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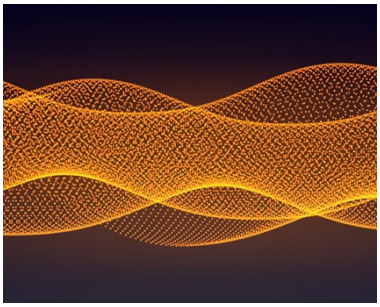

Physics includes ten labs:

- ! Conservation of Elastic Potential Energy
- ! Conservation of Momentum
- ! Hooke’s Law
- ! Torque
- ! Waves and Sound
- ! Mechanical Waves
- ! Friction
- ! Uniform Circular Motion
- ! Freefall: Measuring g
- ! Newton’s Laws

The labs are aligned to the NGSS and other state science standards and can be used with any textbook curriculum. Labs can be accessed on any internet-capable device and can be completed in 30-45 minutes.!

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Conservation of Elastic Potential Energy

Performance Expectations

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.

Science and Engineering Practices

Planning and carrying out investigations
Developing and using Models
Using mathematics and computational thinking
Analyzing and Interpreting Data
Constructing Explanations

Crosscutting Concepts

Cause and effect
Energy and matter

Conservation of Momentum

Performance Expectations

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 motion of particles (objects) and energy associated with the relative position of particles (objects).

Science and Engineering Practices

Developing and using models
Analyzing and interpreting data
Engaging in Argument from Evidence
Constructing Explanations

Crosscutting Concepts

Cause and Effects
Patterns
Energy and matter

Hooke's Law

Performance Expectations

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.

Science and Engineering Practices

Analyzing and Interpreting Data
Constructing Explanations
Engaging in Argument from Evidence

Crosscutting Concepts

Cause and effect

Torque

Performance Expectations

HS-ETS1-2: Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

Science and Engineering Practices

Asking questions and defining problems
Analyzing and interpreting data
Using mathematics and computational thinking
Constructing explanations and designing solutions

Crosscutting Concepts

Cause and effect
Scale, proportion, and quantity
Structure and function

Waves and Sound

Performance Expectations

HS-PS4-1: Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves travelling in various media.

Science and Engineering Practices

Developing and using models
Asking questions and defining problems
Planning and carrying out investigations
Analyzing and interpreting data

Crosscutting Concepts

Energy and matter
Systems and system models

Mechanical Waves

Performance Expectations

HS-PS4-1: Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves travelling in various media.

Science and Engineering Practices

Analyzing and interpreting data
Using mathematics and computational thinking
Engaging in argument from evidence

Crosscutting concepts

Patterns
Cause and effect
Structure and function

Friction

Performance Expectations

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.

Science and Engineering Practices

Analyzing and interpreting data
Obtaining, evaluating, and communicating information

Crosscutting Concepts

Cause and Effect

Uniform Circular Motion

Performance Expectations

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.

Science and Engineering Practices

Analyzing and interpreting data
Using mathematics and computational thinking
Engaging in argument from evidence

Crosscutting Concepts

Patterns
Cause and effect
Scale, Proportion, and Quantity

Free Fall: Measuring g

Performance Expectations

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.

Science and Engineering Practices

Asking questions and defining problems
Constructing Explanations
Engaging in argument from evidence

Crosscutting Concepts

Scale, Proportion, and Quantity
Systems and system models

Newton's Laws

Performance Expectations

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.

Science and Engineering Practices

Developing and using models
Planning and carrying out investigations
Analyzing and interpreting data

Crosscutting Concepts

Cause and effect
Systems and system models
