Newburyport Public Schools
The Port Where Tradition and Innovation Converge

Newburyport Science Curriculum Framework Guide -Grade HS Physics

Focus Areas

In Grade 8 the focus on student learning in Science is on the following areas:

1. Matter and Its Interactions
2. Motion and Stability: Forces and Interactions
3. Energy
4. Waves and their Applications in technologies for information transfer

Guiding Principles for Grade Grade HS Physics Science

Matter and its interactions

•Illustrating the energy released or absorbed during the processes of fission, fusion, and radioactive decay.

Motion and Stability: Forces and Interactions

•Using data to predict the change in motion of objects when acted on by a net force.

•Showing mathematically that the total momentum of a system is conserved when there is no net force on the system.

•Designing a device that minimizes forces on an object during a collision.

•Describing and predicting the effects of gravitational and electrostatic forces between objects.

•Providing evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current.

•Predicting changes to voltage, current, or resistance when simple changes are made to a circuit.

•Using models to predict changes to velocity and acceleration for an object moving in one dimension.

Energy

•Calculating the change in energy of a system and identify energy transformations from one form to another.

•Using models to show that energy at the macroscopic scale can be accounted for as either moving particles or energy stored in fields.

•Designing and evaluate a device that works to convert one form of energy into another form of energy.

•Using evidence to show thermal energy will transfer between touching objects from high to low temperature to reach thermal equilibrium.

•Developing models to illustrate the forces and changes in energy between two magnetically or electrically charged objects changing position in a magnetic or electric field.

Waves and their Applications in Technologies for Information Transfer

•Mathematically showing the relationships among the frequency, wavelength, and speed of waves.

•Evaluating the idea that electromagnetic radiation can be understood by either a wave model or a particle model.

•Communicating how devices use waves to transmit and capture information and energy.

Newburyport Public Schools
The Port Where Tradition and Innovation Converge

Newburyport Science Curriculum Framework Guide -Grade HS Physics

Focus Areas

In Grade 6 the focus on student learning in Science is on the following areas:

1. Earth's Systems
2. Earth's Place in the Universe
3. Matter and Its Interactions
4. Motion and Stability: Forces and Interactions
5. Waves and their Applications in Technologies for Information Transfer
6. Engineering Design
7. Materials, Tools, and Manufacturing

Guiding Principles for Grade HS Physics Science

Science and Engineering Practices:

1. Ask Questions and Define Problems
2. Develop and Use Models
3. Plan and Carry Out Investigations
4. Analyze and Interpret Data 5. Use Mathematical and Computational Thinking
6. Construct Explanations and Design Solutions
7. Engage in Argument from Evidence
8. Obtain, Evaluate, and Communicate Information