

Earth Systems Science Core Curriculum

Standard 1: Students will understand the scientific evidence that supports theories that explain how the universe and solar system developed.

Objective 1: I can describe the big bang theory and evidence supporting it.

Objective 2: I can relate the structure and composition of the solar system to the processes that exist in the universe.

I know the following words:

Big bang theory, blue shift, heavy element, mass, nuclear fusion, red shift, theory, universe, astronomy

Standard 2: Students will understand that the features of Earth's evolving environment

Affect living systems, and that life on Earth is unique in the solar system.

Objective 1: I can describe the unique physical features of Earth's environment that make life on Earth possible.

Objective 2: I can analyze how ecosystems differ from each other due to abiotic and biotic factors.

Objective 3: I can describe Earth's diversity of life as it changes over time.

I know the following words:

Abiotic, atmosphere, biodiversity, biome, biotic, ecosystem, extinction, system, aesthetic, ethical, social, economic, stellar, photosynthesis, biomass, species

Standard 3: Students will understand that gravity, density, and convection move Earth's plates and this movement causes the plates to impact other Earth systems.

Objective 1: I can explain the evidence that supports the theory of plate tectonics.

Objective 2: I can describe the processes within Earth that result in plate motion and relate it to changes in other Earth systems.

I know the following words:

Plate tectonics, convergent, divergent, transform, plate, convection current, hypothesis, theory, seafloor spreading, biomes, climate, weather, geosphere, biosphere, hydrosphere, volcanic eruption, hot spot, fault

Standard 4: Students will understand that water cycles through and between reservoirs in the hydrosphere and affects the other spheres of the Earth system.

Objective 1: I can explain the water cycle in terms of its reservoirs, the movement between reservoirs, and the energy to move water. Evaluate the importance of freshwater to the biosphere.

Objective 2: I can analyze the physical and biological dynamics of the oceans.

I know the following words:

Groundwater, reservoir, salinity, glacier, biological dynamics, tide, geologic time

Standard 5: Students will understand that Earth's atmosphere interacts with and is altered by the lithosphere, hydrosphere, and biosphere.

Objective 1: I can describe how matter in the atmosphere cycles through other Earth systems.

Objective 2: I can trace ways in which the atmosphere has been altered by living systems and has itself strongly affected living systems over the course of Earth's history.

I know the following words:

Carbon cycle, climate, decomposer, matter, nitrogen cycle, ozone layer, depletion, fossil fuel, lithosphere

Standard 6: Students will understand the source and distribution of energy on Earth and its effects on Earth systems.

Objective 1: I can describe the transformation of solar energy into heat and chemical energy on Earth and eventually the radiation of energy to space.

Objective 2: I can relate energy sources and transformation to the effects on Earth systems.

I know the following words:

Absorbed, Coriolis Effect, energy, greenhouse gas, meteorology, radiation, reflected, topography