Unit 2
Motion and Stability

High School
Physics

Unit Length and Description:

9 Instructional Weeks

Students will use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects. They will also plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current. Students will develop and use models of two objects interacting through electric and magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to this interaction.

Science Standards:

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.

Enduring Understandings- Unit Anchor Phenomenon:

Faster NHL Skater Challenge: Each year skaters challenge to see who can skate the fastest time around the ring. In 2018, that time was 13.454 sec. The record was set in 2016 with a time of 13.172 sec.

Essential Questions- Reflective Summaries:

- How is data used to support claims that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration?
- Use mathematical representations to support claims the total momentum of a system of objects is conserved when there is no net force on the system.
- How can you apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision?