

PROPERTIES OF MOTION PHYSICS LAB 301

APPLIED SCIENCES

Designed For Students:
 Grades 9th-12th
 Ages 15-18

Program Length:
 3 hours

Park:
 Magic Kingdom® Park
 Meet at the Transportation and Ticket Center bus lot

OVERVIEW

Discover Magic Kingdom Park from a new angle as students learn the inner workings of their favorite rides and shows. During hands-on experiments, students work together to test potential and kinetic energy, centripetal force and vertical and lateral acceleration just as Disney attraction engineers do during the ride design process.

LEARNING OUTCOMES

- Define Newton's First Law of Motion
- Develop a problem-solving technique for everyday situations
- Define potential and kinetic energy
- Discover the uses of hydraulics and pneumatics
- Define centripetal force
- Explore the effects of centripetal force on a moving vehicle
- Discover the effects of vertical and lateral acceleration on a moving vehicle

Science in Motion

- Onboard the Walt Disney World Resort Monorail Transportation System, students are introduced to Newton's First Law of Motion
- Students gain knowledge of OHERC, an acronym for one version of the Scientific Method

Physics at Work

Select Magic Kingdom Park attractions set the stage for student's discovery of the role of physics in generating thrills and chills.

- Students examine how speed, velocity, and acceleration influence roller coaster design elements
- Through the use of model roller coaster elements, students uncover the interplay of potential and kinetic energy in attraction design
- Students see the conclusions gained in the model activity at work within a Magic Kingdom Park attraction
- Students discover the geometric process of indirect measurement
- Using a simple formula, students calculate centripetal force
- Students will observe and experience airtime, positive g-force, and lateral g-force on a Disney thrill attraction

Hydraulics and Pneumatics

- Students identify hydraulics and pneumatics in audio-animatronics technology

GROUP LEADER RESOURCES

A video overview of *Properties of Motion Physics Lab* is available on the Disney Youth Programs YouTube Channel.

National Standards and supplemental educational materials aligned with this program are available at DisneyYES.com.



Disney Youth Education Series programs are accredited by the Northwest Accreditation Commission.

All programs subject to availability. Program content, times, attractions, and locations subject to change due to inclement weather, availability, or group dynamics. Students must meet minimum age/grade requirements.

Start planning your field study today! Call 877-FIELDTRIP (877-343-5387) • Visit DisneyYES.com



© Disney
MYFYES