



STEMducate

**AIM
KITS**

ROBOTIC ARM

September
2024



September 2024: Robotic Arm

This Month's AIM Kit is building a Robotic Arm. Ever wondered how robotic arms in factories or laboratories work? In this project, you'll build a simple but functional robotic arm that can pick up and move objects. This hands-on activity introduces the basics of robotics, engineering, and mechanics, giving you a taste of how real-world robotic systems operate.

Perfect for aspiring engineers, this project will challenge you to think critically and problem-solve as you bring your robotic arm to life.



MATERIALS NEEDED:

1. Cardboard (thick and sturdy)
2. String
3. Straws
4. Scissors
5. Glue or tape
6. Popsicle sticks
7. Rubber bands
8. Paper clips or brads
9. Small weights or objects to lift



PROCEDURE:

1. Cut the cardboard into three rectangular segments for the arm (shoulder, elbow, wrist).
2. Connect the segments using brads or paper clips to create pivot points for movement.
3. Attach popsicle sticks to the wrist segment to form a gripper, using rubber bands and string to control its movement.
4. Thread string through straws and attach it to each segment. Pulling the strings will move the arm.
5. Test the arm by picking up small objects and adjust the strings for better control.



WHY IT WORKS:

The robotic arm you've built works by mimicking the way human arms move, using mechanical joints and levers to create motion. By pulling on the strings, you're effectively controlling the tension and movement of each segment, just like muscles and tendons do in a human arm.

The gripper at the end functions as a simple claw, demonstrating basic robotics principles such as mechanical advantage and control systems. This project not only gives you hands-on experience with building a functional robot but also provides insight into how engineers design and operate robotic systems in various industries.



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About STEMducate

STEMducate is a non-profit organization dedicated to creating and promoting STEM to students from a young age to increase their curiosity and imagination. Our goal is to expose students to STEM opportunities and careers, enabling them to dream big and make their dreams a reality. We provide positive and powerful opportunities and experiences in STEM fields for people of all ages. These initiatives will hopefully entice students toward becoming the next innovators, educators, researchers, and leaders. We aim to reduce the number of unfilled jobs due to the lack of specialized skills that are needed to perform job tasks.

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