

## Unit 5: Geology

<b>Unit #:</b>	APSDO-00018801	<b>Duration:</b>	9.0 Week(s)	<b>Date(s):</b>	
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**Grades:**  
7

**Subjects:**  
Science

### Unit Focus

In this unit, students will learn that the Earth is a dynamic planet, with some events, such as volcanoes or earthquakes, occurring quickly, while other processes, such as the movement of tectonic plates, take place over a longer period of time than is observable. Students will understand that Earth's features are the work of natural forces that build up and wear down the land. Additionally, students will learn that patterns of geological events and features can help scientists understand Earth's history, as well as attempt to predict future events. Summative assessments may include application problems, experimental designs, laboratory practices, data analyses, models, projects, and position statements. These may be in the form of stand-alone tasks or as part of quizzes, tests, labs, or other assignments. Primary instructional materials include the Prentice Hall textbook Inside Earth and the Merrill textbook Earth Science, as well as related laboratory equipment and materials.

### Stage 1: Desired Results - Key Understandings

Established Goals	Transfer
<p><b>Next Generation Science Standards (DCI)</b> <i>Science: 7</i></p> <ul style="list-style-type: none"> <li>• All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms. <i>ESS2.6.A1</i></li> </ul>	<p><b>T1</b> (T3) Collect, analyze, and evaluate the quality of evidence in relation to a question.  <b>T2</b> (T5) Communicate scientific information clearly, thoroughly, and accurately.  <b>T3</b> (T2) Design an investigation or model using appropriate scientific tools, resources, and methods.  <b>T4</b> (T4) Develop a valid scientific conclusion, assess its validity and limitations, and determine future course of actions to inspire further questions.  <b>T5</b> (T1) Integrate knowledge from a variety of disciplines and apply it to new situations to make sense of information, formulate insightful questions, and/or solve problems.  <b>T6</b> (T6) Use mathematics to represent physical variables and their relationships, to make quantitative predictions, and to solve problems.</p>
	<b>Meaning</b>

	Understandings	Essential Questions
<ul style="list-style-type: none"> <li>• Mapping the history of natural hazards in a region, combined with an understanding of related geologic forces can help forecast the locations and likelihoods of future events. <i>ESS3.6.B1</i></li> <li>• Maps of ancient land and water patterns, based on investigations of rocks and fossils, make clear how Earth's plates have moved great distances, collided, and spread apart. <i>ESS2.6.B1</i></li> <li>• Tectonic processes continually generate new ocean sea floor at ridges and destroy old sea floor at trenches. <i>ESS1.6.C2</i></li> <li>• The geologic time scale interpreted from rock strata provides a way to organize Earth's history. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale. <i>ESS1.6.C1</i></li> <li>• The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future. <i>ESS2.6.A2</i></li> <li>• Water's movements-both on the land and underground-cause weathering and erosion, which change the land's surface features and create underground formations. <i>ESS2.6.C5</i></li> </ul>	<p><b>U1</b></p> <p>The distribution of fossils and rocks, continental shapes, and seafloor structures provide evidence for plate tectonics. MS-ESS2.B</p> <p><b>U2</b> (U132) Earth events can occur quickly; others occur very slowly, over a time period much longer than one can observe.</p> <p><b>U3</b> (U132) Earth events can occur quickly; others occur very slowly, over a time period much longer than one can observe.</p> <p><b>U4</b> (U136) Patterns of geological features seen on maps can help scientists to understand Earth's history, such as tectonic plate movements.</p> <p><b>U5</b> (U136) Patterns of geological features seen on maps can help scientists to understand Earth's history, such as tectonic plate movements.</p> <p><b>U6</b> (U164) Mapping the history of natural hazards in a region, combined with an understanding of related geologic, forces can help forecast the locations and likelihoods of future events.</p> <p><b>U7</b> (U139) Earth's major systems are the geosphere, the hydrosphere, the atmosphere, and the biosphere. These systems are dynamic and interact in multiple ways to affect Earth's surface materials and processes.</p> <p><b>U8</b> (U139) Earth's major systems are the geosphere, the hydrosphere, the atmosphere, and the biosphere. These systems are dynamic and interact in multiple ways to affect Earth's surface materials and processes.</p> <p><b>U9</b> (U135) Water on Earth exists as a solid (ice), liquid (water), and gas (water vapor).</p>	<p><b>Q1</b> (Q135) How do scientists observe, record, study, and predict changes in the Earth?</p> <p><b>Q2</b> (Q135) How do scientists observe, record, study, and predict changes in the Earth?</p> <p><b>Q3</b> (Q102) What factors cause the Earth's interior and surface to change?</p> <p><b>Q4</b> (Q139) How do the major systems (geosphere, hydrosphere, and biosphere) of the Earth interact?</p> <p><b>Q5</b> (Q140) How do the properties and movements of water shape Earth's surface and affect its systems?</p> <p><b>Q6</b> (Q135) How do scientists observe, record, study, and predict changes in the Earth?</p> <p><b>Q7</b> (Q137) How do maps help us to understand the present and past location of geological features?</p>

<b>Acquisition of Knowledge and Skill</b>	
<b>Knowledge</b>	<b>Skills</b>
<p><b>K1</b></p> <p>Use maps to identify plate boundaries and movements in order to predict and develop models of faults, folds, volcanoes, and earthquakes</p> <p><b>K2</b></p> <p>Describe how the geosphere, atmosphere, and hydrosphere work together to affect earth's surface</p> <p><b>K3</b></p> <p>Develop models to explain how water weathers, erodes, and deposits sediments and identify the landforms created by these processes</p> <p><b>K4</b></p> <p>Describe several sources of evidence for plate tectonics</p> <p><b>K5</b></p> <p>Identify sedimentary, metamorphic, and igneous rocks and describe the processes that formed them (rock cycle)</p>	<p><b>S1</b></p> <p>Using appropriate lab equipment (e.g., scales, graduated cylinders) to measure the mass and volume of solids and liquids and calculate their density</p>