

Electricity and Mini-Robots Syllabus

Week	Topic	Details
1	Static electricity and Electroscope	Build an electroscope to detect static electricity
2	Current Electricity	Create simple, series, and parallel circuits
3	Conductors/Insulators & Electromagnetism	Test various materials to determine their ability to conduct electricity; create a simple electromagnet and observe magnetic fields and magnetic properties
4	Circuit Cards	Design a foil circuit and test other students' circuits to determine configuration
5	Build an Induction Motor	Build an induction motor
6	Build a Bristle Bot	build a bristlebot using a toothbrush, battery, and vibrating motor
7	Wire Splicing/Breadboard	Learn how to cut/strip/splice wires on a battery pack; introduction to breadboards
8	Breadboard	set up circuits on a breadboard using a resistor, LED, jumper wires, buzzer, potentiometer, capacitor
9	Build Flippy the Dancing Robot	Assemble Flippy motor/battery pack/breadboard; determine circuit needed to make Flippy move and light up
10	Build Flippy the Dancing Robot	Test various arm designs on Flippy
11	Batteries	create a nickel/penny/electrolyte battery; test battery with a multimeter; analyze voltage changes
12	Homopolar Motor	build a homopolar motor using copper wire, neodymium magnet, and battery