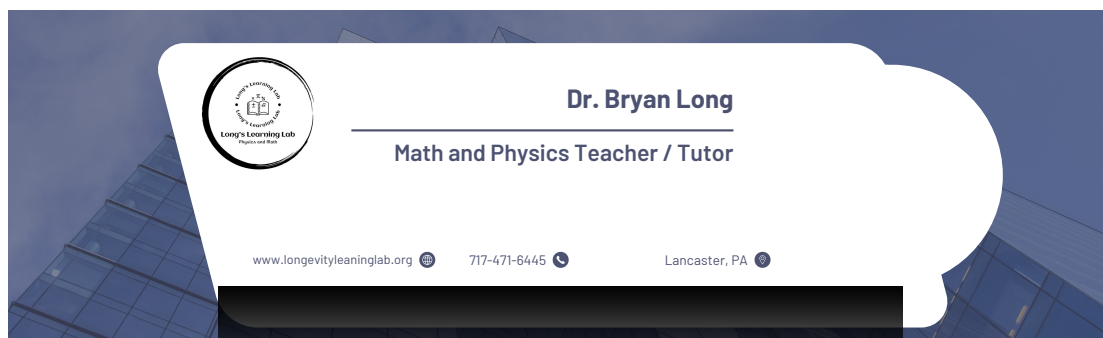




Below are two charts that describe typical topics taught in HS Physics. Dr. Long can teach any of these topics and/or provide homework help. Dr. Long believes a mastery of HS Physics requires consistent practice and explanation.

General HS Physics Topics

1. Introduction to Physics

- Overview of what physics is and its importance.
- Basic concepts such as measurement, units, and the scientific method.

2. Mechanics

- Kinematics: Motion in one and two dimensions, speed, velocity, acceleration, and equations of motion.
- Dynamics: Newton's laws of motion, force, friction, and applications of forces.
- Work, Energy, and Power: Work-energy theorem, kinetic and potential energy, power.
- Momentum and Collisions: Conservation of momentum, elastic and inelastic collisions.

3. Thermodynamics

- Temperature and Heat: Scales of temperature, heat transfer mechanisms, specific heat.
- Laws of Thermodynamics: First law (conservation of energy), second law (entropy), and applications.
- Heat Engines and Efficiency: Carnot cycle, heat engines, efficiency calculations.

4. Waves and Optics

- Wave Properties: Characteristics of waves, wave types (mechanical vs. electromagnetic), wave behavior.
- Light and Optics: Reflection, refraction, lenses, mirrors, image formation, and optical instruments.

5. Electricity and Magnetism

- Electric Charge and Electric Fields: Coulomb's law, electric field, electric potential.
- Electric Circuits: Current, voltage, resistance, Ohm's law, series and parallel circuits.
- Magnetism: Magnetic fields, magnetic force, electromagnetic induction.

6. Modern Physics

- Quantum Mechanics: Introduction to quantum theory, wave-particle duality, uncertainty principle.
- Atomic and Nuclear Physics: Structure of the atom, radioactivity, nuclear reactions.
- Special Relativity: Einstein's theory of special relativity, time dilation, length contraction.

7. Applications and Problem Solving

- Real-world applications of physics principles.
- Problem-solving techniques and strategies.