G-E-T High School Curriculum
Align, Explore, Empower
Scope and Sequence
Physics

Unit 1 - Kinematics (Length of Unit - 6 weeks)
- The Science of Physics, Motion in one Dimension, Two-Dimensional Motion and Vectors.
In this unit, students will … ● understand and calculate displacement, velocity, speed, acceleration and direction of objects moving in one- and two- dimensions. Resource: Ch. 1-3, Holt Physics

Standards for Physics: Unit 1
HS-PS2-1: 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.

Unit 2 - Forces (Length of Unit -3 weeks)
- Forces and the Laws of Motion Resource: Ch. 4, Holt Physics
In this unit, students will … ● Apply Newton's Laws of Motion to cases involving mass, acceleration, and inertia, and understand weight, friction and normal force.

Standards for Physics: Unit 2
HS-PS2-1: 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-PS2-2: 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.

Unit 3 - Work, Energy and Momentum (Length of Unit - 5 weeks)

- Work and Energy, Momentum and Collisions

In this unit, students will …

- Know the relationship between energy, work, and power, the interrelation between mass, velocity, and momentum, conservation of momentum, and elastic and inelastic collisions.

Resource: Ch. 5 and 6, Holt Physics

Standards for Physics: Unit 3

HS-PS2-1: 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-PS2-2: 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-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 motions of particles (objects) and energy associated with the relative positions of particles (objects).

Unit 4- Rotational Motion (Length of Unit -3 of weeks)

- Rotational Motion and the Law of Gravity, Rotational Equilibrium and Dynamics

In this unit, students will …

- understand and calculate velocity, acceleration and force involved in rotational motion, apply Newton'sLaw of Universal Gravitation, apply Kepler'sLaws of Planetary Motion, and understand torque.

Resource: Ch. 7 and 8, Holt Physics

Standards for Physics: Unit 4
HS-PS2-1: 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-PS2-2: 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.