



## Materials and Tools for U Control Invention Kit

This materials and tools list is sufficient for 20 students to complete the activities in teams of five students. This list can be used to purchase and/or supply materials and tools *without* purchasing the kit.

Materials and tools that are not supplied in the kit are listed separately and identified as *required* or *optional* to complete the activities.

All activities require safety items: safety glasses, disposable latex-free gloves, and dust masks.

Materials and Tools (required; supplied in the purchased kit)	Size and Quantity	Notes
Shipping tape, clear	2 small rolls	Suggest rolls of 1.88 inch x 22.2 yard
Cardstock	25 sheets of 8 1/2-inch X 11-inch	Suggest 110 lb. weight
2-foot x 2-foot x 1-inch pink foam insulation	10 pieces	<a href="#">Home Depot</a>
2-inch x 1 3/16-inch door middle hinges	10	<a href="#">Home Depot</a>
2 1/2-inch L-brackets	20	<a href="#">Home Depot</a>
Machine screws, 8-32 tpi, 1 1/2-inch, Phillips head	200	
Nuts, #8-32	50	
Flat washers (#8)	30	



Precision screwdriver set	5 sets	
Duct tape	2 rolls	
Painters tape	1 roll	
Red hookup solid core wire, 22 AWG	125 feet	<a href="#">SparkFun</a>
Black hookup solid core wire, 22 AWG	125 feet	<a href="#">SparkFun</a>
9V battery	5	
9V battery holder	5	
AA battery	40	
AA battery holder (holds 4 batteries)	10	
Solderless breadboard, 400 tie-points, 4 power rails	5	<a href="#">Amazon</a>
Jumper wire kit	5	<a href="#">SparkFun</a>
SPDT switch (on-off-on toggle)	5	<a href="#">Amazon</a>



H-bridge motor driver chip	5	<a href="#">SparkFun</a>
Hot glue gun and glue sticks	5	
Metal strap ties, 1 1/4-inch x 9-inch, 20 guage	10	<a href="#">Home Depot</a>
Servo motor, 4.8-7.2 volts	5	<a href="#">Amazon</a>
DC toy/hobby motor, 130 size	5	<a href="#">Adafruit</a>
Pliers, needle nose or jewelry	5 for class	
Wire cutter/stripper	5 for class	
<b>Safety Items (required; supplied in the purchased kit)</b>	<b>Description</b>	<b>Notes</b>
Latex-free disposable gloves	1 box of 100; medium	
Safety glasses	22 regular	
Safety glasses	3 over prescription safety glasses	
Dust masks, disposable		



Materials and Tools (required; <i>not</i> supplied in the purchased kit)	Size and Quantity	Notes
Cardboard and scrap materials		Commonly found in recycling bins
Scissors, sharp	1 pair for each class member	
Yardsticks	1 for each team	Must include metric and U.S. standard notations
Utility knife	5 for class	For cutting cardboard
Calculators	1 for each team	Can use calculators on smart phones
Newspaper	As needed	For keeping surfaces clean
Paper towels	As needed	For cleaning-up water spills
Permanent markers	5 for class	
Hammer	3 for class	
Phillips and flat head screwdriver set	5 sets	

Materials and Tools (optional; <i>not</i> supplied in the purchased kit)	Size and Quantity	Notes
Soldering iron and lead-free solder	1 for class	