



Robotics

Georgia 4-H Project Achievement empowers young people with skills for a lifetime. Through a competitive process, students explore their interests, unleash their creativity, share their work, and celebrate their achievements! This guide provides 9th—12th graders with examples for getting started with their project exploration.

Description of Project:

4-H'ers may explore the areas of robotics and technology systems related to robotics. Through this project 4-H'ers may:

- learn advanced robotics design, including investigating engineering design, robotics building, and computer programming systems
- sharpen engineering and design skills, increasing understanding of mechanics and the underlying physics
- demonstrate problem solving, decision-making, and logical reasoning by using science process skills to develop robotics
- design and build robotic solutions to industrial challenges
- promote the knowledge of safe practices and procedures to protect against personal injury and property damage in engineering applications
- explore careers associated with robotics

Overview:

- ⇒ Choose project
- ⇒ Develop skills in:
 - Project
 - Leadership
 - Service
- ⇒ Prepare portfolio for work completed from January 1—December 31
- ⇒ Prepare presentation
- ⇒ Practice
- ⇒ Compete
- ⇒ Reflect

Examples of Project Development Experiences:

- Tour an engineering college, technical school, and/or maker's lab
- Enroll in a mechanics or STEM class in school
- Study the design, process of creating, and the many uses and global impacts of robotics
- Visit local industries to explore how they use robotics in their manufacturing processes
- Research careers in robotics
- Participate in 4-H robotics teams, clubs, and competitions in your area
- Connect with robotics professionals and others interested in robotics
- Join NASA's Robotics Alliance Project to learn about robotic technology, robots, and careers

Project Sharing and Helping Examples:

- Present a robotics-related demonstrations to 4-H Club members, school classes, civic clubs, and senior homes
- Serve as a teen leader for Mission Make-It: Georgia 4-H Engineering Challenge
- Teach friends, family, and/or your community members how to build simple robots, such as a BristleBot or ArtBot
- Present a robot you created at a school science event
- Mentor a younger student in developing a 4-H Robotics project
- Start a robotics club in your community
- Make a video with step-by-step instructions on how to build a robot, then share with your friends online
- Coach a younger student through a local robotics competition
- Organize a tour of a local industry, technical school, and/or college to expose younger 4-H'ers to robots and careers
- Construct a simple robot to assist someone with an everyday task or problem
- Conduct a STEM activity at 4-H club meetings or summer programs
- Exhibit a robotics-related mini-booth at a fair or event

Recommended Resources:

- Georgia4h.org/ProjectAchievement
- georgia4h.org/set/Robotics.html
- gafirst.org/frc
- robotics.nasa.gov/email/subscribe.php
- georgia4h.org/set/Engineering.html
- sciencebuddies.org/build-robots
- stemgeorgia.org/stem-competitions/robotics-competitions

Special Considerations:

- Please use best safety practices when handling tools and equipment.
- Remember to learn and abide by federal, state, and local laws and codes regarding powered equipment operation.
- When teaching safety, remember to reference official guides in creating presentations and exhibits.
- Youth should practice internet safety when communicating with new people online. A best practice is to take a friend or parent to shadow your interview or copy your parent/guardian on online communications with adult mentors.
- Be respectful of other cultures.

At Competition:

Robotics 4-H projects may use posters, artifacts, biofacts, and/or technology to support their presentation. The time limit for these presentations is 12 minutes. Computers, projectors, screens, and other technological devices may be used.

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Sources:

The University of Georgia CAES. 2016. Project Achievement. <http://www.georgia4h.org/projectachievement/>

The University of Georgia CAES. 2016. Science, Engineering, and Technology. <http://www.georgia4h.org/set/>

