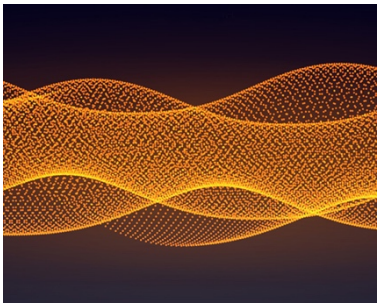
Science2Go is a digital learning solution that offers a new approach to laboratory education for middle and high school students. It allows students to engage in science and engineering practices in any learning environment without access to supplies or equipment. It can be used in-school as prelab work or in classrooms where complete hands-on labs are not possible. Because the lab solutions are online, they are ideal for remote learning. Science2Go combines videos focused on lab techniques and data collection with downloadable, editable worksheets intentionally designed to engage students in science and engineering practices. Students observe and refine experiments, identify design flaws, analyze data, and practice scientific reasoning while connecting science to natural phenomena.

## Physics Overview



### 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

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## 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

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## 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

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## 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

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## 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

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## 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

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## 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

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## 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

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## 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

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## 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

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