

Earth Science Institute II June 22, 2010
Day 2 Correlation of EarthComm Curriculum and HSCE's

EarthComm Curriculum Unit Code	
<p>EDG1 = Earth's Dynamic Geospheres: Chapter 1, Volcanoes</p> <p>EDG2 = Earth's Dynamic Geospheres: Chapter 2, Plate Tectonics</p> <p>EDG2 = Earth's Dynamic Geospheres: Chapter 3, Earthquakes</p> <p>EFS1 = Earth's Fluid Spheres: Chapter 1, Oceans</p> <p>ENR1 = Earth's Natural Resources: Chapter 1, Energy Resources</p>	<p>ENR3 = Earth's Natural Resources: Chapter 3, Water Resources</p> <p>ESE1 = Earth System Evolution: Chapter 1, Astronomy</p> <p>ESE2 = Earth System Evolution: Chapter 2, Climate Change</p> <p>ESE3 = Earth System Evolution: Chapter 3, Changing Life</p>

Stop 1: Veteran's Memorial Park at the End of the Lift Bridge	
EarthComm Connections	
Learning Outcomes:	HSCE
<ul style="list-style-type: none"> ○ Identify patterns in solar activities (sunspot cycle, solar flares, and solar wind). ○ Relate events on the Sun to phenomena such as auroras, disruption of radio and satellite communications, and power grid disturbances. ○ Describe how nuclear fusion produces energy in the Sun. ○ Describe how nuclear fusion and other processes in stars have led to the formation of all the other chemical elements. ○ Explain natural mechanisms that could result in significant changes in climate (e.g., major volcanic eruptions, changes in sunlight received by the Earth, and meteorite impacts.) 	<p>E5.2A</p> <p>E5.2B</p> <p>E5.2C</p> <p>E5.2D</p> <p>E5.4B</p>

Stop 2: Mont Ripley Ski Hill	
EarthComm Connections	
Learning Outcomes:	HSCE
<ul style="list-style-type: none"> ○ Describe the position and motion of our solar system in our galaxy and the overall scale, structure, and age of the universe. ○ Identify patterns in solar activities (sunspot cycle, solar flares, and solar wind). ○ Relate events on the Sun to phenomena such as auroras, disruption of radio and satellite communications, and power grid disturbances. ○ Describe how nuclear fusion produces energy in the Sun. ○ Describe how nuclear fusion and other processes in stars have led to the formation of all the other chemical elements. ○ Explain natural mechanisms that could result in significant changes in climate (e.g., major volcanic eruptions, changes in sunlight received by the Earth, and meteorite impacts.) 	<p>E5.1A</p> <p>E5.2A</p> <p>E5.2B</p> <p>E5.2C</p> <p>E5.2D</p> <p>E5.4B</p>

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Stop 3: Small Park in Hancock- Place Based	
EarthComm Connections	Inquiry, Nature of Science, All Units
Learning Outcomes:	HSCE
<ul style="list-style-type: none"> ○ Generate new questions that can be investigated in the laboratory or field. ○ Evaluate the uncertainties or validity of scientific conclusions using an understanding of sources of measurement error, the challenges of controlling variables, accuracy of data analysis, logic of argument, logic of experimental design, and/or the dependence on underlying assumptions. ○ Conduct scientific investigations using appropriate tools and techniques (e.g., selecting an instrument that measures the desired quantity—length, volume, weight, time interval, temperature—with the appropriate level of precision). 	<p>E1.1A</p> <p>E1.1B</p> <p>E1.1C</p>

Stop 4: The Breakers	
EarthComm Connections	
Learning Outcomes:	HSCE
<ul style="list-style-type: none"> ○ Explain why the Earth is essentially a closed system in terms of matter. ○ Analyze the interactions between the major systems (geosphere, atmosphere, hydrosphere, and biosphere) that make up the Earth. ○ Explain, using specific examples, how a change in one system affects other Earth systems. ○ Describe natural processes in which heat transfer in the Earth occurs by conduction, convection, and radiation. ○ Describe renewable and nonrenewable sources of energy for human consumption (electricity, fuels), compare their effects on the environment, and include overall costs and benefits. ○ Explain natural mechanisms that could result in significant changes in climate (e.g., major volcanic eruptions, changes in sunlight received by the Earth, and meteorite impacts.) ○ Explain, using specific examples, how a change in one system affects other Earth systems. ○ Compare and contrast surface water systems (lakes, rivers, streams, wetlands) and groundwater in regard to their relative sizes as Earth's freshwater reservoirs and the dynamics of water movement (inputs and outputs, residence times, sustainability). ○ Describe the Earth's principal sources of internal and external energy (e.g., radioactive decay, gravity, solar energy). ○ Identify differences in the origin and use of renewable (e.g., solar, wind, water, biomass) and nonrenewable (e.g., fossil fuels, nuclear [U-235]) sources of energy. 	<p>E2.1A</p> <p>E2.1B</p> <p>E2.1C</p> <p>E2.2C</p> <p>E2.4A</p> <p>E5.4B</p> <p>E2.1C</p> <p>E4.1A</p> <p>E2.2A</p> <p>E2.2B</p>

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<ul style="list-style-type: none"> ○ Explain how the impact of human activities on the environment (e.g., deforestation, air pollution, coral reef destruction) can be understood through the analysis of interactions between the four Earth systems. 	E2.4B
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Stop 5: University Telescope near Atlantic Mine	
EarthComm Connections	
Learning Outcomes:	HSCE
<ul style="list-style-type: none"> ○ Describe the position and motion of our solar system in our galaxy and the overall scale, structure, and age of the universe. ○ Describe how nuclear fusion and other processes in stars have led to the formation of all the other chemical elements. ○ Explain how the solar system formed from a nebula of dust and gas in a spiral arm of the Milky Way Galaxy about 4.6 Ga (billion years ago). 	E5.1A E5.2D E5.3A

Stop 6: Seaman Mineral Museum	
EarthComm Connections	
Learning Outcomes:	HSCE
<ul style="list-style-type: none"> ○ Explain how the solar system formed from a nebula of dust and gas in a spiral arm of the Milky Way Galaxy about 4.6 Ga (billion years ago). ○ Describe the Earth's principal sources of internal and external energy (e.g., radioactive decay, gravity, solar energy). 	E5.1A E2.2A

Stop 7: Dinner @ Keweenaw Brewing Company	
EarthComm Connections	Inquiry, Nature of Science, All Units
Learning Outcomes:	HSCE
<ul style="list-style-type: none"> ○ Generate new questions that can be investigated in the laboratory or field. ○ Evaluate the uncertainties or validity of scientific conclusions using an understanding of sources of measurement error, the challenges of controlling variables, accuracy of data analysis, logic of argument, logic of experimental design, and/or the dependence on underlying assumptions. ○ Conduct scientific investigations using appropriate tools and techniques (e.g., selecting an instrument that measures the desired quantity—length, volume, weight, time interval, temperature—with the appropriate level of precision). 	E1.1A E1.1B E1.1C

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