HENRY COUNTY SCHOOLS

Better Together.

EARTH SYSTEMS

| SCIENCE |

HENRY

Teaching & Learning Standards

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Science

Earth Systems

Collaboration, Communication, Creativity, and Critical Thinking skills are embedded within the language of the Henry Teaching and Learning Standards

HCS Graduate Learner Outcome	***As a Henry County graduate, I will understand and analyze the origins, interactions and relationships between and among the Earth, our solar system, and the universe as demonstrated through the integration of scientific processes and practices.***

GA Standard Code

SES1 **Obtain, evaluate, and communicate information to investigate the composition and formation of Earth systems, including the Earth's place in the solar system.**

- SES1a Construct an explanation of the origins of the solar system from scientific evidence including the composition, distribution and motion of solar system objects.
- SES1b Ask questions to evaluate evidence for the development and composition of Earth's early systems, including the geosphere (crust, mantle and core), hydrosphere and atmosphere.
- SES1c Develop a model of the physical composition of Earth's layers using multiple types of evidence (e.g., Earth's magnetic field, composition of meteorites and seismic waves).

HCS Graduate Learner Outcome	***As a Henry County graduate, I will apply science and engineering practices to understand and analyze lithospheric materials, tectonic processes, and the human and environmental impacts of natural and human-induced changes to Earth's surface.***

GA Standard Code

SES2 **Obtain, evaluate, and communicate information to understand how plate tectonics creates certain geologic features, landforms, Earth materials, and geologic hazards.**

- SES2a Construct an explanation based on evidence that describes the mechanisms causing plate tectonic motion.
- SES2b Develop and use models for the different types of plate tectonic settings (convergent, divergent and transform boundaries).
- SES2c Construct an explanation that communicates the relationship of geologic features, landforms, Earth materials and geologic hazards to each plate tectonic setting.
- SES2d Ask questions to compare and contrast the relationship between transformation processes of all rock types (sedimentary, igneous, and metamorphic) and specific plate tectonic settings.
- SES2e Construct an argument using multiple forms of evidence that supports the theory of plate tectonics (e.g., fossils, paleomagnetism, seafloor age, etc.).

SES3 **Obtain, evaluate, and communicate information to explore the actions of water, wind, ice, and gravity as they relate to landscape change.**

SES3a Plan and carry out an investigation that demonstrates how surface water and groundwater act as the major agents of physical and chemical weathering.

SES3b Develop a model of the processes and geologic hazards that result from both sudden and gradual mass wasting.

SES3c Construct an explanation that relates the past and present actions of ice, wind, and water to landform distribution and landscape change.

SES3d Construct an argument based on evidence that relates the characteristics of the sedimentary materials to the energy by which they were transported and deposited.

HCS Graduate Learner Outcome	***As a Henry County graduate, I will understand and analyze the history of Earth by interpreting evidence found in rock and ocean sediments through the integration of scientific practices and processes.***

GA Standard Code

SES4 **Obtain, evaluate, and communicate information to understand how rock relationships and fossils are used to reconstruct the Earth's past.**

SES4a Use mathematics and computational thinking to calculate the absolute age of rocks using a variety of methods (e.g., radiometric dating, rates of erosion, rates of deposition, and varve count).

SES4b Construct an argument applying principles of relative age (superposition, original horizontality, cross-cutting relations, and original lateral continuity) to interpret a geologic cross-section and describe how unconformities form.

SES4c Analyze and interpret data from rock and fossil succession in a rock sequence to interpret major events in Earth's history such as mass extinction, major climatic change, and tectonic events.

SES4d Construct an explanation applying the principle of uniformitarianism to show the relationship between sedimentary rocks and their fossils to the environments in which they were formed.

SES4e Construct an argument using spatial representations of Earth data that interprets major transitions in Earth's history from the fossil and rock record of geologically defined areas.

HCS Graduate Learner Outcome	***As a Henry County graduate, I will understand and analyze the role of solar energy in Earth processes, the dynamics and composition of the atmosphere and global processes influencing weather and climate.***

GA Standard Code

SES5 **Obtain, evaluate, and communicate information to investigate the interaction of solar energy and Earth's systems to produce weather and climate.**

- SES5a Develop and use models to explain how latitudinal variations in solar heating create differences in air pressure, global wind patterns, and ocean currents that redistribute heat globally.
- SES5b Analyze and interpret data (e.g., maps, meteograms, and weather apps) that demonstrate how the interaction and movement of air masses creates weather.
- SES5c Construct an argument that predicts weather patterns based on interactions among ocean currents, air masses, and topography.
- SES5d Analyze and interpret data to show how temperature and precipitation produce the pattern of climate regions (zones) on Earth.
- SES5e Construct an explanation that describes the conditions that generate extreme weather events (e.g., hurricanes, tornadoes, and thunderstorms) and the hazards associated with these events.
- SES5f Construct an argument relating changes in global climate to variation to Earth/sun relationships and atmospheric composition.

HCS Graduate Learner Outcome	***As a Henry County graduate, I will understand and analyze Earth's systems and the relationship between human activity and the Earth as demonstrated through the integration of scientific processes and practices.***

GA Standard Code

SES6 **Obtain, evaluate, and communicate information about how life on Earth responds to and shapes Earth's systems.**

- SES6a Construct an argument from evidence that describes how life has responded to major events in Earth's history (e.g., major climatic change, tectonic events) through extinction, migration, and/or adaptation.
- SES6b Construct an explanation that describes how biological processes have caused major changes in Earth's systems through geologic time (e.g., nutrient cycling, atmospheric composition, and soil formation).
- SES6c Ask questions to investigate and communicate how humans depend on Earth's land and water resources, which are distributed unevenly around the planet as a result of past geological and environmental processes.
- SES6d Analyze and interpret data that relates changes in global climate to natural and anthropogenic modification of Earth's atmosphere and oceans.