

Integrated Chemistry & Physics: Grades 9, 10, 11, 12

Adopted 2023

Matter and its Interactions

HS-ICP1-1. Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms. [HS-ICP1-1](#)

HS-ICP1-2. Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties. [HS-ICP1-2](#)

HS-ICP1-3. Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles. [HS-ICP1-3](#)

HS-ICP1-4. Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy. [HS-ICP1-4](#)

HS-ICP1-5. Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay. [HS-ICP1-5](#)

Forces

HS-ICP2-1. Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration. [HS-ICP2-1](#)

Energy

HS-ICP3-1. Quantitatively analyze various scenarios to describe how the change of energy in one component in a system responds to the change in energy of the other components and flow of energy into and out of the system are known. [HS-ICP3-1](#)

HS-ICP3-2. Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects). [HS-ICP3-2](#)

HS-ICP3-3. Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy. **HS-ICP3-3**

HS-ICP3-4. Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction. **HS-ICP3-4**

HS-ICP3-5. Gather data to build a model to describe and explain the flow of current through series and parallel electric circuits. **HS-ICP3-5**

**Waves and their
Applications in
Technologies for
Information Transfer**

HS-ICP4-1. Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves. **HS-ICP4-1**