

ENERGY AND WAVES PHYSICS LAB

Designed for Students
Grades 3rd-12th
Ages 8-18

Program Length
3 hours

Park Location
Magic Kingdom® Park

SYNOPSIS

The uniquely themed lands of the *Magic Kingdom*® Park form the basis of this examination of light and sound energy and its relationship to creating one-of-a-kind Disney experiences.

The learning adventure begins with students interacting with common everyday items, showcasing real-world examples of the many forms of energy, and how the movement of energy is often in the form of a wave. Students engage in discussion and hands-on activities that form the foundation of their exploration of sound and light at work at the *Magic Kingdom*® Park.

Sound is a familiar part of our lives and provides information about the world around us. Guided by a Disney Y.E.S. facilitator, students investigate sound and how it is produced and how it travels. A select attraction showcases how sound can alter our sense of reality and transport us from one world to another, Disney-style!

The students' journey continues into the amazing world of light and a look at the Electromagnetic Spectrum. Refraction, reflection, absorption, and wave components are revealed through study and group discussion. A trip to Liberty Square® provides an illuminating understanding of the power of light in creating some delightfully "haunting" special effects!

We put it all together at a select *Fantasyland*® attraction and discover how Walt Disney Imagineers applied the principles of light and sound to create an immersive story experience. This final destination brings into sharp focus how light and sound energy are integral to the way we experience the world around us.

LEARNING OUTCOMES

After completing Energy and Waves Physics Lab, participants will be able to:

- ✓ Interpret and identify surrounding forms of energy
- ✓ Consider how sound waves are affected by traveling through solids, liquids and gasses
- ✓ Predict the factors that may affect the speed of sound
- ✓ Interpret how UV light causes fluorescing in certain substances
- ✓ Compare various factors that can influence the intensity of UV light
- ✓ Explain how scrim is used to create special effects
- ✓ Relate the effect of Pepper's Ghost to how light is reflected in glass.
- ✓ Define and illustrate frequency
- ✓ Understand how:
 - acoustics can affect sound
 - optics can affect light
- ✓ Demonstrate how a compression wave travels