**IOWA 4-H PROJECT HOT SHEET**

**4-H ROBOTICS PROJECT**

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**Are You Into It?**

Robotics is the way of the future that is here today. Robots do surgery, build cars, and assist us with our complex modern lives. This project is all about these amazing machines and learning to build and program your own robots to solve issues you face.

- Develop an interest and understanding of science, engineering and technology.
- Develop problem solving and logical reasoning skills.
- Improve communication and teamwork skills by working the way scientists and engineers do - in teams.
- Develop responsible attitudes about science and technology and how they relate to the real world and people’s lives.
- Gain experience in problem solving and decision-making using science process skills.
- Develop knowledge and skills related to robotics and engineering design process.

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**Here’s what you can do all year!**

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<tr>
<td>- Play with toy robots and figure out how they work</td>
<td>- Learn more advanced robot design and programming techniques</td>
<td>- Consider complex tasks that need accomplished and design and program a robot to do them for you</td>
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<td>- Learn about how robots are used in the real world</td>
<td>- Learn how sensors work, how they are used in robotics, and how to program a robot with sensors</td>
<td>- Job shadow an engineer or programmer</td>
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<tr>
<td>- Join a robotics club so you can practice building and programming a robot</td>
<td>- Talk to companies that use robotics about ideas for projects &amp; ways robotics are used in real world situations.</td>
<td>- Be a mentor to a team of younger robotics enthusiasts</td>
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**Step It Up!**

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

**Communication**

- Give a presentation on robots in our daily life
- Design a working exhibit on how to build a simple robot
- Create a “History of Robots” poster
- Demonstrate how to build a robot
- Start a blog about how to use robots to solve problems
- Produce a video to show a robotics competition you participated in

**Citizenship**

- Bring robots to an elderly care center and show them how to make them work.
- Build a robot to pick up trash.

**Leadership**

- Lead a LEGO® robot building workshop
- Mentor a robotics club of younger kids

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Learn more at [www.extension.iastate.edu/4h/projects/robotics](http://www.extension.iastate.edu/4h/projects/robotics) or contact your county ISU Extension Office.
Take Robotics further!

Here are other opportunities to explore Robotics:

- Participate in the Bratney Companies 4-H Robotics Challenge at the Iowa State Fair [http://www.extension.iastate.edu/4h/StateFair/roboticschallenge.htm]
- Participate in IT-Adventures at Iowa State University [http://www.it-adventures.org]
- Attend a FIRST LEGO League competition—dates and locations at [http://www.isek.iastate.edu/fll/]
- Participate in Iowa State Engineering Kids Summer Camps in Ames [http://www.isek.iastate.edu/camp/]
- Contact your county ISU Extension Office for local workshops, activities, and events related to robotics. [http://www.extension.iastate.edu/content/county-offices]
- Meet others interested in robotics? Check out 4-H camps and the Iowa 4-H Center. [http://www.extension.iastate.edu/4h/camping]
- Enter a science research project or engineering design in a science fair or the State Science and Technology Fair of Iowa. [http://www.sciencefairiofiowa.org/]
- Is it county fair time? Consider taking an exhibit, a piece of your project learning to the fair for judging and to show off what you have learned. It might get selected to go to the Iowa State Fair. [http://www.extension.iastate.edu/4h/statefair]
- Attend Iowa 4-H Youth Conference and participate in workshops, motivational speakers and a community service project, bringing ideas back to your community. [http://www.extension.iastate.edu/4h/StateConference/]
- Interested in a college education in the fields related the robotics? Schedule a visit with Iowa State University to explore those majors. [www.iastate.edu]

Resources

4-H Resources

- 4-H Robotics Curriculum [http://www.4-h.org/resource-library/cumriculum/4-h-robotics/]
  - Virtual Robotics
  - Junk Drawer Robotics
  - Robotics Platform
- GEAR-Tech-21 [http://4hset.unl.edu/4hdrupal/index.php]
- Bratney Companies 4-H Robotics Challenge [http://www.extension.iastate.edu/4h/statefair/roboticschallenge]

More Resources

- Iowa State Engineering Kids (ISEK) Programs [http://www.isek.iastate.edu/]
- FIRST Technology Robotics Challenge [http://www.engineering.uiowa.edu/ess/future-students/k-12/first-tech-challenge]
- IT-Adventures robotics challenge [http://www.it-adventures.org/]
- Botball team robotics [http://www.botball.org/]
- BEST Robotics Competition [http://best.eng.auburn.edu/]
- Engineer Your Life [http://www.engineeryourlife.org/]

Record Keeping

Find all your record keeping tools at: [http://www.extension.iastate.edu/4h/page/record-keeping]

- 4-H Yearly Summary (4H 0096)
- Basic 4-H Project Record (4H 0096A)
- Experienced 4-H Project Record (4H 0096B)
- Advanced 4-H Project Record (4H 0096C)
- Recordkeeping Self-Evaluation (4H 98, PDF)

Exhibit Ideas

- Make and exhibit a robot you've programmed to perform a specific function
- Make a poster on types of robots in the world around you
- Research what companies use robots and how
- Use recycled materials to make a robot