IEEE Ottawa Robotics Competition
Compétition de robotique d'Ottawa d'IEEE

Kit Fact Sheet

Last Revised: November 18, 2021

Feature	Robotics Platform			
Platform Name	Micro:bit	Lego Mindstorms	Arduino	
Name of Kit	Micro:bit	EV3	mBot	Otto DIY Builder Kit
Cost	$0 (virtual) $26 (physical)	$570	$180	$130
Description	See pages after this table			
Ideal Age Group by Grade*	4 – 6	6 – 10	9 – 12	7 – 10
Assembly required?	No	Yes, but customizable	Yes, manual and tools provided. Customizable.	Yes, manual and tools provided. Customizable.
Sensors	• Accelerometer (motion) • Compass • Light • Temperature • Ultrasonic (distance)	• Colour • Gyroscope (orientation) • Touch (x2) • Ultrasonic (distance)	• Accelerometer (motion) • Gyroscope (orientation) • Infrared (black/white) • Ultrasonic (distance)	• Ultrasonic (distance)
Batteries Included	Not necessary**	Rechargeable (included) or AA	AA	Rechargeable
Software compatibility	• Chromebook • Mac • Windows	• Chromebook • Mac • Windows	• Chromebook (not free) • Mac • Windows	• Chromebook • Mac • Windows

*   Our suggested age groups may differ from those of who make the robots based on our challenges.

** If you plug a micro:bit into another platform, you may need batteries. Otherwise, the physical micro:bit can be powered through a USB cable.

Micro:bit
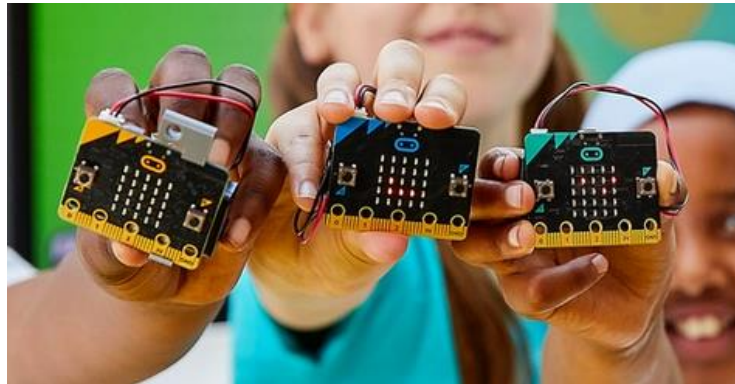
The BBC micro:bit is a pocket-sized computer that you can code, customize and control to bring your digital ideas, games and apps to life. You can individually program its LED, as well as its buttons, inputs, and outputs.

Its super fun and easy to use and ready to get started out-of-the-box. The extensive wireless and sensor features mean the micro:bit can be used across the school, including subjects such as science, math, music, art and computing. It also has a well-documented resources library made by the BBC.

- Great for first-time programmers
- Well organized online resources are available to provide tutorials
- Best suited for designing simple apps
- Most economical choice
- The basic kit does not have wheels or motors. Add-ons are available to allow the robot to move

Lego Mindstorms EV3

Through hands-on learning, LEGO® MINDSTORMS® Education EV3 will enable your students to: understand forces and motion; graph and interpret rotation sensor data; develop robots capable of complex thinking using logical structures and sensor feedback; understand that complex systems are created from subsystems; and design, build and program a fully-functioning robotic system using LEGO® bricks.

The kit includes an EV3 Intelligent Brick, a powerful small computer that makes it possible to control motors and collect sensor feedback. LEGO bricks can then be attached to the motors and chassis to create a fully customizable robot.

- Compatibility with LEGO bricks encourage hands-on creativity
- Modular design allows students to easily create a fully customizable moving robot
- Proprietary brand makes it more expensive than other open-source options

mBot
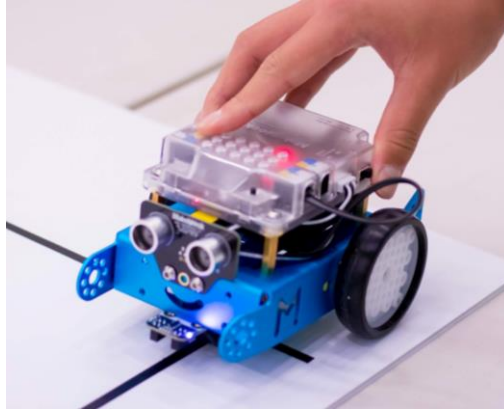
The Makeblock mBot2 STEM Educational Programmable Robot Kit is an educational robot designed to make use of wireless capabilities in order to travel around and respond to the environment. Starting as an entry-level solution in lower secondary education and going all the way to upper secondary and beyond.

With mBlock's enhanced coding learning experience, mBot2 allows students and educators to begin with the block-based coding approach, and seamlessly transition into object-oriented coding with Python, all in the same environment.

- For more experienced programmers or older students
- Good for movement projects, such as racing, line following, obstacle avoidance
- Can be used to teach how to program using professional programming languages
- Assembly is required

Otto DIY Builder Kit

The Otto DIY Builder Kit is a perfect choice for both beginners and makers alike. Otto can walk, dance, make sounds gestures and avoid obstacles in this starter version but you can always upgrade, expand and customize with extra sensors and 3D printing. The Builder Kit is easy to make, assemble and code and you have plenty software options from novice to advanced professional.

The Otto DIY Builder Kit includes all hardware needed, free access to online learning content in Otto Academy, and dedicated full support, making it ideal for remote teaching, home schooling, and self-learning.

- For more experienced programmers or older students
- open source and can be customized with 3D printing
- Can be used to teach how to program using professional programming languages
- Assembly is required