Science (P. 522)</li> <li>• Holt Physical Science (P. 470-507)</li> </ul>

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### Unit 4 • Weather and Climate *\*For additional details, see NGSS and full curriculum map*

Big Idea	Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, landforms, and living things.		
Essential Questions	<ol style="list-style-type: none"> <li>How do the motions and complex interactions of air masses result in changes in weather conditions?</li> <li>What causes different regional climates?</li> <li>What factors have caused the rise in global temperatures over the past century?</li> </ol>		
Time Frame 11-13 Weeks			
Common Core Language Standards	<p>L.6.1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p>L.6.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <p>L.6.3. Use knowledge of language and its conventions when writing, speaking, reading, or listening.</p> <p>L.6.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies.</p> <p>L.6.6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p>		
ELD Standards	NGSS Performance Task	NGSS Clarification Statement	Lab Activities
<p><b>Part IC-9.</b> Express information and ideas in formal oral presentations on academic topics</p> <p><b>Part IC-10.</b> Write literary and informational texts to present, describe, and explain ideas and information, using appropriate technology</p> <p><b>Part IC-11.</b> Justify opinions or persuade others by making connections and distinctions between ideas and texts and articulating sufficient, detailed, and relevant textual evidence or background knowledge, using appropriate register.</p>	<p><b>MS-ESS2-5.</b> Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.</p> <p><b>MS-ESS2-6.</b> Develop and use a model to describe how unequal heating and rotation of the Earth causes patterns of atmospheric and oceanic circulation that determine regional climates.</p> <p><b>MS-ESS3-5.</b> Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.</p>	<p><b>MS-ESS2-5.</b> Emphasis is on how air masses flow from regions of high pressure to low pressure, causing weather (defined by temperature, pressure, humidity, precipitation, and wind) at a fixed location to change over time, and how sudden changes in weather can result when different air masses collide. Emphasis is on how weather can be predicted within probabilistic ranges. Examples of data can be provided to students (such as weather maps, diagrams, and visualizations) or obtained through laboratory experiments (such as with condensation). [<b>Assessment Boundary:</b> Assessment does not include recalling the names of cloud types or weather symbols used on weather maps or the reported diagrams from weather stations.]</p> <p><b>MS-ESS2-6.</b> Emphasis is on how patterns vary by latitude, altitude, and geographic land distribution. Emphasis of atmospheric circulation is on the sunlight-driven latitudinal banding, the Coriolis effect, and resulting prevailing winds; emphasis of ocean circulation is on the transfer of heat by the global ocean convection cycle, which is constrained by the Coriolis effect and the outlines of continents. Examples of models can be diagrams, maps and globes, or digital representations. [<b>Assessment Boundary:</b> Assessment does not include the dynamics of the Coriolis effect.]</p> <p><b>MS-ESS3-5.</b> Examples of factors include human activities (such as fossil fuel combustion, cement production, and agricultural activity) and natural processes (such as changes in incoming solar radiation or volcanic activity). Examples of evidence can include tables, graphs, and maps of global and regional temperatures, atmospheric levels of gases such as carbon dioxide and methane, and the rates of human activities. Emphasis is on the major role that human activities play in causing the rise in global temperatures.</p>	<ul style="list-style-type: none"> <li>Construct a model (conceptual or physical) that explains how water is cycled through Earth's systems.</li> <li>Make a poster or brochure that describe one weather phenomena (ie hurricane, tornado, hail, Santa Ana Winds), it's causes, and the effects on society.</li> <li>Write an argumentative essay supporting or denying Global Warming.</li> </ul> <ul style="list-style-type: none"> <li>Holt Earth Science (P. 468-535)</li> <li>FOSS Weather and Water kit</li> </ul>

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**Unit 5 • Human Impacts**

*\*For additional details, see NGSS and full curriculum map*

Big Idea	Human activities such as mining, land use, energy use, and water use make significant impacts on Earth's systems.		
Essential Questions	<ol style="list-style-type: none"> <li>How can scientific principles be used to design methods for monitoring and minimizing human impacts on the environment?</li> <li>How do increases in human population and per-capita consumption of natural resources impact Earth's systems?</li> </ol>		
Time Frame 2-3 Weeks			
Common Core Language Standards	<p>L.6.1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p>L.6.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <p>L.6.3. Use knowledge of language and its conventions when writing, speaking, reading, or listening.</p> <p>L.6.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies.</p> <p>L.6.6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p>		
ELD Standards	NGSS Performance Task	NGSS Clarification Statement	Lab Activities
<p><b>Part IC-9.</b> Express information and ideas in formal oral presentations on academic topics</p> <p><b>Part IC-10.</b> Write literary and informational texts to present, describe, and explain ideas and information, using appropriate technology</p> <p><b>Part IC-11.</b> Justify opinions or persuade others by making connections and distinctions between ideas and texts and articulating sufficient, detailed, and relevant textual evidence or background knowledge, using appropriate register.</p>	<p><b>MS-ESS3-2.</b> Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.</p> <p><b>MS-ESS3-3.</b> Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.</p> <p><b>MS-ESS3-4.</b> Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.</p>	<p><b>MS-ESS3-2.</b> Emphasis is on how some natural hazards, such as volcanic eruptions and severe weather, are preceded by phenomena that allow for reliable predictions, but others, such as earthquakes, occur suddenly and with no notice, and thus are not yet predictable. Examples of natural hazards can be taken from interior processes (such as earthquakes and volcanic eruptions), surface processes (such as mass wasting and tsunamis), or severe weather events (such as hurricanes, tornadoes, and floods). Examples of data can include the locations, magnitudes, and frequencies of the natural hazards. Examples of technologies can be global (such as satellite systems to monitor hurricanes or forest fires) or local (such as building basements in tornado-prone regions or reservoirs to mitigate droughts).</p> <p><b>MS-ESS3-3.</b> Examples of the design process include examining human environmental impacts, assessing the kinds of solutions that are feasible, and designing and evaluating solutions that could reduce that impact. Examples of human impacts can include water usage (such as the withdrawal of water from streams and aquifers or the construction of dams and levees), land usage (such as urban development, agriculture, or the removal of wetlands), and pollution (such as of the air, water, or land).</p> <p><b>MS-ESS3-4.</b> Examples of evidence include grade-appropriate databases on human populations and the rates of consumption of food and natural resources (such as freshwater, mineral, and energy). Examples of impacts can include changes to the appearance, composition, and structure of Earth's systems as well as the rates at which they change. The consequences of increases in human populations and consumption of natural resources are described by science, but science does not make the decisions for the actions society takes.</p>	<ul style="list-style-type: none"> <li>Make a poster or brochure that describes a human activity that impacts an Earth system and how scientific principles can be used to mitigate the problem.</li> <li>Holt Earth Science (P. 126-173)</li> </ul>

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**Unit 6 • Project Alert** \*For additional details, see NGSS and full curriculum map

Big Idea	Drug use can limit your potential.		
Essential Questions	What are the consequences of smoking, drinking alcohol, using inhalants, or taking drugs? How can you resist pressures to use drugs?		
Time Frame 2-3 Weeks			
Common Core Language Standards	<p>L.6.1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p>L.6.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <p>L.6.3. Use knowledge of language and its conventions when writing, speaking, reading, or listening.</p> <p>L.6.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies.</p> <p>L.6.6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p>		
ELD Standards		Project Alert Mission	Lab Activities
<p><b>Part IC-9.</b> Express information and ideas in formal oral presentations on academic topics</p> <p><b>Part IC-10.</b> Write literary and informational texts to present, describe, and explain ideas and information, using appropriate technology</p> <p><b>Part IC-11.</b> Justify opinions or persuade others by making connections and distinctions between ideas and texts and articulating sufficient, detailed, and relevant textual evidence or background knowledge, using appropriate register.</p>	<p>Can be connected to <b>CA ED CODE 51934(a)</b>: A school district shall ensure that all pupils in grades 7 to 12, inclusive, receive HIV/AIDS prevention education from instructors trained in the appropriate courses. Each pupil shall receive this instruction at least once in junior high school.</p>	<p>Project Alert is a skills-based curriculum that teaches teens how to say “NO.”</p> <p>Each day, America’s teenagers are bombarded with misleading messages about drugs. Glamorized by media and endorsed by peers, the consequences of drug use and experimentation are dangerously disguised, and often hidden altogether.</p> <p>The reality is that drug use can alter a teen’s life forever. That’s why every student should be given the tools to make a decision against using drugs- and the best place to give them those tools is your classroom.</p> <p>The Project ALERT two-year core curriculum consists of 11 lessons that are most effective when taught once a week during the first year, plus three booster lessons that should be delivered the following year.</p> <p>Project ALERT complements other curricula and can be implemented in conjunction with lessons from sex education, health, physical education, science and social studies.</p>	<ul style="list-style-type: none"> <li>• Project Alert <a href="http://www.projectalert.com">www.projectalert.com</a> (Free online resources and training)</li> <li>• Role play refusing to participate in using drugs</li> <li>• Make a poster or brochure that describes the benefits of not using a specific drug.</li> </ul>