



**COLORADO STATE UNIVERSITY
EXTENSION**

Robotics & Engineering

Project units are designed for members 8-18 years old.

Unit 1-3 - Junk Drawer Robotics

Inspiring youth to:

- 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.

Unit 4-6 - Platform Robotics

Inspiring youth to:

- Learn to use a robotics kits such as:
 - Arduinio
 - EV3
 - Brushbot
 - Hexy
 - Pushbutton Programming
 - Cubelets
 - Robotic Arm Edge
 - Spark Fun RedBot
 - WeDo
 - Multiplo
 - NXT
 - TETRIX



Unit 7 - Robotic Teams

Inspiring youth to:

- Participate on a robotics team
- Use skills learned in previous units to build a robot and compete

Project Tips:

- Take part in at least two leadership experiences each year
- Be sure to include your e-record in a secure binder with your exhibit
- If you plan to take a unit for more than one year, make sure your exhibit is different each year
- Enter your exhibit in the county fair

Resources:

- Exhibit & Judging Requirements
- Record Books
- Manual Information

Located at: Colorado4h.org

Robotics & Engineering

Tips:

- Complete the Robotics & Engineering e-record and secure in a sturdy binder
- In Junk Drawer Units (1-3), members are only allowed to enter a display board exhibit or a stand-alone exhibit, not both.
- Robotics Platforms is just a fancy way to say robotics kits or robotics materials. Some types of commercial kits or platforms include: Arduino Kits, Brushbot, Make, Hexy, Pushbutton Programmable Robotic Kit, Sparky, Cubelets, Robotic Arm Edge, Sparkfun Red Bot, Multiplo, TETRIX, CEENBot, and VEX, current and discontinued LEGO Robotics kits with programmable robots including EV3, WeDo, NXT, SPIKE Prime, Mindstorm, and Boost.
- Youth working individually on a robotics platform should enroll in the Platform Units. Youth should advance between Units 4-6 as they feel they are progressing in their project knowledge.
- Youth working on a team on a robotics platform should enroll in the Team Robotics Unit. Despite being on a team, the fair exhibit is meant to be completed and entered by an individual member.



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Beyond
Ready

Robotics and Engineering Industry Careers



Robotics Engineer

Creates and implements robotic systems; build, test and maintain robots that are efficient and safe



Software Developer

Designs programs that control robots; write test and maintain software that helps bring robots to life



Chemical Engineer

Work with pharmaceuticals, industrial chemicals or food processing; research and develop new process for chemical production



AI & Machine Learning Engineer

Creates new algorithms that allow machines to learn and adapt without human direction



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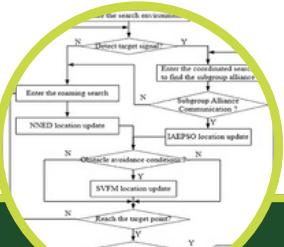
Degrees/Certifications:

Science in Engineering
Biomedical Engineering
Chemical Engineering
Geospatial Engineering
Geology
Engineering in Robotics
Engineering in Mining
Artificial Intelligence
Technology and Design



Robotics Sales Engineer

Uses knowledge to sell robotic systems to businesses and organizations



Control Systems Engineer

Specializes in algorithms that control the movement of robots/designs accuracy programs



Research Scientist

Explores new applications for robotic technology; develop innovative solutions to problems



Robotics Technician

Ensures robotic systems operate smoothly and efficiently; installs, maintains and repairs robots