

## **LEGO® ENGINEERING LABS**

Wednesdays, January 26-May 4 (no class Feb 16, Mar 16, or Apr 6; 12 weeks)

9:30am-10:45am

Ages 6-8

Students learn fundamental engineering principles related to force and motion, explore how simple machines and mechanisms reduce the effort needed to move objects, and design and construct structures and machines out of LEGO® to investigate how design affects functionality. All lab costs are included in registration fee.

Instructor: Tina Oresteen, BSc

Location: Discover Science Center Peachtree City

Course fee: \$220 OR \$20/lab

10% off sibling discount

Register for full semester or individual labs.

### **LAB SCHEDULE:**

**LEGO® Bridges** - Wednesday, January 26

Students learn about design and construction of bridges as they learn about tensile and compression forces acting on structures, and build a bridge that holds significant weight.

**LEGO® Mazes** - Wednesday, February 2

This week, students are challenged to design and build a three-dimensional marble maze with multiple layers and hidden obstacles.

**LEGO® Machines: Wheels and Pulleys** - Wednesday, February 9

We investigate how two simple machines, wheels and pulleys, reduce the amount of effort needed to move an object as we build a pulley system.

**LEGO® Power Cranes** - Wednesday, February 23

Students build a motorized crane out of LEGO®, complete lifting challenges, and design modifications to create a more efficient machine.

**LEGO® Machines: Levers and Wedges** - Wednesday, March 2

We investigate the physics of levers and wedges to design, construct and test simple LEGO® machines to create the best design to lift a heavy load.

**LEGO® Chain Reactions** - Wednesday, March 9

Students use their creativity and engineering skills to design and build a series of simple machines to create complex chain reactions.

**LEGO® Machines: Inclined Planes and Screws** - Wednesday, March 23

This week, we study how inclined planes reduce the effort needed to move a heavy load, and learn how a screw is a modification of an inclined plane.

**LEGO® Mechanisms: Gears** - Wednesday, March 30

Gears are modified wheels that efficiently transfer force and motion. We experiment with different gear combinations to determine the best system for the job.

**LEGO® Power Cars** - Wednesday, April 13

Students learn about gears and wheels as they build a motorized LEGO® car, and modify it to complete driving challenges involving different effects of gravity and other forces.

**LEGO® Sweeper** - Wednesday, April 20

We build and modify a sweeping machine which incorporates gears, wheels and pulleys to effectively clean up a dirty path.

**LEGO® Dragster** - Wednesday, April 27

This week, we build a dragster and launcher to test different wheel combinations for their effects on speed and distance on a vehicle.

**LEGO® Dogbot** - Wednesday, May 4

Students build a mechanical toy using levers, pulleys and gears to learn the basics and challenges of robot design.