HENRY COUNTY SCHOOLS

Better Together.

ENVIRONMENTAL SCIENCE

| SCIENCE |

HENRY

Teaching & Learning Standards

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Science

Environmental Science

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 apply scientific and engineering practices to understand and analyze the flow of energy and the cycling of matter in an ecosystem.***

GA Standard Code

SEV1 **Obtain, evaluate, and communicate information to investigate the flow of energy and cycling of matter within an ecosystem.**

- SEV1a Develop and use a model to compare and analyze the levels of biological organization including organisms, populations, communities, ecosystems, and biosphere.
- SEV1b Develop and use a model based on the Laws of Thermodynamics to predict energy transfers throughout an ecosystem (food chains, food webs, and trophic levels).
- SEV1c Analyze and interpret data to construct an argument of the necessity of biogeochemical cycles (hydrologic, nitrogen, phosphorus, oxygen, and carbon) to support a sustainable ecosystem.
- SEV1d Evaluate claims, evidence, and reasoning of the relationship between the physical factors (e.g., insolation, proximity to coastline, topography) and organismal adaptations within terrestrial biomes.
- SEV1e Plan and carry out an investigation of how chemical and physical properties impact aquatic biomes in Georgia.

HCS Graduate Learner Outcome	***As a Henry County graduate, I will apply scientific and engineering practices to understand and analyze the effects of stability and change on the interconnected system that comprises Earth.***

GA Standard Code

SEV2 **Obtain, evaluate, and communicate information to construct explanations of stability and change in Earth's ecosystems.**

- SEV2a Analyze and interpret data related to short-term and long-term natural cyclic fluctuations associated with climate change.
- SEV2b Analyze and interpret data to determine how changes in atmospheric chemistry (carbon dioxide and methane) impact the greenhouse effect.
- SEV2c Construct an argument to predict changes in biomass, biodiversity, and complexity within ecosystems, in terms of ecological succession.
- SEV2d Construct an argument to support a claim about the value of biodiversity in ecosystem resilience including keystone, invasive, native, endemic, indicator, and endangered species.

HCS Graduate Learner Outcome	***As a Henry County graduate, I will apply scientific and engineering practices to understand and analyze the availability, allocation and conservation of energy and natural resources.***

GA Standard Code

SEV3 **Obtain, evaluate, and communicate information to evaluate types, availability, allocation, and sustainability of energy resources.**

- SEV3a Analyze and interpret data to communicate information on the origin and consumption of renewable forms of energy (wind, solar, geothermal, biofuel, and tidal) and non-renewable energy sources (fossil fuels and nuclear energy).
- SEV3b Construct an argument based on data about the risks and benefits of renewable and nonrenewable energy sources.
- SEV3c Obtain, evaluate, and communicate data to predict the sustainability potential of renewable and non-renewable energy resources.
- SEV3d Design and defend a sustainable energy plan based on scientific principles for your location.

HCS Graduate Learner Outcome	***As a Henry County graduate, I will apply scientific and engineering practices to understand and analyze the effects of human activities and technology on ecosystems.***

GA Standard Code

SEV4 **Obtain, evaluate, and communicate information to analyze human impact on natural resources.**

- SEV4a Construct and revise a claim based on evidence on the effects of human activities (agriculture, forestry, ranching, mining, urbanization, fishing, water use, pollution, desalination, waster water treatment) on natural resources (land, air, water, organisms).
- SEV4b Design, evaluate, and refine solutions to reduce human impact on the environment including, but not limited to, smog, ozone depletion, urbanization, and ocean acidification.
- SEV4c Construct an argument to evaluate how human population growth affects food demand and food supply (GMOs, monocultures, desertification, Green Revolution).

SEV5 **Obtain, evaluate, and communicate information about the effects of human population growth on global ecosystems.**

- SEV5a Construct explanations about the relationship between the quality of life and human impact on the environment in terms of population growth, education, and gross national product.
- SEV5b Analyze and interpret data on global patterns of population growth (fertility and mortality rates) and demographic transitions in developing and developed countries.
- SEV5c Construct an argument from evidence regarding the ecological effects of human innovations (Agricultural, Industrial, Medical, and Technological Revolutions) on global ecosystems.
- SEV5d Design and defend a sustainability plan to reduce your individual contribution to environmental impacts, taking into account how market forces and societal demands (including political, legal, social, and economic) influence personal choices.