

STEAM KITS

Science - Technology - Engineering - Art - Agriculture - Mathematics

**Livingston, McLean, & Woodford County
STEAM In The Classroom**



Illinois Extension
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN



STEAM KITS

University of Illinois

McLean County Extension, STEAM in the Classroom

is able to provide the following materials to be checked out for educational use

Coding:

Makey-Makey: Makey-Makey mimics a keyboard and allows everyday items to be used to control a computer. This kit does not require any software downloads, but does require a computer to use.

Ozobots: Small robots are a perfect introduction to coding. Different color combinations direct Ozobots on a path from one place to another. More advanced coding can be practiced using Ozobot Blockly.

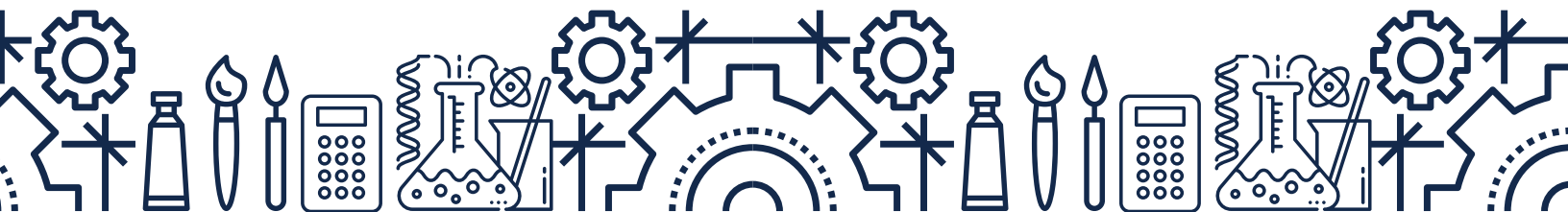
Spheros: Sphero robots provide a tactile and interactive approach to learning. Students can use them to explore basic programming concepts, problem-solving skills, and engineering principles. Beginners can use block-based coding, and more advanced users can apply text-based coding skills.

Code Your World: Students work on a 4-part series of creative projects that allow them to apply coding concepts in practical ways. These projects might include designing simple games, creating animations, or building interactive stories, making learning both fun and meaningful.

Robotics:

Lego Spike Prime: Spike Prime is a STEAM learning tool that helps students develop critical thinking and problem-solving skills through projects that combine LEGO bricks, coding, and hardware.

Eco Bots: Made with toothbrush heads and small vibrating motors, Eco Bots give youth an opportunity to build a brush robot. Then that robot is adapted to solve an environmental problem.



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Circuitry and Electricity:

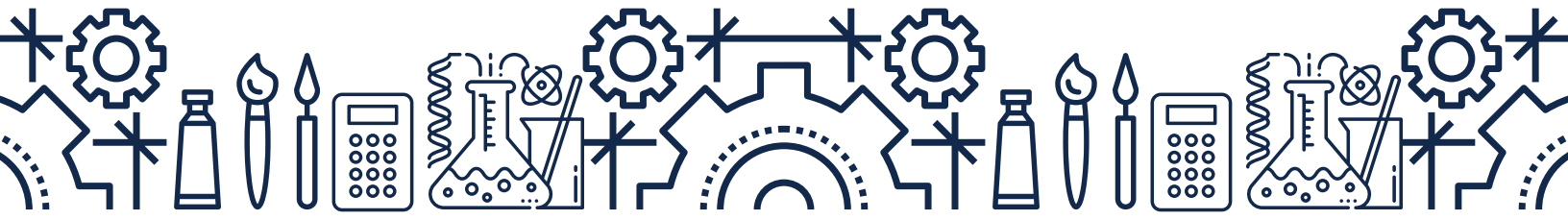
Snap Circuits: Use simple electrical parts that snap into place to build over 100 different projects. Electrical components provide hands-on experience designing and building models of working electrical circuits. No tools are required to make working electrical circuits. Manuals have clear, easy-to-understand diagrams.

Snap Circuits Green Energy: Learn the basics of electronics and explore clean energy concepts, such as electric cars, windmills, and hand-generated power. Includes full-color manual and separate “Think Green” educational manual that explains environmentally-friendly energy, including solar, hydro, wind, and others. This pairs well with Power Protectors STEM Challenge lessons.

Paper Circuits: Use copper tape and surface-mount LEDs to make creative circuits on a flat surface, like a piece of paper. You can make light-up greeting cards, make origami animals come to life, or create three-dimensional pop-up paper sculptures with working lights.

DC Circuit Lab: This kit uses different types of material to teach and demonstrate direct current circuits.

Soft/Sewn Circuits: This kit allows students to sew and glue to create light-up fabric artwork using conductive and insulating elements.



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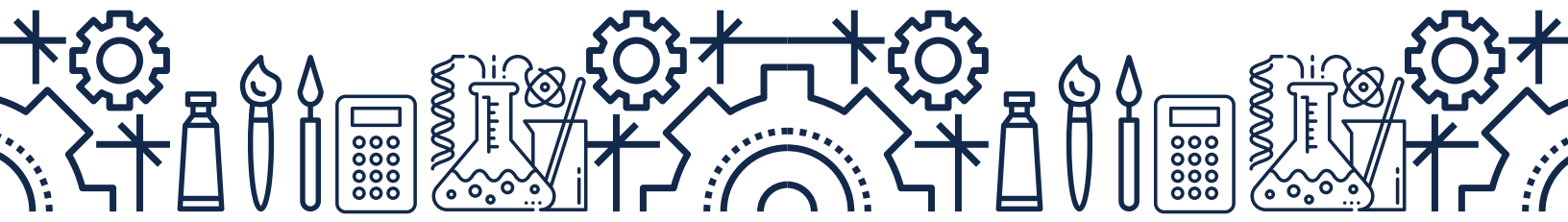
Space and Rocketry:

Stomp Rockets: Stomp Rockets are flying figure rockets powered by compressed air. Students explore the engineering process by designing fins and nose cones for the rockets. Rockets are created with everyday materials and tested with the Stomp Bladder launcher.

Mission to Mars: This STEM Challenge kit contains several activities. Design and build a Mars rover to travel over the surface of the red planet. Develop coordinate graphing skills while attempting to land a parachuting astronaut in the designated landing zone in Land Zone Surveyor. Play Crop Curiosity to compare and contrast growing conditions on Earth and Mars.

Galactic Quest: This STEM Challenge kit includes a board game, mini telescopes, and supplies to build a hydraulic arm. Work to use the hydraulic cosmic claw to harvest crops in space. Explore the properties of light and vision with the mini telescopes. The importance of cybersecurity is demonstrated by using a code to send and decipher messages.

Star Lab mobile planetarium presentations: These are hosted by Extension staff. Star Lab requires a 15 ft tall ceiling and 25 x 25 ft floor space without blocking doorways. Popular presentation topics include the planets, constellations, eclipses, and moon phases.



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Engineering and Building:

Contraptions by Keva: Explore and test proportion and balance by building ball track structures. This kit contains planks, Keva balls, and instruction manuals for projects. There is guidance for beginning and experienced builders of all ages.

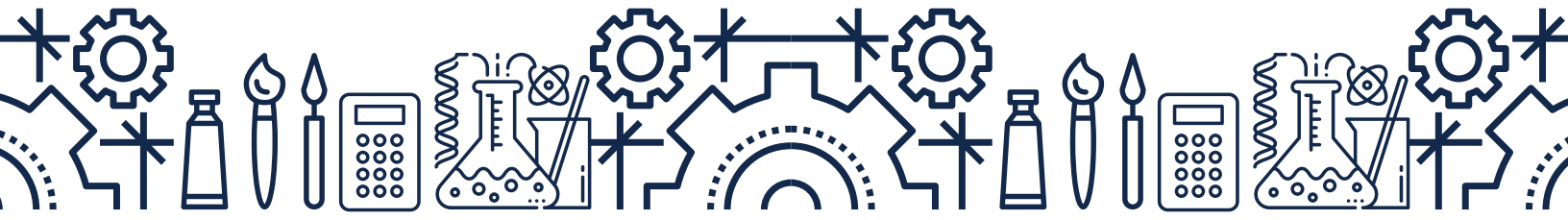
Junk Drawer: In the Junk Drawer Robotics curriculum, students are challenged to build robots from everyday items. Youth use a Robotics Notebook to record their learning experiences, robotic designs, and data from their investigations.

Facilitator guides for three levels are available.

Rigamajig Junior: This kit is fantastic for open engineering and imaginative creation. Using various wooden planks and large plastic nuts and bolts, the possibilities for building are endless. Structures small enough to fit on a desk or large enough to climb into may be created with this kit.

Wired for Wind: Students engage in the engineering design process for wind energy technology. Students build, design, and test a wind turbine. Changes can be made to the design of the blades or the blade pitch angle. Students will use a multimeter to measure the output of their turbines.

Robotic Hand: Create a functioning model of a human hand using straws, string, cardstock, and tape. Each student will have the supplies to make their own robotic hand.



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Plants and Agriculture:

Apples: Read Apples by Gail Gibbons. Then, use the supplies provided to craft a chain depicting an apple's life cycle. Follow up by reading other apple-themed literature. Other projects available include homemade applesauce, applesauce Ooblek, and apple tower engineering.

Pumpkins: Read Pumpkins by Gail Gibbons. Then, use the supplies provided to construct the life cycle of a pumpkin chain. For dessert at the end, use the included supplies to make pumpkin pie in a bag. Other projects available include pumpkin volcanoes, pumpkin tower engineering, and pumpkin catapults.

Soy Beanie Babies: Create a beanie baby necklace to learn about seed germination. Use this kit to explore what a seed needs to grow. Soybeans are used to make a variety of products. Learn about those as well as the life cycle of a soybean with this kit.

Milk Magic: Using milk, food coloring, and dish soap, students will observe the amazing reactions that occur as the soap interacts with the milk's fat and proteins, creating a colorful display. This hands-on activity demonstrates the concepts of surface tension and chemical reactions in a visually captivating way, making it an engaging addition to any science lesson. This experiment sparks curiosity and promotes inquiry-based learning.

Soil Sammies: Soil Sam is a simple activity designed for students, utilizing a nylon stocking, soil, and grass seeds. This hands-on experience allows learners to observe plant growth above and below the soil. Students can explore the conditions necessary for plants to grow and thrive.

Aero Garden Grow Lights: This kit can be utilized to grow plants in your classroom.

