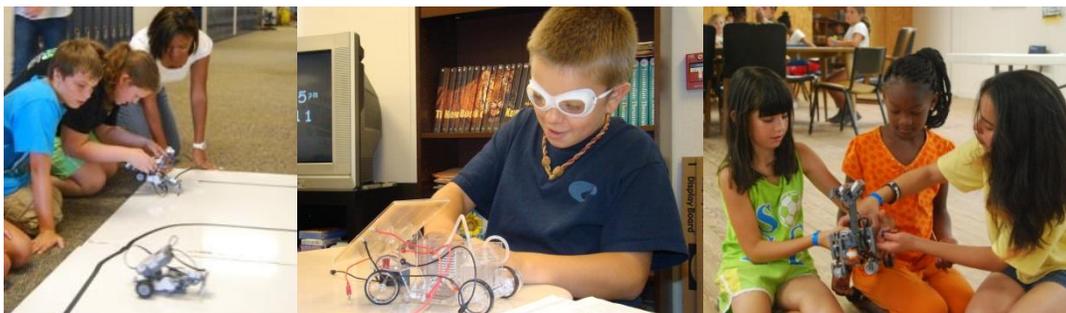




4-H Robotics Project



Step It Up!

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

Citizenship/ Leadership

- Bring robots to a school science club and show club members how they work
- Build a robot to pick up trash
- Mentor younger youth in the robotics project
- Lead a workshop teaching others about robotics

Communication

- Create a video about how to build a simple robot from everyday objects
- Make a poster about the history of robots
- Give a speech about how robots help us in everyday life
- Start a blog about your robotics experience

Are you Into It?

Learn how to design, build and program a robot.

Robots do surgery, build cars, and even vacuum floors. Explore the world of robotics by learning to build and program your own robots to solve complex and fun challenges. In this project you will:

- Explore the use of robotics and the technology that makes them work.
- Learn engineering and design skills, increasing understanding of mechanics and the underlying physics
- Gain experience in problem solving, decision-making and logical reasoning using science process skills
- Improve communication and teamwork skills by working in teams

Here's what you can do all year!

Starting Out Basic

- Identify how robots are used and explore the benefits of using robots
- Learn about forces that affect mechanical functions such as friction and gravity
- Discover scientific inquiry and the engineering design process
- Complete basic programming challenges such as making your robot go forwards, backwards or turn at various degrees
- Create a robot that uses a non-electric form of power, such as gravity or air
- Visit a factory that uses robots to create a product

Learning More Intermediate

- Learn more advanced robot design and programming techniques
- Practice precision programming
- Explore circuits and electronic systems
- Learn about sensors and discover how they are used to create a response
- Create a robot that uses sensors to complete a task
- Talk to companies that use robotics about ideas for projects and ways robotics are used in real world situations

Expanding Horizons Advanced

- Research the influence of technology on society
- Identify questions that involve data collection and build a robot that can meet the need
- Job-shadow an engineer or programmer
- Engineer your own design challenge and build a robot up to the task

Healthy Living

- Visit a healthcare facility to learn how robotics is used in the medical field
- Take exercise breaks to clear your mind for better problem solving
- Program a robot to measure the distance of a neighborhood walk

Science

- Use math skills to make your programs more accurate
- Use the engineering design process to improve your designs
- Learn about the laws of physics that affect the way your robot functions
- Research past and present technologies



Expand Your Experiences in Robotics!

- Attend a star-gazing program at a local planetarium or science museum
- Explore fields of study and careers in robotics: engineering, physics, public health and safety, and GPS/GIS. Schedule a visit with the University of Florida: www.ufl.edu
- Register for 4-H University to attend workshops, participate in community service events, hear keynotes, compete in contests, have fun, and meet other youth from across Florida who may share common interests: florida4h.org/programsandevents/
- Contact your county IFAS Extension Office for workshops, activities, and events related to community service
- Participate in program planning, development, and implementation for new robotics programs in your 4-H Club
- Facilitate the 2012 National Youth Science Day experiment, Eco Bot Challenge. 4h.org/nysd

Project Sharing Ideas

- Make a poster that shows what robots are used for around the world
- Create and exhibit a robot that you have designed and programmed to do a specific task
- Design and construct a robot from found or recycled objects
- Present a display about companies that use robotics and how
- Develop a display that describes a robotic solution to a need or problem that you have seen or encountered
- Make a storybook about a robot you created

Resources

4-H Project Resources

Project materials to assist youth in learning may be available through your county 4-H office or you can order directly. Available at National 4-H:

4-hmall.org

- Virtual Robotics
- Junk Drawer Robotics
- Robotics Platforms

GEAR-Tech-21 (combines robotics with GPS/GIS technologies) .

4hset.unl.edu/4hdrupal/.

SeaPerch (underwater remote operating vehicles)

seaperch.org/.

Connections and Events

Attending events and taking advantage of opportunities that will expand your project learning will help you become the best you can be. Contact your county 4-H office.

Take part in:

- Local workshops and day camps
- 4-H County Events Day
- FIRST LEGO League firobotics.org/.

Experience

- 4-H Summer Day and Residential Camps
- 4-H University

Attend other statewide events. Check them out at florida4h.org

Record Keeping

Learning to take good records of what you do and what you spend for your project is a 4-H life skill.

The following record keeping forms can help you keep a record of your activities.

Project Report Forms can be found at florida4h.org

- Junior (grades 4-6)
- Intermediate (grades 7-8)
- Senior (grades 9-12)
- Financial Summary
- Member Portfolio (ages 8-13)

Awards and Recognition

Florida's Recognition Program involves feedback through:

- Participation
- Setting Goals
- Meeting Standards
- Peer Competition
- Cooperation

Certificates, pins, ribbons, trophies, trips and/or scholarships are awarded based on quality of performance at the county, district, state and national levels.

To learn more about current recognition opportunities visit the Florida 4-H website at florida4h.org or contact your county 4-H agent.

Learn more at florida4h.org
or contact your local UF/IFAS Extension County Office

4-H You
GROWING TOGETHER