gsema

# STEM FEST

May 3, 2025 • 9 AM-1 PM
Camp Cedar Hill
Waltham

**gsema.org/stemfest**

Come to a STEM takeover at Camp Cedar Hill! Explore these fun, hands-on science, technology, engineering, and math activities presented by local STEM professionals.

**Color Like a Robot**
D
Did you know you can learn coding through coloring? Follow the algorithm to color in the pictures just as a robot would.
— *LEGIT (Liberty Encouraging Girls in Technology)*

**STEM Career Exploration**
D B
STEM careers are for everyone. Use coloring pages to learn about ways princesses use their STEM skills to make the world a better place. Check back throughout the day to see our STEM vision board!
— *Ms. Massachusetts Elemental*

***NEW* Tough as Pudding**
D B
Learn about material properties by mixing concrete made of pudding! Test out different ingredients to learn how to make your material stronger. *Modeling dough concrete is available as an alternative.
— *Simpson, Gumpertz, and Heger*

***NEW* Computers Don't Have Eyes**
D B J
How can a computer check if something is ready to come out of the oven if it doesn't have eyes? Turn cookies into numbers (and back into cookies), and learn how computers interact with objects in the real world. — *Kensho*

**Crafting Kaleidoscopes**
D B J
Create your own kaleidoscope with household items. Explore how light can reflect off a mirrored surface to create unique, symmetric patterns!
— *Society of Women Engineers Boston*

**Mazes and Marbles**
D B J
Create a maze using craft sticks and marbles, and challenge your fellow Girl Scouts to see who can navigate through it the fastest! — *Suffolk*

**Need a Tissue?**
D B J
Get a glimpse into how engineers think about creating synthetic tissues for people who need them! Then, make one of your own by building a model bone, crafting a heart, or assembling your own cells.
— *Tufts BME*

**Need for Speed**
D B J
Do you think you can use plastic building blocks to build something in less than a minute? Put your skills to the test with this speedy engineering challenge! Compete by yourself or take things to the next level by competing with another Girl Scout.
— *RTX*

**Smart Dollhouse**
D B J
Imagine a world where you could control every inch of your home with the touch of a button. Explore every possibility with our incredible "smart" dollhouse using buttons, motion sensors, and photocells.
— *QSys*

**Vaccine Cornhole**
D B J
Face off in an epic battle between Team Virus and Team B cell in a game of vaccine cornhole to learn how vaccines work to keep your body healthy!
— *MIT Biological Engineering*

***NEW* World's Strongest Straws**
D B J
Drive a robot around a field and try to achieve various tasks with it! Work through the engineering design process by building a structure that can support a cup of pennies using only straws and tape. Challenge your peers to a friendly competition and try to build the structure that can support the most weight!
— *Andover Robotics*

Each activity includes the Girl Scout level the activity has been designed for, but they are all open to all Girl Scouts.

D- Daisy
B - Brownie
J- Junior
C- Cadettes
S - Seniors
A- Ambassadors

***NEW* Doll-Sized Science**
D B J C S
Learn about important women scientists throughout our history and observe the world on a small scale using paper microscopes and dolls! — *Graduate Women in Science and Engineering at BU*

**Hold Your Helmets**
D B J C S
Have you ever had a concussion? Try on our concussion goggles to see what it feels like. Try out an obstacle course and see how difficult it is to complete basic tasks. After you come to this station, you'll never forget to wear a helmet again!
— *Boston Children's Hospital*

**Strawberry DNA**
D B J C S
When we think about genetics and biology, we usually aren't thinking about a fruity summertime favorite. Learn what DNA is and how scientists study it by using common household objects to extract genetic material (DNA) from living organisms (strawberries). — *X-Chem*

**3D Printing in Action**
D B J C S A
You may have heard of 3D printing, but what can you do with it and how do 3D printers work? Come learn how you can make almost anything with a 3D printer, and then get your own 3D-printed object! — *Formlabs*

***NEW* Adapt and Overcome**
D B J C S A
How would your life change if you lost the function of a part of your body? Could you eat with one hand? Put your sweatshirt on? Use a phone? Learn how to create adaptive equipment to assist mobility during everyday tasks. — *Charter Care*

**Bridges!**
D B J C S A
Check out realistic model bridges and learn what makes a bridge strong! — *Boston Society of Civil Engineers*

**Catapults and Flowers**
D B J C S A
Have you ever seen how a flower can change colors? In this experiment, you will! Girl Scouts will also participate in a demonstration of a catapult and will take home a catapult kit to make and experiment on their own. This activity will highlight the P&G product development cycle with a display featuring women engineers who have worked on P&G products.
— *P&G Gillette*

***NEW* Designing for Coastal Change**
D B J C S A
Discover how waves and sea level rise can impact coastal cities like Boston, and channel your inner engineer by testing out different ways to help cities adapt to beach erosion and climate change.
— *Stone Living Lab*

**DNA Bracelets**
D B J C S A
DNA is the genetic code that plays a crucial role in the growth, development, and overall health of living organisms. Make a bracelet that represents this code and follows the same rules as our genes.
— *New England Bio Labs*

**Dolphin Anatomy**
D B J C S A
Meet Echo, a life-sized model of a bottlenose dolphin! Learn about dolphin anatomy and discover the unique adaptations that dolphins have to their ocean environment.
— *Whale and Dolphin Conservation*

**In Our Energy Era**
D B J C S A
Explore energy and conservation! Learn how to save energy and money at home, and make a new bracelet for your energy era. — *Eversource*

**Race a Robot**
D B J C S A
Check out a real-life robot and complete a fun engineering challenge!
— *Littleton Robotics FRC 6328*

**Ready, Set, STEM-ON-THE-GO**
D B J C S A
Get STEM programming delivered straight to your door! Check out what GSEMA's STEM ON-THE-GO mobile learning center offers and learn how to request it for your troop meeting. — *GSEMA*

**Robot Battles**
D B J C S A
Get ready to design and build your own combat robot in this exciting hands-on activity! Using sustainable materials, participants will create robots powered by motors, wires, and batteries while they focus on building, design, and iteration. Then, test your creations' strength and battle strategy. Let your creativity soar as you build the ultimate mechanical warrior!
— *Guild Hall Learning*

***NEW* Robot Palooza**
D B J C S A
It's all about robots! Learn to operate Stormgears' 2024 UNH district finalist robot! Participants will pick up foam rings and shoot them out for other robot operators to collect. Then, make your own Bristle Bot to race alongside your fellow Girl Scouts. Bristle Bots will be provided for Daisies and younger Brownies.
— *Stormgears FRC*

**Slimy Swabs**
D B J C S A
Search for and catch (toy) amphibians, practice swab techniques that scientists use in their field research, and learn about amphibian conservation work locally and around the world!
— *Woodhams Lab: UMass Boston Biology Department*

**Squirmy Wormy**
D B J C S A
Get up-close and personal with worms, pill bugs, mites, centipedes, and other decomposers! Look at soil samples under the microscope, learn what worms eat, and why decomposition is important to growing food!
— *Massachusetts Horticultural Society*

**Continued on next page >**

***NEW* Ultimate Operation**
D B J C S A
Test your hand-eye coordination by trying to perform a surgical procedure! Try to grasp different small items using a camera to guide your hand! Start by watching a demonstration, and then give it a go yourself!
— *Johnson & Johnson MedTech (DePuy Synthes)*

**Pedal Power**
D B J
Move your body while learning about energy efficiency! Use "pedal power" to learn the difference between LED and incandescent bulbs, and the importance of saving energy.
— *Eversource*

**Water, Water, Everywhere!**
B J C S
Enjoy a hands-on demonstration of a watershed, explore the different kinds of pollution that impact Charles River, and learn about the importance of nature.
— *Charles River Watershed Association*

***NEW* Building Blocks**
B J C S A
Use blocks made from deconstructed buildings to design your dream home or structure! This hands-on exercise allows Girl Scouts to learn about architecture and engineering by bringing their ideas to life.
— *SA+C Inc*

**Clothespin Cars**
B J C S A
Construct a race car using clothespins and buttons, and use an elastic band to propel it forward and compete with others. — *Suffolk*

**DIY Periscope**
B J C S A
Use mirrors to peer around a corner! Make a periscope and learn how light reflects and refracts, and find out how your creation is similar to a microscope or a telescope.
— *New England Sci Tech*

***NEW* Go Ham (Radio)!**
B J C S A
Come and master the art of amateur, or ham, radio! Learn about the way hams use different kinds of radio technology for public service, safety in an emergency, and fun. With help from local ham radio operators, you can even send a radiogram message home to your family!
— *American Radio Relay League*

***NEW* Light Up Your Brain**
B J C S A
By engaging in certain activities, you can help your body produce more feel-good chemicals! Learn which neurotransmitters make you feel happy, energized, connected, rested, grounded, loved, and more.
— *She Thrives Therapy Solutions LLC*

***NEW* Thermal Aura**
B J C S A
Use thermal imaging cameras to see the different insulation performance of different materials! — *Arup*

***NEW* Up, Up, and Away!**
B J C S A
Elevate your paper airplane skills and learn to trim them like pilots do! With a few cuts and folds of paper, you'll be a master of the paper skies. Finally, launch your planes to test how well they fly. — *Boeing*

**Build, Burn, Breathe**
J C S A
Take a deep breath and get ready to dive into the science of air! Build models using plastic building blocks to uncover the secrets of everyday air pollutants, and discover where they come from.
— *MIT Biological Engineering*

***NEW* Energy Efficient Dollhouse**
J C S A
This dollhouse needs your help! Increase this house's energy consumption grade by renovating it to be more energy efficient. Use your creative skills to make renovations out of the materials available and show us what updates you would make! — *Christa McAuliffe Center at Framingham State University*

**Mission: Drone**
J C S A
Prepare for an exciting drone-piloting adventure! Code drones to navigate obstacles and complete thrilling missions before switching to manual mode to put your piloting skills to the test. You'll be a master of the sky in no time with this exciting mix of coding, teamwork, and hands-on experience!
— *Guild Hall Learning*

***NEW* Shine Bright!**
J C S A
Explore the world of circuit planning! Build your own mini lighting circuit for a cardboard house, plan your electrical layout, install and connect, and learn how circuit planning impacts lighting throughout a structure. — *Arup*

***NEW* Soak It Up!**
J C S A
Build and test your own period product prototypes using layers of different materials against superabsorbent polymer to see how each material holds liquids. Participants will learn about the science of absorption, material engineering, and product design while learning which combination works best for liquid retention and leak protection. — *Periodic*

**Solar Bugs and Bristle Bots**
J C S A
Make a Bristle Bot or a Solar Bug! You can learn about motors, vibration, solar energy, and more as you assemble your new best friend.
— *MIT Lincoln Laboratory*