

Overview of Year

11-12 Grade: Regents Physics Curriculum

Your curriculum overview may have more than 6 units. Please adjust the template accordingly.

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| SEPT | OCT | NOV | DEC | JAN | FEB | MARCH | APRIL | MAY | JUNE |
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| Unit 1 Motion and Measurement | Unit 2 Kinematic and acceleration | Unit 3 Newton's Laws and Forces | Unit 4 Work, Energy and Power | Unit 5 Waves | Unit 6 Electricity and Magnetism |
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| Unit 1 | Understanding | Essential Question |
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| Motion and Measurement | <p>The motion of an object is always judged with respect to some other object or point. The idea of absolute motion or rest is misleading.</p> <p>The motion of an object can be described by its position, direction of motion, and speed (rate of change).</p> | How can we develop and use mathematical models and diagrams to describe and predict the motion of an object in 1D? |
| <p>Performance Task:</p> <p>Develop an experiment that would help you figure out if there is a speeding problem in a neighboring street. Students will need to write a letter to the department of transportation with recommendations based on their findings.</p> | | |

| Unit 2 | Understanding | Essential Question |
|---|--|--|
| Kinematics | The path of a projectile is the result of the simultaneous effect of the horizontal and vertical components of its motion; these components act independently. | How can we develop and use mathematical models and diagrams to describe and predict the motion of an object in 2D? |
| <p>Performance Task:</p> <p>Students use their understandings of Kinematics and Projectile motion in order to plan a projectile launch that hits a specific target a few meters away.</p> | | |

| Unit 3 | Understanding | Essential Question |
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| Forces and Newton's Laws | Matter interact through forces that result in changes in motion. | How do forces affect the way our world moves? |
| Performance Task: Students plan and perform a series of physics demonstrations and articulate the laws that each demonstration exemplifies and how. | | |

| Unit 4 | Understanding | Essential Question |
|--|---|---|
| Work, Energy and Power | All interactions between matter require the use and transfer of energy. Energy exists in many forms, and when these forms change energy is conserved. | What is energy, where does it come from and how do we use it? |
| Performance Task: Energy Rube Goldberg – students design a rube Goldberg style device that uses several different forms of energy to make a marble move from one place to the other. During the design and building process students will make a poster that describes their device and explains the different types of energy used and how they are transformed from one to the other | | |

| Unit 5 | Understanding | Essential Question |
|--|---|---|
| Waves | A wave is a disturbance that travels through space and transfers energy | How do waves affect what we see and hear? |
| Performance Task: Audio waves activity – Students listen to two separate pieces of audio. Their task is to draw two waves that represent the general properties and differences between those pieces of audio. Their diagrams and descriptions must meet the criteria outlined in the following checklist | | |

| Unit 6 | Understanding | Essential Question |
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| Electricity and Magnetism | Energy may be stored in electric* or magnetic fields. This energy may be transferred through | <ul style="list-style-type: none"> • What is electrical energy, how can we control its flow and for what purpose? |

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| | conductors or space and may be converted to other forms of energy. | |
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Performance Task:

Determining the electric charge of an object. Students must determine if the charge of an object is positive or negative based on attraction or repulsion to other reference materials they have used in class. Students must develop the experiment.

Given a complex circuit diagram, build a working device and perform all voltage and current measurements, use those measurements to calculate resistance