

### 2017-18 School Year





# Energy, Forces & Flight\*

### \* Plus Robots!



### **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!

### "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.

### **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.

### **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.

### **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 Bernouli 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!

### **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.

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

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

### Sparking throughouse Geaming

### 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.

### **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.

### 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!

#### **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!

### 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.





## 2017-18 School Year



# **MAD LABS**

### "Cell"ebration

Learn about the basic building blocks of everything, cells! Discover the different parts of a cell, what cells look like under a microscope, and make your own cell model to take home!

### **Optical Illusions**

Children are introduced to the concepts of refraction, science of optics, and biology associated with sight. A wide variety of optical illusions like the mirror mirage, twisting coils, and convex and concave mirrors are used to demonstrate how physics can trick our eyes.

### **Tantalizing Taste**

This class is a fun introduction to the taste and smell senses. Children count the taste buds on their tongues to learn about taste sensitivity. We will discuss how taste changes as we age and experiment to find out if anyone is a supertaster. A take home taste test kit allows the tasting fun to continue at home!

#### **Sonic Sounds**

This class introduces children to the properties and transmission of sound waves. Children listen to sounds made with solid materials— from plastic, to metal, to string. Ordinary objects are used to create a sound-effect symphony. Electronic devices reveal frequency when a pitch-changing machine alters the children's voices to gruff monsters or happy chipmunks.

### **Mission Nutrition**

Children are introduced to the basics of nutrition. They will gain an understanding of how food provides energy for the body and how exercise plays an important role in energy levels. The program encourages a healthy attitude toward nutrition and fitness. Take home your own pedometer to measure your activity level.

#### Bugg

Children are introduced to the world of entomology. Examining real specimens and models help children familiarize themselves with insect anatomy. Children will understand how insects adapt to their environment, defend themselves and pollinate plants.



Kids get a cool science take-home every week!

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

### Sparking throughouse Ceaning

### **Ecosystems Exploration**

This class provides students with an opportunity to explore the fascinating world of ecosystems. They will also learn about the interconnections that exist between all the living things in ecosystems, including human beings.

### **Movie Effects**

This class is an exciting introduction to the science behind movie's spectacular special effects and technology. Children learn the science applications in filmmaking, from the chemistry of movie snow, to the acoustics of Foley artist sound effects, to the optics of 3-D technology. Children take home their own Cartoon Creator.

### Lights, Color, Action

Enter the world of light and color. Exciting experiments on white light including color-wheel blending and prism-splitting spectrums to introduce Newton's color theory concepts. Ultraviolet light and chromatography are also explored.

### **Harnessing Heat**

Children learn about the concepts of heat and heat transfer in this class. They act out hot and cool molecule movements, experiment to feel heat change, and discover why how hot or cold we feel is relative.

### Walloping Weather

Children get weather-wise in this climate-controlled class! They discover why seasons exist, how air affects weather, and perform a test to prove that air is everywhere. Children create three-day weather forecasts for cities around the world and stage a statically charged indoor storm. Take home color-changing Sun Beads to know when ultraviolet light is present.

### **Earthworks**

Children dig-in to Earth science! We examine three rock samples to find out how they were made and where they were formed. They inspect minerals with an ultraviolet light to see them fluoresce. They model the moving plates that cause bends and breaks in the Earth's solid rock layer. Tremors are created to tip a tower, and then things get rocky with the Sedimentary Stacker take home.

