micro:bit Materials List

The following materials are needed to complete the *Physical Computing with micro:bit* CodeHS course. Students can work in groups (2-3) or individually through the course. Having groups larger than 3 students is not recommended.

Item (with suggested link)	Amount (per group or per student)	Descriptions/Notes
Micro:bit with USB cable	1	This microcontroller is used in every project. There are many kits available through Amazon, but be sure to check that the actual micro:bit board is included. (This kit includes #2: a battery pack!)
Battery Pack with JST connector	1	You'll also need **2 AAA** batteries to go inside each battery pack. This will allow students to run programs on their micro:bit when unplugged from the computer and plugs directly into the micro:bit. Though the micro:bit can be run using computer power, there are many scenarios where students will want to run their programs without being tethered to the computer.
Alligator Clip Jumper Wires	10-20	Wires are used to connect external components to the micro:bit in a good number of projects. To connect components together, alligator clip jumper wires are needed.
LEDs	10-15	LEDs are used in many projects throughout this course. A variety of colors is suggested. Pay attention to the voltage for each color when selecting resistors.
Resistors	10-20	Resistors are used to limit the amount of current flowing through various components. Due to the long, skinny legs of resistors, students may struggle getting them into the breadboard. For this reason, it might be helpful to have a pair of wire cutters on hand.
Headphones or Audio Output Device	1	In module 2, students will learn how to play audio from their micro:bit. In order to hear the sounds, students will need to have access to headphones or a speaker with an audio jack. If all students/groups don't have their own, you may want to make some available in your classroom.
Micro Servo Motors	2-4	Servo motors are used in a variety of projects and are helpful to have on hand when students reach the advanced micro:bit module. They are pretty inexpensive and can be bought in bulk.
Alligator clip to Male Jumper Wires	4-6	To connect certain components to the micro:bit (such as a servo motor), alligator clip to male jumper wires are needed.

Ultrasonic Range Finder	1	Students will study one external sensor as a group in this course. This sensor provides great information but must be used in conjunction with an external power source. Be sure students utilize the power source correctly to avoid short circuiting the micro:bit device.
Alligator Clip to Female Jumper Wires	4-8	To connect the ultrasonic range finder, female connectors need to be used. These should have alligator clips on the opposite end to be able to connect to the micro:bit.
External Battery Pack	1	To power larger external components (or more than 1 at a time) you can connect a larger power supply using the micro:bit pins. You'll also need **3 AA** batteries to go inside each battery pack. **Important Note!**: This battery pack can NOT be supplied directly to the micro:bit board or it will short out the device components. Be sure that students know exactly how and when to attach this battery pack to their device before giving them this component.
Breadboard	1	This component can be used in every project to organize circuits, though it is not formally introduced in the course until the final module. There are many companies and sizes to choose from, though we suggest having a 400-point board for each group of students.
Male to Male Jumper Wires	10-20	Wires are used to connect external components to the micro:bit in a good number of projects. To connect components to a breadboard, male to male jumper wires are needed. Though there are many different types of wires available, we highly suggest male jumper wire with plastic ends. Using wire that has simply been stripped at the ends can cause a lot of frustration for students and leads to broken wires getting stuck in the breadboard.

Note: In module 3, students will explore additional external sensors on their own. The cost for these additional sensors should be built into the class budget. There are many kits available that include multiple sensors (as well as many of the materials listed here!), but if you want to purchase them separately, you may need to solder parts to each sensor.