



AMUSEMENT PARK PHYSICS mini-course

With optional trip to UNIVERSAL STUDIOS BEHIND THE SCENES

Wednesdays, September 14-October 5 (4 weeks)

1:00pm-2:30pm

Ages 11+

Students learn heart-pounding lessons in physics as they graph, design, and calculate their way through key principles making roller coasters and amusement parks so thrilling. All lab costs are included in registration fee.

This course is a great introduction to our immersive 3-day family trip to Universal Studios in Orlando October 9-11, where students experience hands-on learning during our exclusive behind-the-scenes tours and programs (see below).

Instructor: Candra Eden, BSc

Location: STEM Lab (suite 21) - Roswell

Mini-course fee: \$100

10% sibling discount

LAB SCHEDULE:

MOTION PRINCIPLES - Wednesday, September 14

We review and breakdown Newton's three laws as we see how force affects the motion of roller coaster cars and the riders inside.

ENERGY AND MOMENTUM - Wednesday, September 21

Energy is the ability to do work. We investigate how roller coaster tracks utilize and switch between different forms of energy at different parts of the ride.

STRUCTURAL ENGINEERING - Wednesday, September 28

This week, we look at loops, corkscrews, drops, and how the shape and size of a roller coaster can affect the g-force felt on passengers.

SIX DEGREES OF FREEDOM - Wednesday, October 5

Students investigate the freedom of movement of a rigid body in three-dimensional space as they work to graph motion.

Optional UNIVERSAL STUDIOS PHYSICS FAMILY TRIP

Orlando, FL

October 8-11

Most appropriate for kids ages 11+

Students join Candra and Christina in Orlando to experience hands-on learning during our exclusive behind-the-scenes tours and physics and engineering programs at Universal Studios and Islands of Adventure:

- Behind-the-Scenes Tour at Islands of Adventure
- Transformers Roll Out at Universal Studios
- Hollywood Rip Ride Rocket at Universal Studios

While here, students analyze and create visual representations of the park's rides in this hands-on experience. Students feel like VIPs during tours that include a few of their most popular attractions. From literature to technology, students gain a new perspective of the innovation and creativity that goes into developing one of the world's most popular theme parks. Participating Girl Scouts receive Amusement Park and Engineering fun patches. An adult must be present in the park to drop off and pick up participants before and after tour and science programs.

October 8 – Arrival

- Evening Meet and Greet

October 9 – Behind the Scenes at Islands of Adventure

- Islands of Adventure 9am-8pm (Early Entry at 8am)
- Morning Science Workshop
- **Science Students:** Behind the Scenes Tour at Islands of Adventure 12:30pm - 3:30pm. (meeting time: 12:00pm)

October 10 – Transformers Roll Out at Universal Studios

- Universal Studios 8am-7pm (Early Entry at 7am)
- **Science Students:** Transformers Roll Out at Universal Studios 12pm - 2pm (meeting time: 11:45am)
 - “Students learn about the engineering principles of the 6 Degrees of Freedom and analyze TRANSFORMERS: The Ride-3D to reconstruct the ride vehicle’s motion sequences.”
- Evening Science Workshop

October 11 – Hollywood Rip Ride Rocket at Universal Studios

- Universal Studios 8am-7pm (Early Entry at 7am)
- **Science Students:** Hollywood Rip Ride Rocket at Universal Studios 10am -12pm.
(meeting time: 9:45am)
 - “Students work in small groups to collect data and measure speed at different points along the Hollywood Rip Ride Rockit roller coaster to visually prove the law of conservation of energy.”

All park ticket purchases, accommodations and additional travel arrangements can be made through www.TravelGreene.com.

www.DiscoverScienceCenter.com