



I Can...

HS. Matter and Its interactions

- relate the interactions between electrons and atoms to explain material properties, chemical reactions, and the movement of energy in matter.
- relate the bond energy and properties of matter to predict the outcome of a chemical reaction.
- design an experiment that predicts and changes the conditions such as temperature or concentration at equilibrium in a chemical reaction in order to achieve a desired outcome.
- use mathematical relations to demonstrate that atoms, and therefore mass, are conserved in a chemical reaction.
- explain how nuclear processes differ from normal interactions in matter in regards to energy and the conservation of mass.

HS. Motion and Stability: Forces and Interactions

- use Newton's second law to describe the motion and energy of objects.
- understand the forces and momentum on objects in a collision and use that information to construct a device to use that information.
- use Newton's Law of Gravitation and knowledge of electrical fields and forces to investigate the behavior of materials near electromagnetic fields.
- communicate why the molecular level structure of designed materials is important to their function.

HS. Energy

- understand and use how the motion of particles is related to temperature and energy distribution.
- design and build a device that transfers energy from one type to another.

HS. Waves and Their Applications in Technologies for Information Transfer

- use math to relate the speed, wavelength, and frequency of all waves and the dual wave/particle nature of electromagnetic radiation.
- describe and understand the properties and reactions of matter when they are exposed to EM radiation and how this can be used to transmit and store data.



HS. Earth's Place in the Universe

- analyze data to understand and predict changes to the Earth's climate, ocean, and geological systems including using feedback systems.
- describe how the cycling of various systems of water, carbon, and energy on both immediate and geologic time scales produce and influence our balance of life and planet.
- understand and model how the fusion reactions in our sun predict its lifespan and provide energy for the entire solar system.
- evaluate evidence such as light spectra, motion of distant galaxies, and the composition of matter in the universe to understand the Big Bang model of the formation of the universe.
- describe how stars over their life cycles produce elements through fusion processes.
- use mathematical or computational models to predict the motion of orbiting objects in our solar system.
- evaluate evidence of Earth's materials, meteorites, plate tectonics, and other surfaces in order to create an account of the Earth's formation and early history.

HS. Earth's Systems

- construct an argument based on evidence about the simultaneous co-evolution of the Earth's systems and life on Earth.

HS. Earth and Human Activity

- construct and evaluate a model for the development and management of natural resources as they relate to human activities.
- evaluate or refine a technological solution that reduces human impact on natural systems.
- evaluate data from global climate models to understand and predict how human activities are altering the Earth's systems.