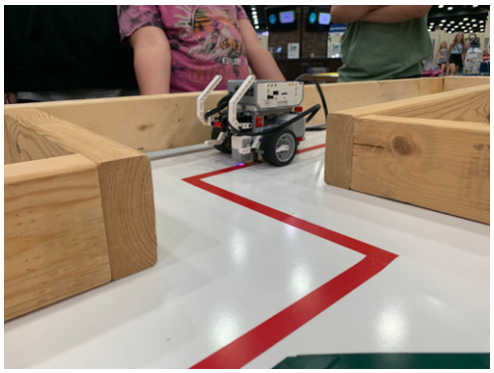
KENTUCKY 4-H PROJECT OVERVIEW

4-H Robotics Project



Are you Into It?

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Extension Specialist for 4-H Youth Development

Explore 4-H Robotics!

- Learn about the various types of robotic platforms and how they can be used.
- Discover various types of coding languages and how to use computational thinking to program robots.
- Experiment with common household items to develop "junk drawer" robots.
- Build and test your own mechatronic devices to solve problems.

Here's what you can do all year!

Starting Out
Basic/Level 1

- Utilize the Engineering Design Process to create machines to solve problems and challenges.
- Use everyday items to master robotics skills.
- Learn about robotic arms that can complete tasks.
- Learn about robotic movement.
- Learn about mechatronics, electricity, and computer programming.

Learning More
Intermediate/Level 2

- Explore various robotics platforms and their coding languages.
- Program robots to accomplish various tasks and challenges.
- Build more advanced "Junk Drawer" robotic devices using hydraulic and pneumatic systems.
- Go deeper into the Engineering Design process and incorporate more problem-soving skills.
- Start or join a 4-H Robotics team.
- Participate in robotics competitions.

Expanding Horizons
Advanced/Level 3

- Explore mechatronics and learn more about the connections between mechanical, electronic and control systems.
- Explore more about programming logic and number systems.
- Design, build and program your own robot from scratch.
- Learn more about various and more advanced sensors for your robot.

Step It Up!

Pass it on! Now that you know how, share it with others. Here are ideas to get you started.

Communication

- Share what you've learned with others through a speech or demonstration.
- Write a report or a descriptive paper on how you completed your project.

Citizenship

- Study your school or community to see the needs that could be handled by some type of robotic solution.
- Visit a local first responding agency (law enforcement, fire and rescue, etc.) to see how they utilize robotic technology.

Leadership

- Start a 4-H Robotics Club in your community to engage others with similar interests
- Teach younger 4-H members the skills you have learned.

4-H is a community of young people who are learning leadership citizenship and life skills.

Learn more at www.kentucky4h.org or contact your county extension office.

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Disabilities accommodated with prior notification.

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Take Robotics Further!

Here are some other opportunities to explore Robotics:

- Start a 4-H Robotics Club.
- Find a community issue that can be addressed by the use of a robotic device.
- Learn more about how robotic devices are used for surgery or in the medical industry.
- Learn more about how robots are utilized in agricultural practices.
- Find out more about how robots have revolutionized modern industry.

Exhibit Ideas

- Develop a robot to demonstrate a task related to a sport at your school.
- Work with a local mechanical engineering firm to do a public demonstration of robotic technology.
- Develop a display showing how robotic advancements have benefited mankind over the past century.

Resources

4-H Resources	Other Resources	Record Keeping
• National 4-H Electric Excitement Curriculum https://shop4-h.org/products/electric-excitement-helpers-guide • National 4-H Wired for Wind Curriculum https://shop4-h.org/products/power-of-the-wind-activity-bundle • National 4-H Explore A Power Park Paper Circuits https://shop4-h.org/products/explore-a-power-park-book-1-paper-circuits • National 4-H Electric and circuit kits https://shop4-h.org/collections/science-technology-engineering-math-curriculum?sort_by=title-ascending	• https://education.lego.com/en-us/LEGO Education • Edison Robots https://meetedison.com/ • OzoBot https://ozobot.com/ • Sphero https://sphero.com/	• Develop a Robotics project notebook of what you have studied and created. • Develop blueprints, circuit diagrams and layouts for your robotic designs • Record expenses (and income) associated with your Robotics project.

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