

TI STEM Projects Equipment List for TI-Innovator™ Hub Activities



10 Minutes of Code for TI-Innovator™ Hub

Introduce students to the basics of coding to help build critical thinking and problem-solving skills. Programming with TI-Innovator™ Technology introduces physical computing and helps spark interest in engineering, robotics and more.

Equipment recommendation:	TI part #	Equipment for single setup:
30 students		3 students per setup
10 TI-Innovator™ Hubs	STEM/PWB/2L1	1 TI-Innovator™ Hub

Project location: education.ti.com/ticodes



10 Minutes of Code for TI-Innovator™ Hub and TI-RGB Array

Short, easy-to-teach activities using the TI-Innovator™ Hub and the TI-RGB array. Learn to control the 16 color LEDs on the TI-RGB Array.

Equipment recommendation:	TI part #	Equipment for single setup:
30 students		3 students per setup
10 TI-Innovator™ Hubs	STEM/PWB/2L1	1 TI-Innovator™ Hub
10 TI-RGB Arrays (for Unit 7)	STEMRGB/ENV	1 TI-RGB Array

Project location: education.ti.com/ticodes



Digital Mood Ring

This activity is “square one” for using Texas Instruments graphing calculators to code the TI-Innovator™ Hub on other STEM Projects. Students program input and output feedback controls to make the built-in lights on the Hub mimic the colors of a mood ring.

Equipment recommendation:	TI part #	Equipment for single setup:
30 students		3 students per setup
10 TI-Innovator™ Hubs	STEM/PWB/2L1	1 TI-Innovator™ Hub
2 (Packs of 5) Temperature Modules	STEMTEMP/ENV/9L1	1 Temperature Module
30 Chenille wires/pipe cleaners		2-3 Chenille wires

Project location: TISTEMprojects.com

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Making Music With Code

Introduce students to the basics of coding to help build critical thinking and problem-solving skills. Programming with TI-Innovator™ Technology introduces physical computing and helps spark interest in engineering, robotics and more.

Equipment recommendation:	TI part #	Equipment for single setup:
30 students		3 students per setup
10 TI-Innovator™ Hubs	STEM/PWB/2L1	1 TI-Innovator™ Hub
10 Laminated 88-key piano keyboards with note frequencies in Hz (optional)		Laminated 88-key piano keyboard with note frequencies in Hz (optional)

Project location: TISTEMprojects.com



Pet Car Alarm

Engage students in the math and science of the greenhouse effect by designing and building a pet-smart alarm system that sounds an alert when the interior temperature of a model car approaches the danger zone.

Equipment recommendation:	TI part #	Equipment for single setup:
30 students		3 students per setup
10 TI-Innovator™ Hubs	STEM/PWB/2L1	1 TI-Innovator™ Hub
4 (Packs of 5) White LED Modules	STEMWLED/ENV	2 White LED Modules
2 (Packs of 5) Servo Motor Modules	STEMSM/ENV	1 Servo Motor Module
4 (Packs of 5) Temperature Modules	STEMTEMP/ENV	2 Temperature Modules
2 (Packs of 5) Hall Sensor Modules	STEMHS/ENV	1 Hall Sensor Module
10 External battery kits	STEMBT/AC	1 External battery kit
10 Small magnets (ceramic, ferrite or ceramic-ferrite)		1 Small magnet
10 Small toy pets		1 Small toy pet
10 Small pieces of clear plastic to model car window		1 Small piece of clear plastic
10 Fashion doll cars, shoeboxes, or other objects to model a car		1 Fashion doll car, shoebox, etc.
Cellophane tape to attach magnet to pet and window to motor		Cellophane tape

Project location: TISTEMprojects.com

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The Heart Project

The four-chambered heart activity inspires a passion for biomechanical engineering as students design the electrical system that makes an artificial heart go thump-thump, thump-thump.

Equipment recommendation:	TI part #	Equipment for single setup:
30 students		3 students per setup
10 TI-Innovator™ Hubs	STEM/PWB/2L1	1 TI-Innovator™ Hub
1 LED and Leads pack	STEMLEDS/ENV	LEDs and Leads
2 (Packs of 5) Temperature Modules	STEMTEMP/ENV	1 Temperature Module
40 Toothpicks		4 Toothpicks
40 2 x 3/4 inch adhesive labels		4 2 x 3/4 inch adhesive labels
30 oz. Conductive modeling clay (such as Play-Doh) (red) (Note: Do not use plasticine or non-conductive modeling clay.)		3 oz. Conductive modeling clay (red)
10 Build sheet PDFs (optional)		1 Build sheet PDF (optional)
10 3D-printed hearts (optional)		1 3D-printed heart (optional)

Project location: TISTEMprojects.com



Some Like It Tepid

Feel the heat as students collect temperature data of their favorite beverage, define thresholds and program the TI-Innovator™ Hub's built-in LED to indicate the beverage's temperature.

Equipment recommendation:	TI part #	Equipment for single setup:
30 students		3 students per setup
10 TI-Innovator™ Hubs	STEM/PWB/2L1	1 TI-Innovator™ Hub
10 TI-SensorLink Adapters	STEMSL/ENV	1 TI-SensorLink Adapter
10 Vernier BTA SS Temperature Probes	Vernier Part #: TMP-BTA	1 Vernier BTA SS Temperature Probe
10 Cups (for hot liquid)		1 Cup (for hot liquid)

Project location: TISTEMprojects.com

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Smart Irrigation System

This lesson challenges students to find a solution to a critical real-world problem — how to use water most efficiently — by designing, building and coding a working model system that waters real crops without wasting a drop.

Equipment recommendation:	TI part #	Equipment for single setup:
30 students		3 students per setup
10 TI-Innovator™ Hubs	STEM/PWB/2L1	1 TI-Innovator™ Hub
2 (Packs of 5) Light Sensor Modules	STEMLS/ENV	1 Light Sensor Module
2 (Packs of 5) Temperature and Humidity (DHT) Modules	STEMDHT/ENV	1 Temperature and Humidity (DHT) Module
2 (Packs of 5) Moisture Modules	STEMMM/ENV	1 Moisture Module
2 (Packs of 5) Water pumps	STEMWP/PWB	1 Water pump
40 AA batteries		4 AA batteries
10 Containers for the plants, such as 1-gallon milk jugs		1 Container for the plants
Soil, perlite or some other growth medium		Soil, perlite or other growth medium
Drinking straws		Drinking straws
Duct tape		Duct tape

Project location: [TISTEMprojects.com](https://www.tistempj.com)



Running the Bases (with the TI-RGB Array)

The TI-RGB Array provides another level of engagement as students experiment with controlling each of the 16 individual RGB LEDs. Math, science and design all come together when using the TI-RGB Array.

Equipment recommendation:	TI part #	Equipment for single setup:
30 students		3 students per setup
10 TI-Innovator™ Hubs	STEM/PWB/2L1	1 TI-Innovator™ Hub
10 TI-RGB Array	STEMRGB/ENV	1 TI-RGB Array

Project location: [TISTEMprojects.com](https://www.tistempj.com)

Ready to purchase? Reach out to a [product dealer in the U.S.](#) (or [Canada](#)) to get a quote, or contact your local [Educational Technology Consultant](#) for help choosing the right technology.