MOBILE MAKER OFFERINGS (Updated 8/25/2025)

Any program can be adapted for student ages 5-17. Class size limited to 20 students max. If you have larger classes – please let us know! We can accommodate! We can accommodate mixed ages in the classes

1. **Kitchen Chemistry: Cupcake Chemistry**

   Students become kitchen scientists by experimenting with cupcake recipes to uncover the role each ingredient plays. Working in teams, they'll make microwave cupcakes while altering ingredients like sugar, flour, oil, or baking powder. As they compare textures, rise, and taste, they'll discover the chemistry of leavening, emulsification, and structure. This activity shows how small recipe changes create big differences, linking food science to real-world chemistry. Each student enjoys their cupcake creations at the end!

2. **Edible Slime Science *NEW***

   Slime you can actually eat! In this tasty science experiment, students will mix safe, edible ingredients to create stretchy, squishy slime. As they play, they'll explore the science of polymers, texture, and chemical reactions—all while making a fun treat they can taste

3. **Kitchen Chemistry: Boba Tea**

   Students explore both history and science through the fun of bubble tea. They'll learn about the origins of boba in Taiwan, then roll up their sleeves to create popping boba spheres using food-safe chemistry techniques. After experimenting with molecular gastronomy and polymers, students combine their handmade boba with tea or juice to make their own drink. This program blends cultural history, chemistry, and hands-on food science in one tasty lesson.

4. **Kitchen Chemistry: Flatbread & Quesadilla Science *NEW***

Mix, knead, and create your own flatbread—right in a bag! Students will measure ingredients, learn how flour, water, and yeast interact, and then cook their fresh flatbread on a griddle. Once the bread is ready, they'll turn it into a delicious cheese quesadilla while exploring the science of heat, melting, and how simple ingredients come together to make a tasty meal.

5. **Forensic Science: Who Stole the Cookie?**

   There's been a cookie theft—and students are on the case! Acting as junior detectives, they'll examine a mock crime scene and collect evidence. Students will test mystery powders to identify substances, perform chromatography on inks to analyze a ransom note, and compare soil samples for a match. Along the way, they'll learn about chemical testing, separation techniques, and trace evidence. By the end of the activity, the "cookie thief" will be revealed, and students will understand how science helps solve everyday mysteries.

6. **Forensic Science: The Case of the Missing Fossil *NEW***
   A rare fossil has vanished from the paleontology exhibit; use forensic science to uncover the culprit. In this hands-on investigation, students will perform chemical analyses on textile samples, use uv lights to detect clues, and chromatography. Students will connect their lab results with clues left at the scene to identify who is responsible for the theft.

7. **Forensic Science: Molly the Turtle Has Been Kidnapped!**

   Oh no—Molly the Turtle has disappeared! Students will solve this mystery by learning about blood types and performing safe, hands-on blood typing experiments. They'll test "blood samples" from different suspects and use their results to eliminate or identify the kidnapper. This program teaches genetics, immune system basics, and the importance of matching blood types in medicine, all while engaging students in a high-stakes, animal-rescue investigation.

8. **Forensic Science: Death in Denver*[2]**

   In this advanced forensic simulation, students act as crime scene investigators to solve a mysterious death. They'll analyze realistic evidence including blood spatter patterns, skeletal remains, and DNA samples. Using deductive reasoning and forensic techniques, students will piece together the chain of events that led to the crime. This program introduces them to multiple branches of forensic science, from biology to physics, while giving a thrilling, real-world look at how investigators solve complex cases.

9. **Engineering Challenge: Air-Powered Rockets**

Students will design and construct their own paper rockets, experimenting with nose cones, fins, and body shapes to maximize flight distance. Using a compressed-air launcher, they'll blast their rockets into the sky and compare results. This activity introduces aerodynamics, thrust, and Newton's Laws of Motion, encouraging students to redesign and test again for improved performance.

10. **Engineering Challenge: EPVs (Egg Protection Vehicles)**
    Can you keep your egg safe in a fall? Students design and build vehicles to protect an egg dropped from a height. They'll experiment with shock absorption, aerodynamics, and crash protection, testing their designs outdoors in an exciting egg-drop challenge. Through trial and error, students learn about impact forces, gravity, and real-world engineering design for safety.
11. **Engineering Challenge: Pumpkin Chuckin': Halloween Catapult Challenge *NEW***
    Get ready for some Halloween engineering fun! Students will design and build their own mini catapults using simple machines to launch candy pumpkins through the air. Along the way, they'll learn about force, motion, and the science of levers. Prizes will be awarded for accuracy, distance, and hitting spooky targets—if you dare!
12. **Engineering Challenge: Soapbox Derby**

    Students build and race mini soapbox cars down a 40-foot track. Starting with a basic chassis, they'll design, decorate, and refine their car bodies to improve speed and stability. After racing, they'll analyze results, tweak their designs, and try again. This program combines creativity, engineering, and physics, showing how design choices impact performance.

13. **Engineering Challenge: Catapults**

    Build, launch, redesign, repeat! Students will use simple materials to design their own catapults, testing how far they can fling pompoms across the room. They'll experiment with lever arms, tension, and launch angles while learning about energy transfer and force. Friendly competition encourages iterative design and creative problem-solving.

14. **Engineering Challenge: Flying Reindeer STEM challenge *NEW***

    Bring holiday magic into the classroom with this hands-on STEM activity! Students will craft reindeer using everyday materials. Once decorated, each reindeer becomes a flying marvel—powered by a balloon and gliding along a taut string across the room. As they play and experiment, students will explore Newton's Third Law—perfect for a joyful holiday-themed session!

15. **Engineering Challenge: Stomp Rockets**

With PVC launchers and paper, students will design stomp rockets they can keep. They'll test different fin styles, nose shapes, and tube lengths, then launch their rockets skyward with the power of their own stomps. This activity highlights propulsion, stability, and aerodynamics in a fun, high-energy format.

16. **Engineering Challenge: Pizza Box Racer**

    Students transform pizza boxes into racing vehicles powered by vibrating motors. By experimenting with different designs for the underside, they'll explore friction, motion, and balance as their "cars" zoom down an inclined plane. After testing, students refine their vehicles to improve speed and control. It's a creative blend of recycling, electronics, and physics.

17. **Electronics: Build a Walking Robot**

    Students become robot engineers by wiring together a simple motor and switch to power a walking "robot." Using craft materials, they'll design legs, feet, or bristles to make their robot move in wobbly, silly ways. Along the way, students learn how circuits work and how motion can be created from electrical energy. Each robot is unique and ready to take home!

18. **Electronics: Solar Critters**

    Harness the power of the sun! Students design fun critters—like bugs, frogs, or turtles—then add a motor and a small solar panel to bring them to life. As sunlight powers the motor, their critters will crawl or wiggle. This program introduces renewable energy, circuits, and design thinking.

19. **Electronics: Paper Circuits – Light-Up Ghosts and Pumpkins**

    Celebrate Halloween with glowing art! Students use LEDs, copper tape, and batteries to create light-up paper ghosts and pumpkins. This project introduces basic circuits in a fun, seasonal format that combines science with holiday creativity.

20. **Electronics: Light-Up Canvases**

    Where science meets art! Students create an 8x10 canvas painting or drawing—seasonal, holiday-themed, or original—and then wire simple circuits with LEDs to add glowing lights to their artwork. They'll learn how electricity can be integrated into creative projects, and they'll take home a one-of-a-kind light-up masterpiece.

21. **Electronics: Light Up the Holidays**

Students design festive holiday cards or ornaments and embed simple LED circuits to make them light up. Using copper tape, coin batteries, and LEDs, they'll learn how electricity flows while creating keepsakes they can bring home for holiday cheer.

22. **Electronics: Snap Circuits**

    Students explore electricity using snap-together circuit boards. They'll experiment with series and parallel circuits, resistors, switches, and motors to build fun projects. This activity gives students the chance to experiment freely and see the real-world applications of electrical concepts in action.

23. **Electronics: Motorized Boats**

    Students upcycle recycled materials into boats, then wire motors and switches to propel them across a tub of water. They'll test and refine their designs to improve stability and speed, while learning about buoyancy, propulsion, and circuits.

24. **Electronics: Pressure-Sensing Plate – DIY Room Alarm**

    Students turn cardboard and foil into a pressure-sensitive switch. When stepped on, it closes the circuit and triggers an alarm (buzzer or light). This activity introduces switches, conductivity, and practical applications of circuits for security and safety.

25. **Electronics: Art Robots**

    Students wire motors to create "jiggling robots" that draw as they move across paper. Using simple circuits, students will build robots that leave behind colorful patterns—turning electricity into art.

26. **Electronics: Crazy Critters: Build & Adapt with Electronics *NEW***

    Bring your imagination to life with science, art, and engineering! In this hands-on program, students will design and build their own "crazy critters" using simple electronics like vibrating motors, along with brushes, pipe cleaners, recycled items, and craft supplies. Once their critter is built, students will choose an ecosystem—desert, forest, ocean, or arctic—and adapt their critter to survive in that environment. This activity combines creativity, electronics, and ecology for a one-of-a-kind STEM adventure!

27. **Electronics: Fruit & Veggie Power: The Science of Electricity *NEW***

    Can a potato light a bulb? In this electrifying program, students will turn fruits and vegetables into batteries! By inserting electrodes and connecting wires, they'll discover how chemical reactions can create an electrical current. From lemons to potatoes, kids

will experiment with different foods to see which makes the best battery while learning about circuits, energy, and the surprising power of produce.

28. **Electronics: Halloween Glow-Up: Light-Up Mummies & Bats *NEW***

    Prepare for a spine-tingling crafting adventure with this electrifying Halloween STEAM session! Students will transform ordinary paper towel tubes into glowing mummies and bats, outfitted with simple circuits that make their eyes come to life. Using LED lights, copper tape, basic electronics, and classic art supplies, they'll learn how electrical circuits work while decorating their creations with googly eyes, spooky wings, and mummy wrappings. By the end, each student will take home a glowing creature that lights up the night—and their imagination!

29. **Critical Thinking: Lost in Space Escape Room**

    Students are stranded on a damaged spacecraft and must work together to return home! They'll solve puzzles, decode messages, and identify scientific clues to repair their ship before time runs out. Each group of up to 8 students has 20 minutes to complete the escape, while additional students can engage in side activities. This program encourages teamwork, critical thinking, and STEM-based problem-solving in a high-energy, immersive environment.

30. **Critical Thinking: Secret Code Bracelets *NEW***

    Learn how to send hidden messages with science! Using pipe cleaners and pony beads, students will spell out their names in Morse code—dots and dashes represented by different bead colors. UV-reactive beads serve as spacers, changing color in the sunlight and adding a fun twist. Along the way, students will explore the basics of Morse code communication and discover how ultraviolet rays from the sun cause the special beads to change color.

31. **Critical Thinking: Enchanted Library Escape Room *NEW***

    Step into a magical library where mischievous fairies have hidden the way out! Work together to solve riddles, decode clues, and unlock puzzles scattered among enchanted books and glowing artifacts. Along the way, you'll discover the secrets of fairy magic and test your problem-solving skills.

32. **Programming & Coding: Coding with Cubelets**

    Cubelets are magnetic robot blocks that snap together to form working robots without any wiring. Students learn the basics of coding by combining blocks that serve as sensors, motors, and logic pieces. They'll design robots to complete specific tasks, discovering how

coding concepts like sequencing, inputs, and outputs come to life in a tangible, hands-on way.

33. Programming & Coding: Coding with Indi Robots

Students use color-coded tiles to program Indi Robots, teaching them how to navigate mazes and obstacles. By laying out color patterns, students learn sequencing, debugging, and problem-solving in a fun and accessible way. This program is a playful introduction to robotics and coding logic.

34. Programming & Coding: Coding with Edison Robots

Edison Robots are versatile, programmable machines that respond to light, obstacles, and even TV remote signals. Students will learn how to code their robots to follow light, avoid collisions, and compete in sumo wrestling matches. This program builds coding skills while highlighting real-world applications of robotics.

35. Programming & Coding: Interactive Art with Makey Makey [1]

Students create a work of art—such as a poster, drawing, or collage—then connect it to a Makey Makey circuit board. Using Scratch, they'll program their art to play sounds or music when touched. This program combines coding, art, and electronics in a hands-on experience that shows how creativity and technology can merge.

36. Programming & Coding: Lego WeDo Robotics

Students use Lego WeDo kits to build motorized creations like animals, vehicles, or machines. Using block-based programming software, they'll code their Lego builds to move, react, or make sounds. This activity introduces both engineering and programming while encouraging creativity and collaboration.

37. **Programming and Coding: Code Your Own Game in Scratch *NEW*[1]**

Jump into the world of programming with Scratch, a beginner-friendly coding platform. In this interactive session, students will learn the basics of coding logic, animation, and game design. Step by step, they'll create their very own playable game—complete with characters, challenges, and scoring—while building problem-solving and creative thinking skills.

38. AI Detectives: Train a Sorting Robot and build a prototype[1]

Step into the world of artificial intelligence! In this hands-on class, students will use AI to train a computer to recognize two different categories—like ocean animals vs. trash or healthy snacks vs. junk food. Then, they'll bring their ideas to life by building a creative prototype robot model that could use their AI to do the sorting. A perfect mix of coding, problem-solving, and maker fun!

39. **3D Modeling: Keychains**[1]

    Students will learn the basics of 3D modeling using beginner-friendly design software. They'll sketch and customize their own keychain, adding shapes, initials, or fun icons. This activity combines digital design, creativity, and manufacturing technology—and everyone gets to take home a custom keychain. Items are printed out at the museum and brought back to library.

40. **Modeling: Snowmen**[1]

    Using 3D design tools, students will build their own digital snowman complete with hats, scarves, and unique features. Along the way, they'll learn how to manipulate shapes, resize objects, and layer components to create a finished model. Each design will be printed on a 3D printer, giving students a keepsake snowman they designed themselves. Items are printed out at the museum and brought back to library.

41. **3D Modeling: Creature Creations**[1]

    Students use instructor-provided "parameters" (for example, must have four legs, wings, or antennae) to design their own imaginative creatures in 3D modeling software. This challenge sparks creativity while teaching the fundamentals of scaling, rotation, and digital design. Once printed, each student will have a one-of-a-kind creature of their own invention. Items are printed out at the museum and brought back to library.

42. **3D Modeling: Trinket Boxes**[1]

    Students will design small trinket boxes using 3D modeling software, learning how to create functional objects with lids that open and close. They'll apply concepts of symmetry and measurement while experimenting with design choices. Each student takes home a useful, personalized box made on the 3D printer. Items are printed out at the museum and brought back to library.

43. **Chemistry: Creepy Chemistry**

    In this Halloween-themed workshop, students dive into chemistry with spooky twists. They'll paint with pH-sensitive paper that changes colors, extract fluorescein from household materials to make glowing pumpkins, and experiment with eerie chemical

reactions. This activity introduces acids, bases, and fluorescence in a festive, hands-on way.

44. **Chemistry: Magnetic Slime**

    Students make slime that moves with magnets! By mixing iron filings into slime, they create a magnetic material that stretches, pulls, and wiggles when placed near a magnet. Along the way, they'll learn about polymers, non-Newtonian fluids, and the science of magnetism. Each student gets to keep their own batch of magnetic slime.

45. **Chemistry: Awesome Explosions!**

    Take science outdoors for safe but spectacular reactions! Students will create vinegar-and-baking-soda "pop" rockets, exploding zip bags, and the always-popular Coke and Mentos geyser. Through these demonstrations, they'll explore chemical reactions, pressure, and gas release in an exciting, high-energy session.

46. **Space: Phases of the Moon**

    Students explore how the moon changes shape in the sky by painting each phase with glow-in-the-dark puffy slime paint. They'll learn about waxing, waning, and why we see the moon differently throughout the month. By the end, each student has their own glowing lunar art to take home.

47. **Space: Mars Shelter**

    Using the large Mars surface map, students brainstorm where the best shelter locations might be. They'll consider temperature, dust storms, and access to resources. Then, they'll design a model shelter and decide what materials could withstand the Martian environment. This program blends space science with engineering and teamwork.

48. **Space: Mars Rover Racers**[1]

    Students code small Mars rover robots to navigate a course laid out on a Martian topography map. They'll experiment with obstacle placement and navigation strategies, then test their code to see if their rover can complete the challenge. This activity introduces robotics, coding, and planetary exploration.

49. **Space: Constellation Telescopes**

    Students learn about constellations, their myths, and the science of stars. Then, they'll create and decorate their own paper telescopes with punched constellation patterns that glow when viewed against light. This activity blends astronomy, art, and storytelling.

50. **Space: Solar & Lunar Eclipses**

Students will model the Sun, Earth, and Moon using light sources and spheres to explore the difference between solar and lunar eclipses. They'll see how shadows work and discover why eclipses don't happen every month. Each student creates a mini model to take home for continued exploration.

51. Laser Cutting: Jigsaw Puzzles

Students design their own jigsaw puzzle images, either by drawing or using digital templates. They'll see how a laser cutter can etch their artwork onto sturdy cardboard puzzle forms. This program introduces students to digital fabrication, design, and problem-solving as they put their custom puzzles back together.

52. Laser Cutting: Holiday Ornaments

Celebrate the season with personalized keepsakes! Students design holiday-themed ornaments using drawings or computer templates, then watch as the laser cutter engraves their designs. Each student takes home a custom ornament to hang or gift.

53. Laser Cutting: Engraved Art

Students create their own artwork and see it transformed into a professional-looking engraved piece. Using digital files or hand-drawn designs, the laser engraver etches images onto mat board. This activity introduces digital design, precision technology, and the creative potential of laser cutting.

54. Pneumatics: Spooky Engineering (Pop-Up Box)

Perfect for Halloween, this program uses pneumatics to bring spooky props to life! Students design and build their own pop-up box powered by air pressure. With tubing and syringes, they'll create a moving mechanism that makes their creature jump out and surprise their audience. This program introduces pneumatics and mechanical engineering in a fun, seasonal format.

55. Pneumatics: Robotic Hand

Students design and assemble a working robotic hand using straws, tubing, and syringes powered by air. By pulling on the syringes, they'll make their hand grasp and move. This hands-on activity demonstrates how pneumatics and mechanics can mimic human movement, linking engineering to biology.

56. Pneumatics: Backhoe Shovel

Students build a tabletop model of a backhoe powered by pneumatics. Using syringes, tubing, and levers, they'll design a working scoop that can pick up small objects. This

program introduces hydraulics and pneumatics while showing how similar mechanisms are used in construction equipment.

57. Learn to Solder: Solder a Flashlight

Students learn the basics of soldering by building their own working flashlight. They'll practice safety, learn how solder connects circuits, and walk away with a fully functional tool. This program combines engineering and electronics in a take-home project.

58. Learn to Solder: Solder a Light-Up Badge

Students solder LEDs and components onto a badge, learning about circuits while gaining hands-on experience with a soldering iron. They'll design and assemble their own glowing badge, which they can proudly wear home.

59. Optics: Build a Telescope *IMPROVED*

Students discover the science of lenses and magnification by building a simple telescope. They'll learn how light bends through lenses, experiment with focus, and then take their working telescope home for exploring.

60. **Optics: Periscopes**

Students explore reflection and the use of mirrors by building a working periscope. They'll learn how submarines and explorers use periscopes to see around obstacles, then take their custom-built periscope home.

61. The Human Body: Life-Size Organ Outlines

Students trace life-sized outlines of themselves onto large paper, then place organ cutouts in the correct locations. They'll learn the functions of each major organ and see how everything fits together inside the human body. This interactive activity makes anatomy come alive at a scale they can relate to.

62. The Human Body: Oh Poop! The Science of Digestion

Students follow the journey of food through the digestive system in a fun and slightly gross program. They'll learn how our bodies break down food, absorb nutrients, and eliminate waste, using interactive models and activities. By the end, they'll understand how food becomes poop—and why digestion is essential for health.

63. Earth Science/Nature: Fabulous Fossils

Step back in time and dig for ancient treasures! Students will excavate real fossils, learn how they formed millions of years ago, and practice identifying different types of fossils

such as shells, plants, or bones. After the dig, students will make their own fossil necklace to take home. This program combines paleontology, geology, and hands-on discovery in an exciting, kid-friendly way.

64. **Earth Science/Nature: Turtle Encounter**

    Meet live Eastern Box Turtles up close! Students will learn why this species is a “species of concern” in Pennsylvania and explore the differences between native and invasive species. They’ll study turtle habitats, diets, and adaptations before creating a hanging ecosystem mobile to show how turtles interact with their environment. This program blends biology, conservation, and creativity.

65. **Earth Science/Nature: Natures Color Lab *NEW***

    Discover the hidden colors all around us! In this creative science program, students will use natural pigments from berries, leaves, and other plants to make their own watercolor paints. Along the way, they’ll learn why plants have such vibrant colors and how people have used natural dyes for centuries. Each participant will create a unique piece of art to take home using their handmade natural watercolors.

66. **Earth Science/Nature: Water States Through the Seasons Bracelet *NEW***

    Explore how water changes from ice to liquid to vapor as the seasons shift throughout the year. Students will travel through four seasonal stations—winter, spring, summer, and fall—using dice rolls to determine the day’s weather and adding colorful beads to a bracelet to represent water’s different states. By the end, each student will have a unique bracelet that tells the story of water’s journey through the seasons, while learning how Earth’s tilt and the Sun create seasonal changes.

67. **Earth Science/Nature: Clean Water Challenge: Build Your Own Filter *NEW***

    How do we turn dirty water into clean water we can use? In this hands-on activity, students become environmental engineers as they design and build their own water filters using everyday materials. Working step by step, they’ll test how well their filters remove dirt and particles, learning about the science of filtration, the importance of clean water, and how engineers work to solve real-world environmental challenges.

68. **Earth Science/Nature: Earth Science/Nature: Gemstone Dig *NEW***

    Unearth treasures hidden beneath the surface! Students will dig for real gemstones, identify their unique colors and properties, and learn how these beautiful stones are formed deep within the Earth. After the dig, they’ll choose their favorite find to turn into a

necklace to take home. It's a hands-on adventure that blends geology, discovery, and creativity.

69. **Miscellaneous: Leather Tooling**

    Students explore the craft of leatherworking by creating their own personalized item—such as a bookmark, keychain, or bracelet. They'll learn about leather as a material, practice tooling and stamping techniques, and walk away with a unique handmade project. This program connects art, history, and practical skill-building.

70. **Miscellaneous: Learn the Basics of Radio Waves: Build an FM Radio**

    Students discover the fascinating world of radio communication by building a working FM radio—no soldering required! They'll learn how radio waves carry signals, how antennas pick them up, and how circuits turn those signals into sound. Each student assembles and keeps their own radio, combining science, electronics, and hands-on engineering.

71. **Miscellaneous: Plastics! Shaping with Science**

    Discover the amazing world of plastics and how they're used in everyday life. Students will learn how heat and pressure can transform a flat sheet into a 3D object. Using a vacuum former, each participant will create a custom three-dimensional form of their name to take home, while exploring the science behind materials, design, and manufacturing.

1. Requires internet. Will need to simultaneously connect 20 devices. If you are unable to accommodate this, please let us know 2 weeks in advance and we can adjust the program or bring hot spots.
2. Recommended for students 12+