

# Energy, Forces, Flights & Robots



## Spring 2022

In this exciting after school series, students explore inertia, gravity and centripetal force! They will learn about tension and compression as we experiment to see what the strongest shapes are. Children will learn humans aren't the only ones who build things—robots can too...once we build them! We will also learn through play about potential and kinetic energy. Many more exciting topics will be covered throughout the term.

### Magnetic Magic

Children learn how and why magnets behave by testing the basic physical principles governing magnetism. Children use compasses to gain a better understanding of how humans benefit from the Earth's magnetic force. Hands-on experimenting—from swinging compasses to motorized devices—allows children to explore the role of magnetism in our everyday lives.

### Super Structures

Learn how triangles, cylinders and arches make for sturdy homes and skyscrapers! Use teamwork to build your own super structures as well as an earthquake-proof building!

### Energy Burst

Explore the energy of motion and how energy can be conserved. Discover how some of the most beloved toys demonstrate the basic principles in mechanical energy.

### Moving Motion

From planes and trains to automobiles. Check out all the science behind movement, from the inner workings of engines to how your own muscles facilitate movement in your body.

### Under Pressure

Join Bernoulli and Newton as we take this exciting look at aerodynamics and the properties of air...under pressure. Use a vortex generator to create air pockets with a punch and levitate ping pong balls in defiance of gravity!

### Mix It Up

Shake, mix, stir and explore the physical aspects of chemistry. Learn all about solutions and suspensions by doing cool hands-on experiments and then continue the fun at home with your own mixture sorting kit!

### Watts Up

Children have a solid introduction to the properties of electricity and electric charges. Children discover an electric charge's basic properties, learn to distinguish between static electricity and electrical current, and explore the science behind these phenomena. Hands-on activities provide a tactile lesson in charging and discharging objects with static electricity.

### FUN-damental Forces

Gravity... Inertia... Centripetal force... who could ever imagine that an introduction to physics could be so much fun? Experience these awesome forces and build some cool devices to watch them at work!

### Radical Robots

Explore how robots impact life today and experiment with robots that can do some extraordinary tasks. Infrared robots, robotic arms, and even coding robots are brought for children to explore.

### "Current" Events

Take a tour on the electron freeway! Conductors, insulators, transistors, and other elements in the world of electrical circuits introduce themselves to you via the tingle in your fingertips and the twinkle in your eye.

### Fantastic Fliers

The Wright Brothers would be proud as we follow in their footsteps and learn the fundamental principles of flight. Build a "football" glider, control surfaces, and a loop-flying stunt plane.

### Science of Toys

Did you know that some of your favorite toys work using basic science principles? Join the fun as you discover the science of motion by bouncing balls and playing with yo-yos and other classic toys.

**Kids get a cool science take-home every week!**

**\*Note not all topics may be covered depending on length of program.**

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