

TERM 1**Energy/ Earth and Human Activity/ Earth's Systems****6.PS3: Energy**

- 1) Analyze the sources of energy in a system to gather evidence supporting that energy is conserved during transfers of kinetic, potential (elastic, gravitational, and chemical), and/or thermal energy.
- 2) Use a model to gather evidence to support changes to a system can be caused by transfers of sound or thermal energy (i.e., conduction, convection, or radiation).

6.ESS3: Earth and Human Activity

- 1) Use data to explain the consumption and sustainability of natural resources (non-renewable and renewable) and the resulting impact on Earth's system.
- 2) Investigate and compare existing and developing technologies that utilize renewable and alternative energy resources.

6.ESS2: Earth's Systems

- 6) Develop a model to explain the role of greenhouse gases in regulating the Earth's average surface temperature and keeping it habitable.

6.ETS1.2: Engineering Design

- 2) Design, construct, and test a device that either minimizes or maximizes thermal energy transfer by combining solutions or parts of solutions to solve a problem that can be communicated and explained to others.

TERM 2**Earth's Systems****6.ESS2: Earth's Systems**

- 1) Diagram oceanic and atmospheric convection patterns in a system that flow due to uneven heating of the earth.
- 2) Gather evidence to justify that oceanic convection currents in a system are caused by the sun's transfer of thermal energy and differences in salinity leading to global water movement.
- 3) Construct an explanation for how atmospheric flow, geographic features, and ocean currents affect the climate of a region through heat transfer.
- 5) Analyze and interpret data to determine the impact of humans and other organisms on the water cycle, landforms (e.g., rain shadow effect) and atmospheric systems.
- 7) Collect data to provide evidence for how the interactions of air masses result in changes in local weather conditions and how that data can be used to predict probable local weather patterns.
- 4) Develop and use a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.

TERM 3

Ecosystems: Interactions, Energy, and Dynamics/ Biological Change: Unity and Diversity/ Earth and Human Activity

6.LS2: Ecosystems: Interactions, Energy, and Dynamics

3) Use a model to construct an explanation about the transfer of energy through a food web and energy pyramid in an ecosystem.

1) Use data to evaluate and communicate the impact of environmental variables, both living and nonliving (e.g., food, water, oxygen, and other resources), on population size within a system.

2) Construct an explanation that predicts patterns of competitive, symbiotic, and predatory interactions among organisms across ecosystems.

6.LS4: Biological Change: Unity and Diversity

1) Explain how changes to biodiversity in a system would impact human resources (e.g., food, medicine, and clean water) and “ecosystem services” (e.g., climate stabilization, decomposition of waste, and pollination).

6.ESS3: Earth and Human Activity

3) Obtain, evaluate, and communicate information about the impacts of human activities on the biosphere including conservation, habitat management, species endangerment, and extinction.

6.LS2: Ecosystems: Interactions, Energy, and Dynamics

4) Construct an explanation that uses abiotic (e.g., precipitation, temperature, soil) and biotic (e.g., biodiversity, number of organisms) patterns in earth’s terrestrial and aquatic ecosystems (e.g., tundra, taiga, deciduous forest, desert, grasslands, rainforest, marine, and freshwater) as measures of ecosystem health.

6.ETS1: Engineering Design

1) Design, evaluate, and improve a possible solution for maintaining biodiversity of ecosystems.

TERM 4

Ecosystems: Interactions, Energy, and Dynamics

6.LS2: Ecosystems: Interactions, Energy, and Dynamics

5) Analyze existing evidence about the effect of a specific invasive species on native populations in Tennessee and design a solution to mitigate its impact.

End of Year PBL