



AP Physics
High School

1.0 Understands and applies the skills of scientific inquiry.

- 1.1 Uses scientific inquiry to design, conduct, and analyze scientific investigations.
- 1.2 Identifies questions and concepts that guide scientific investigations.
- 1.3 Understands that different kinds of questions suggest different kinds of investigations.
- 1.4 Uses appropriate models when necessary.
- 1.5 Develops hypothesis.
- 1.6 Identifies controls and variables.
- 1.7 Designs and executes scientific investigations.
- 1.8 Selects and uses appropriate tools, technology and techniques to gather data.
- 1.9 Makes appropriate qualitative and quantitative observations.
- 1.10 Recognizes the importance of multiple trials with reproducible results.
- 1.11 Organizes data and observations efficiently, including creating appropriate tables and graphs.
- 1.12 Analyzes and evaluates the data and observations.
- 1.13 Integrates data and observations to draw appropriate conclusions.
- 1.14 Accounts for errors in investigations.
- 1.15 Uses evidence to infer possible applications or extensions for further inquiry.
- 1.16 Uses various methods to communicate experimental methods, observations, results, and interpretations.
- 1.17 Uses appropriate safety procedures when conducting investigations.
- 1.18 Recognizes that safety concerns change with different procedures.
- 1.19 Knows locations and appropriate uses of the safety equipment in the classroom.

4.0 Understands and applies concepts and theories pertaining to matter, its composition and the forces that govern it.

- 4.1 Understands and applies knowledge of the structure and properties of matter.
 - Analyzes and evaluate atomic physics and quantum effects.
 - Evaluates, measure, and analyze nuclear physics.
- 4.2 Understands and applies knowledge of motion and forces.
 - Analyzes and evaluates a particle using kinematics (movement in

one, two, and Circular dimensions).

Using Newton's Three Laws of Motion analyze the effects of changes in motion.

Analyzes and evaluates systems of particles and linear momentum.

Evaluates and analyzes uniform circular motion.

Investigates and analyzes law of gravitation.

Applies the universal law of gravitation.

Examines and evaluates fluid mechanics.

Analyzes electrostatic relationships.

Evaluates and analyzes conductors, capacitors, and dielectrics.

Analyzes and investigates electric circuits.

Studies and evaluates magnetostatics.

4.3 Understands and applies knowledge of types of energy and increase in disorder.

Examines and calculates work, energy and power.

Examines and evaluates kinetic theory.

Analyzes the relationship between heat and energy transfer.

Understands that the sun is the major source of energy on earth arriving as light.

4.4 Understands and applies knowledge of interactions of energy and matter.

Measures and analyzes electromagnetic forces.

Evaluates wave motion.

Evaluates and analyzes physical optics.

Investigates and analyzes geometric optics.

5.0 Understands the nature of science.

5.1 Understands how science develops and changes over time.

5.2 Explains that all scientific ideas are tentative and subject to change and improvement with data to support this.

5.3 Explains that most core scientific theories have large quantities of experimental and observational evidence.

5.4 Understands that scientific innovators have had difficulty breaking through the accepted ideas of their time to reach new conclusions that are considered to be common knowledge.

5.5 Understands that people continue inventing new ways of doing things, solving problems, and getting work done.