Southern Regional High School

Manahawkin, New Jersey

Course Syllabus

Department: Science

Course: Honors Physics

Marking Period 1

Topics/Units to be covered:

- Classroom Expectations/Grading
- Lab Safety
- Choose coordinate systems for motion problems
- Differentiate between scalar and vector quantities.
- Define a displacement vector and determine a time interval.
- Relate the direction and magnitude of velocity and acceleration vectors to the motion of objects.
- List and apply Newton's Laws
- Recognize that friction is often disregarded.
- Identify and calculate static and kinetic friction.
- Determine the direction of frictional forces.
- Apply the law of conservation of momentum.
- Calculate impulse and change in velocity.
- Differentiate between mass and weight.
- Calculate the coefficient of friction.
- Create pictorial and physical models for solving motion problems.

- Quarterly

Marking Period 2

Topics/Units to be covered:

- Predict the range of a projectile from myriad variables
- Relate seasons to the angle of Earth's rotational axis.
- Accurately launch projectiles to a predetermined range.
- Describe and calculate effect of air resistance and aerodynamics on trajectory.
- Identify forces acting on an object at terminal velocity, and calculate
- Define and calculate impulse.
- Calculate mechanical, potential and kinetic energy.
- Apply the law of conservation of energy.
- Calculate efficiency, and mechanical advantage of a system.
- Identify simple machines and their purpose
- List manifestations of lost energy in a system

- Quarterly

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Marking Period 3

Topics/Units to be covered:

- Diagram electric and magnetic fields
- Predict forces between charged objects and magnetic poles.
- Build and analyze series and parallel electrical circuits
- Describe conditions for flow of charge.
- Describe the magnetic field of the Earth.
- Use Ohm's law to calculate variables for a simple circuit.
- Differentiate between AC and DC.

- Quarterly

Marking Period 4

Topics/Units to be covered:

- Differentiate longitudinal, transverse, and surface waves.
- Calculate wave speed, wavelength and frequency
- Differentiate between mechanical and electromagnetic waves.
- Identify and analyze a standing wave and its applications.
- Explain causes of hearing loss.
- Apply Snell's law
- Describe similarities and differences between E & M waves.
- Identify the parts of the human eye.
- Use the law of reflection
- Draw ray diagrams for mirrors and lenses.
- Use the lens equation to calculate image distance and magnification

- Final exam