



<b>Course:</b> CP Geology/Oceanography <b>(1 semester)</b> <b>Grade:</b> 11/12 <b>Designer(s):</b> Monteleone	<b>Overview of Course</b> (Briefly describe what students should understand and be able to do as a result of engaging in this course):  <b>This one semester course will explore geology and oceanography from an Earth Science perspective. Topics in geology may include: minerals, rock types and features, surface and groundwater, plate tectonics, geologic resources, and various issues in environmental geology. Topics in oceanography may include: ocean floor features and exploration, ocean motion, the marine environment, coastline features, and human impact on oceans.</b>
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**Overarching Big Ideas, Enduring Understandings, and Essential Questions**

(These “spiral” throughout the entire curriculum.)

<b>Big Idea</b> (A Big Idea is typically a noun and always transferable within and among content areas.)	<b>Standard(s) Addressed</b> (What Common Core Standard(s) and/or PA Standard(s) addresses this Big Idea?)	<b>Enduring Understanding(s)</b> (SAS refers to Enduring Understandings as “Big Ideas.” EUs are the understandings we want students to carry with them after they graduate. EUs will link Big Ideas together. Consider having only one or two EUs per Big Idea.)	<b>Essential Question(s)</b> (Essential Questions are broad and open ended. Sometimes, EQs can be debated. A student’s answer to an EQ will help teachers determine if he/she truly understands. Consider having only one or two EQs per Enduring Understanding.)
(The first overarching Big Idea goes here.)  <b>Interactions</b>	(The Common Core Standard(s) and/or PA Standard(s) that addresses the first overarching Big Idea goes here.)  <b>3.3.10.A1</b> <b>3.3.10.A3</b> <b>3.3.10.A4</b> <b>3.3.10.A5</b> <b>3.3.10.A6</b> <b>3.3.10.A7</b>	(The Enduring Understanding(s) for the first overarching Big Idea goes here.)  <b>Earth consists of an interacting set of processes and structures.</b>	(The Essential Question(s) for the Enduring Understanding(s) for the first overarching Big Idea goes here.)  <b>How do interactions shape the Earth?</b> <b>How do Earth’s systems interact?</b>
<b>Systems</b>	Same as above	<b>The Earth system is composed of a multitude of systems, which cycle and interact.</b>	<b>How do Earth’s systems interact?</b> <b>What makes a system a ‘system’?</b>
<b>Changes</b>	Same as above	<b>The Earth is a constantly changing planet.</b>	<b>How is the Earth changing?</b> <b>What processes cause change?</b>

**Big Ideas, Enduring Understandings, and Essential Questions Per Unit of Study**  
(These do NOT “spiral” throughout the entire curriculum, but are specific to each unit.)

<p><b>Month of Instruction</b> (In what month(s) will you teach this unit?)</p> <p>Approximate pacing for semester class</p>	<p><b>Title of Unit</b></p>	<p><b>Big Idea(s)</b> (A Big Idea is typically a noun and always transferable within and among content areas.)</p>	<p><b>Standard(s) Addressed</b> (What Common Core Standard(s) and/or PA Standard(s) addresses this Big Idea?)</p>	<p><b>Enduring Understanding(s)</b> (SAS refers to Enduring Understandings as “Big Ideas.” EUs are the understandings we want students to carry with them after they graduate. EUs will link Big Ideas together. Consider having only one or two EUs per Big Idea.)</p>	<p><b>Essential Question(s)</b> (Essential Questions are broad and open ended. Sometimes, EQs can be debated. A student’s answer to an EQ will help teachers determine if he/she truly understands. Consider having only one or two EQs per Enduring Understanding.)</p>	<p><b>Common Assessment(s)*</b> (What assessments will all teachers of this unit use to determine if students have answered the Essential Questions?)</p>	<p><b>Common Resource(s)* Used</b> (What resources will all teachers of this unit use to help students understand the Big Ideas?)</p>
<p>Week 1 – 3</p>	<p>Minerals and Rocks</p>	<p><b>Interactions Systems Changes</b> Minerals Rocks Processes</p>	<p>3.3.10.A1 Relate plate tectonics to both slow and rapid changes in the earth’s surface</p> <p>Describe the rock cycle and the processes that are responsible for the formation of igneous, sedimentary, and metamorphic rocks</p> <p>Explain how the Earth is composed of a number of dynamic, interacting systems exchanging energy or matter.</p> <p>3.3.12.A1 Explain how parts are related to other parts in the weather systems and earth systems including how the output from one part can become an</p>	<p>Minerals and rocks are an integral part of daily life.</p> <p>Minerals and rocks are formed by the interaction of geological processes.</p> <p>Systems change the Earth’s material.</p>	<p><u>How are minerals used in daily life?</u> How do minerals form? How are minerals classified and identified?</p> <p><u>How are rocks used?</u> How do different types of rocks form? How are different types of rocks classified and identified?</p> <p><u>How do systems and processes change Earth’s material?</u></p>	<p>Mineral ID lab Rock ID lab Mineral/Rock Quiz</p>	<p><a href="http://www.usgs.gov">www.usgs.gov</a></p>

			<p>input to another part.</p> <p>Analyze the processes that cause the movement of material in the Earth's systems</p> <p>3.3.10.A4 Explain how the Earth's systems and its various cycles are driven by energy.</p> <p>3.3.12.A4 Relate the transfer of energy through radiation, conduction, and convection to global atmospheric processes</p>				
Week 4-5	River Systems, Groundwater, Watersheds	<p><b>Interactions Systems Changes</b></p> <p>Cycles</p> <p>Hydrosphere</p> <p>Surface water</p> <p>Groundwater</p> <p>Watersheds</p>	<p>3.3.10.A3 Explain how the evolution of the Earth has been driven by interactions between the lithosphere, hydrosphere, atmosphere, and biosphere</p> <p>3.3.10.A5 Explain the processes of the hydrologic cycle</p> <p>4.2.10.A Describe how topography influences the flow of water in a watershed.</p> <p>Describe how vegetation affects water runoff.</p> <p>Investigate and analyze the effects of land use on the quality of water in a watershed.</p> <p>4.2.12.A Examine environmental laws related to land use management and its impact on the water quality and flow within a watershed.</p>	<p>Surface water interacts and changes the surface of the Earth.</p> <p>The water cycle is an integral part of daily life.</p>	<p><u>How does water change the Earth's surface?</u></p> <p>What physical features are characteristic of stream development? How does groundwater create features? What are the features of watershed?</p> <p><u>Why does the Earth's surface look the way it does and how do we know?</u></p> <p><u>Why is the water cycle significant?</u></p> <p><u>How do humans depend on freshwater?</u></p> <p><u>How is the quality of water impacted by human activity?</u></p>	<p>Pennsylvania Rivers Research project</p> <p>River and Groundwater test</p>	<p><a href="http://www.usgs.gov">www.usgs.gov</a></p>

Week 6-10	Plate Tectonics, Volcanism, and Earthquakes	<b>Interactions Systems Changes</b> Processes Plate Tectonics Volcanism Earthquakes	3.3.10.A1 Relate plate tectonics to both slow and rapid changes in the earth's surface  Explain how the Earth is composed of a number of dynamic, interacting systems exchanging energy or matter.  3.3.12.A1 Analyze the processes that cause the movement of material in the Earth's systems  3.3.10.A3 Explain how the evolution of the Earth has been driven by interactions between the lithosphere, hydrosphere, atmosphere, and biosphere	Most geological changes and processes are the result of plate tectonics.  Earth's changes impact people.  The Earth is a system made up of many smaller systems.	<u>How does the movement of Earth's tectonic plates result in many geological features?</u> How does convection explain the movement of continents and the distribution of volcanoes and earthquakes? What are the types of plate boundaries and features associated with each?  <u>What did the Earth look like in the past and how has it continue to change?</u> How does evidence support the theory of plate tectonics?  <u>How are human populations impacted by geological activity?</u>	Volcano Research project	<a href="http://www.usgs.gov">www.usgs.gov</a>
Week 11-18	Ocean Basin and Features; Ocean Movement; Ocean Water and Environment	<b>Interactions Systems Changes</b> Oceans	3.3.10.A5 Explain how there is only one ocean  Explain the processes of the hydrologic cycle  Explain the dynamics of oceanic currents and their relationship to global circulation with the marine environment  3.3.10.A6 Explain the phenomena that cause global atmospheric processes such as storms, currents, and wind patterns  3.3.12.A6 Explain how the unequal heating of the Earth's surface leads to atmospheric global circulation changes, climate, local short term changes, and weather	Oceans interact and influence many of the Earth's systems.	<u>How is the ocean connected to global climatic processes?</u> How do the atmosphere and hydrosphere interact? Explain how ocean currents impact climate.  <u>How are the oceans connected to plate tectonics?</u> Explain the geological development of ocean basins and features. Describe the evidence and importance of seafloor spreading.  <u>How is the ocean environment effected by human activity?</u> Describe coastline features and stabilization.	Ocean Basin and Features Test  Ocean Movement Test  Density Lab Salinity Lab Gas in Liquid Lab Brine Shrimp Lab  Ocean Water and Environment Test	<a href="http://www.usgs.gov">www.usgs.gov</a>

			<p>3.3.12.A4 Relate the transfer of energy through radiation, conduction, and convection to global atmospheric processes</p> <p>3.3.10.A4 Explain how the Earth's systems and its various cycles are driven by energy.</p>				
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\* Some teachers may need to think about the assessments and resources used in order to determine the Big Ideas, Enduring Understandings, and Essential Questions embedded in their courses. At this point in your curriculum mapping, you might want to ignore the “Common Assessments” and “Common Resources Used” columns. However, you may use them if you wish.