

Content: Science	Grade or Course: Global Science (CP and Honors)	Date Developed: August 2018
<p>Overview:</p> <p>This course was developed based on four assumptions of high school science: (1) the study of science should be meaningful for all students; (2) science is best learned by experimentation and analysis of data; (3) student interest is best kept by using relevant material; and (4) all students should understand science in terms of systems, with emphasis on the Earth systems. Global Science helps students develop basic scientific knowledge, skills and attitudes that will be further expanded in grades 10-12. Students will be asked to observe, analyze and draw conclusions from their own lab activities as well as excerpts from current research. Geology, Earth in Space, Earth Systems and sustainability will all be explored. All year long we will focus on collecting & analyzing evidence to help explain ideas being studied in class.</p> <p>Honors Global Science is designed for students with a keen interest in science and the ability to work independently and responsibly. The student must want, need and be capable of a greater challenge than College Prep (CP) Global Science courses. Many topics are explored in greater depth and sophistication. The entire class moves at a faster pace than CP Global Science.</p>		
<p>Essential Questions:</p> <p>How do we make sense of highly variable data collected from the earth to understand the way the earth functions?</p> <p>What evidence supports that the composition of the earth is based on processes that occur in stars?</p> <p>What evidence helps us understand the history & structure of the earth?</p> <p>What are the processes that drive Earth's conditions and continual change over time?</p> <p>How have humans interacted with and impacted Earth's systems?</p>		
<p>EO's addressed to proficiency level:</p> <p>Students will understand, demonstrate, and be evaluated on the following Scientific Practices:</p> <ul style="list-style-type: none"> ● Asking Questions and Defining Problems ● Planning and Carrying Out Investigations ● Analyzing and Interpreting Data ● Using Math and Computational Thinking ● Obtaining, Evaluating, and Communicating Information 		

Standards:**Earth's Place in the Universe:**

HS. ESS 1-1. Illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation.

HS. ESS 1-5. Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks.

HS. ESS 1-6. Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history.

Earth's Systems:

HS. ESS2-1. Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.

HS. ESS 2-2. Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.

HS. ESS 2-3. Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection.

HS. ESS 2-4. Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate.

HS. ESS 2-6. Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.

HS. ESS 2-7. Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth.

Earth and Human Activity

HS. ESS 3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.

HS. ESS 3-2. Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.

HS. ESS 3-4. Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.

HS. ESS 3-5. Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems.

HS. ESS 3-6. Use a computational representation or model to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.

Units:

Unit #1. **Environmental Data and Variability**

Unit #2. **Question type and data analysis**

Unit #3. **Universe and Stars**

Unit #4. **Structure of the Earth and Plate Tectonics**

Unit #5. **Earth Systems**

Unit #6. **Climate**

Unit #7. **Sustainability**

Assessments:

Engineering and Design Challenge 1

Model Solar Home

Engineering and Design Challenge 2

Wind Turbine Challenge

Data Stories

Life from Star Stuff or Life Cycle of Stars Project

Geologic Time Project

3-D model from 2-D data on Plate Tectonics

Carbon Cycle Model

Summative Exams w/ supercorrections (Unit 1, 3, 4, 5, 6)

Sustainability Action Project

Investigations

- Intro
- Convection and density
- Star Spectra
- Concentration
- CO₂ Lab
- Ocean Acidification
- Sustainability

Formative Assessments:

Quiz/Concept Check

Mini Data Story/CER practice

Notebook check with feedback

Project feedback