



G-E-T High School Curriculum

Align, Explore, Empower

Scope and Sequence

Accelerated Physical Science

Unit 1 - Energy and Motion

(12 weeks)

- The study of forces relates motion of objects to the forces applied to those objects and calculates work, power, or efficiency of machines affecting those objects.

In this unit, students will ...

- Identify steps scientists use to solve problems
- Compare and contrast science and technology
- Describe Newton's Laws of Motion
- Relate how force affects motion
- Calculate velocity, acceleration, momentum, and force.
- Explain the law of gravity
- Describe the difference between mass and weight
- Demonstrate the Law of Conservation of Mass and Energy
- Distinguish between Kinetic and Potential Energy
- Relate energy and work
- Perform calculations for work, energy, and efficiency
- Explain how the different machines make doing work easier
- Calculate the mechanical advantage and efficiency of a machine

Resource: Ch. 1-5 Glencoe Physical Science 2005

Standards for Accelerated Physical Science: Unit 1

HS-PS-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-PS-2: Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.

HS-PS2-3: Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision.

HS-PS2-4: Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects.

HS-PS3-1: Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.

HS-PS3-2: Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motion of particles (objects) and energy associated with the relative positions of particles (objects).

Unit 2 - The Nature of Matter

(6 weeks)

- The study of the nature of matter relates the physical and chemical properties to the different states of matter.

In this unit, students will ...

- Define substances and mixtures
- Identify elements and compounds
- Compare and contrast solutions, colloids, and suspensions
- Compare and contrast physical and chemical properties and changes
- Determine how the law of conservation of mass applies to chemical changes

Resource: Ch. 15 and 16, Glencoe Physical Science 2005

Standards for Accelerated Physical Science: Unit 2

HS-PS1-1: 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-PS1-7: Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.