

# BRIXOLOGY & ENGINEERING SUMMER PROGRAM



## ENGINEERS SHAPE THE WORLD!

**1 Week Summer Program allows YOU to step into the shoes of an engineer!**

- Explore the engineering fields of mechanical, structural, aerospace, and nautical engineering.
- Class List: BRIXOLOGY: Machine Mania, BRIXOLOGY: Water Works, Newton's Loco-Motion, Rockin' Rockets, & Super Structures
- Camp features 2 days from our BRIXOLOGY program & is combined with 3 days of our "Adventures in Engineering" program
- Use LEGO® bricks two days to build a different engineering-themed projects in addition to cutting edge curriculum and equipment that develops critical thinking, cooperation, and creative problem-solving skills
- Participate in collaborative engineering challenges
- Extended learning with educational toys and take-home projects to reinforce each concept



**BUILD**



**LEARN**



**TAKE HOME**

# MACHINE MANIA

This BRIXOLOGY day features wacky machines that teach you how gears, levers, and pulleys are useful tools for mechanical engineers. Use simple machines to complete tasks like sending messages across the room and picking up your snack. Launch ping pong balls with our high powered Xpults and jump start your imagination by designing your own car. Combine all of your newfound knowledge with art and build a motorized drawing machine using bricks. A cool machine built with your teammate that creates some pretty cool art and demonstrates how much fun machines can be! Participate in collaborative engineering challenges throughout the day. Have some high-flying fun building the Mad Science® Sky Roller, a zip line-style cable car you get to take home.



# SUPER STRUCTURES

Put on your engineer's hat and get ready for an action packed day of structural engineering! Work together with your fellow civil engineers to use physics to solve problems. Build and test different bridge designs and embrace the challenge to create the strongest bridge possible. Learn why buildings and structures take careful planning in order to ensure that they don't collapse. Investigate arches, build skyscrapers, roller coasters, tunnels, and pyramids. Learn about the ancient Romans and all the cool engineering tricks they passed along to us. Build a "Mad Science Cube Puzzle" to continue your learning beyond this day of engineering fun.

# WATER WORKS

Set sail into this exciting day of exploration of nautical engineering! Participate in collaborative engineering challenges to solve real-world problems in boat design. Create a sea-worthy vessel with your partner using bricks and then test your sophisticated paddle powered boat. Dive deeper into physics by changing specific variables to improve speed, buoyancy, and stability. Get hands-on making mini submarines and participating in a sailboat slalom engineering challenge. Use gravity to make a water powered boat and play a physically active game of anchors away. Take-home the Mad Science® Wave Rider, a boat that is powered by potential energy and has molded dots that make it compatible with LEGO® bricks. Take-home your own Rescue Diver to have endless fun experimenting with buoyancy.



# NEWTONS LOCO-MOTION

Discover Newton's Laws and get hands-on experience with forces, changes in motion, and action and reaction that will make you do the "loco-motion." Newton's laws are brought to life through hands-on discovery with these fundamental rules that engineers must consider in any design. Experience why mechanical engineers need Newton's laws to design cars by experimenting with crash test dummies. Experiment with a CO2 powered rocket car to discover all three laws in action. Get hands-on with inertia wheels, ramps, and pendulums. Launch water balloons across a football field and spin gyroscopes. Challenge your center of gravity skills in a nail-biting game of suspension and construct a balloon car racer to take-home.

# ROCKIN ROCKETS

Launch your imagination to new heights and explore aerospace engineering! Learn the fundamentals of rocketry; including the parts of a rocket, the stages of rocket flight, and how Newton's third law applies to a rocket traveling to space. Experience all of these concepts as you become part of a liftoff team that launches and recovers many sizes & styles of rockets that we blast off into the sky! Launch several kinds of air powered rockets, solid fuel rockets, and alternatively fueled rockets. Have a "rockin" good time radioing mission control, recording altitude, and cooling down with water rockets. Complete an engineering design challenge and build your own off world habitat! Build your own "Mad Science Rocket" and other flying objects to experiment with at home.

**BRIXOLOGY & Mad Science of Maine**  
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**ENGINEERING** MAINE.MADSCIENCE.ORG

*Sparking Imaginative Learning*

