

# ROBOTICS & ENGINEERING

General/Natural  
Resources Projects



Are you interested in putting things together and taking them apart? Do you like games and technology? Do you think that computers are fun? Robotics is the project for you! Young people in robotics learn hands-on about engineering design, computer programming, electrical components, how robots move, and how robotic arms work and much more.

## Resources

- Robotics & Engineering Unit 1: Give Robots a Hand
- Robotics & Engineering Unit 2: Robots on the Move
- Robotics & Engineering Unit 3: Mechatronics
- Platform Robotics Units 4-Beginner, 5-Intermediate, and 6-Advanced
- Robotic Tip Sheet
- Robotic e-record
- State Fair Exhibit Requirements
- [www.usfirst.org](http://www.usfirst.org)
- [www.bestinc.org](http://www.bestinc.org)

## Leadership Opportunities

- Share what you have learned with another robotics group and/or 4-H club
- Help your leader develop a community service project
- Serve as an officer in your 4-H club
- Attend a regional or state leadership event

## Demonstration Ideas

- Teach other about what makes something a robot: What is autonomous?
- Teach others about the 3 D's of Robotics: Dangerous, Dirty and Dull
- How to put together a robot
- Demonstrate a robotic program
- Demonstrate an electrical circuit
- Teach others about a trebuchet
- Teach others about how robotics grips work
- Demonstrate gears and gearing systems

Junk Drawer Robotics Jr./Int./Sr	Platform Robotics Jr./Int./Sr.	Robotic Teams Jr./Int./Sr.
<p>Junk Drawer is for individuals who want to learn basic skills of what it takes to make a robotics kit. Instead everyday items and even "junk" is used to master robotic skills.</p> <p>Unit 1: Give Robots a Hand This unit youth will learn about robotic arms. They can complete a number of tasks that are designed to teach young people about how robotic arms function.</p> <p>Unit 2: Robots on the Move In this unit, youth will learn about robotic movement. They can complete a number of tasks that are designed to teach young people about how robots move.</p> <p>Unit 3: Mechatronic In this unit, youth will learn about mechatronics, electricity and computer programming. They can complete a number of tasks that are designed to teach young people about how mechatronics, electricity and computer programming serve an important purpose in robotics.</p>	<p>Platform Robotics is for individuals who have any sort of robotics kit. These include, but are not limited to: Arduino Kits, EV3, Brushbot, Make, Hexy, Pushbutton Programming Robotic Kit, Sparky, Cubelets, Robotic Arm Edge, Spark Fun RedBot, WeDo, Multiplo, NXT, TETRIS, CEENBot, and VEX.</p> <p>Youth interested in this project will work through the beginner materials in Unit 4 and progress through intermediate Unit 5 and for the more advanced youth, Unit 6 is the best choice.</p> <p>Unit 4: Robotic Platform Beginners</p> <p>Unit 5: Robotic Platform Intermediates</p> <p>Unit 6: Robotic Platform Advanced</p>	<p>Unit 7 is for young people participating on a competitive robotics team. Youth who are participating in a 4-H robotics team should enroll in this unit. Youth enrolled in this unit will complete an individual e-record and display board.</p> <p>Unit 7 : Competitive Teams</p> <p>Groups of 4-H members who want to learn how to build robot and compete.</p>