Lab Materials and Supplies Descriptions

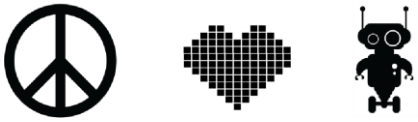
Available Components/Materials

Component Name and Image	Brief Description (links provided where available)
DC Motor 	<table><tr><th></th><th>Output Stage Driving Gear</th><th>Output Stage Driven Gear</th><th>Output Speed (RPM)</th><th>Output Stall Torque (N*m)</th><th>IME Ticks per Revolution</th></tr><tr><td>Standard Motor 393 Gearing</td><td>10t</td><td>32t</td><td>100</td><td>1.67</td><td>627.2</td></tr><tr><td>High Speed Option (included with Motor 393)</td><td>14t</td><td>28t</td><td>160</td><td>1.04</td><td>392</td></tr></table> Tech Specs Inventor's Guide
Shaft Encoder 	Tech Specs Inventor's Guide
Motor Controller 	Tech Specs
HiTec Servo Motor 	Product Info

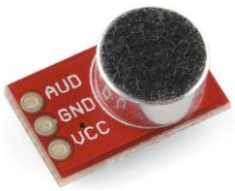


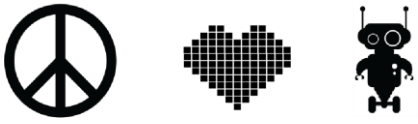
Available Components/Materials

Component Name and Image	Brief Description (links provided where available)
Arduino Uno 	The brain of your Robot Tech Specs (and other detailed info)
Solder 	
USB to Mini-USB Cable 	Used to power Arduino Nano Product Info
12V Battery Pack 	Used to power the Robot System Product Info
Battery Charger 	For 12V Battery Pack Product Info
Breadboard 	Just a regular, solderless breadboard. It has 2 power buses, 30 columns, and 10 rows - a total of 400 tie in points. All pins are spaced by a standard 0.1". The two sets of five rows are separated by about 0.3", perfect for straddling a DIP package over. The board accepts wire sizes in the range of 29-20AWG. **Dimensions**: 3.29 x 2.15 x 0.33" (83.5 x 54.5 x 8.5mm)



Available Components/Materials

Component Name and Image	Brief Description (links provided where available)
Electret Microphone 	Product Info
Line Sensor 	Datasheet
Ultrasonic Range Finder (Ping Sensor) 	Product Guide Ping to Detect Distance
IR Range Finder 	Sharp GP2D120XJ00F, 3-30 cm Datasheet
IR Range Finder 	Sharp GP2Y0A21YK, 10-80 cm Datasheet
IR Range Finder 	Sharp 2Y0A02 YK F33, 20-150 cm Datasheet

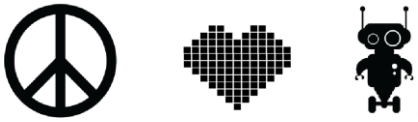


Available Components/Materials

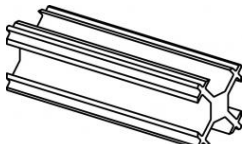
<table>
<tr><th>Component Name and Image</th><th>Brief Description (links provided where available)</th></tr>
<tr><td>IR Range Finder Pigtail Adapter  </td><td>Three pin JST connector with red, black, and yellow colors. 5-inch wire outs.</td></tr>
<tr><td>Microswitch (bump sensor)</td><td></td></tr>
<tr><td>12V - 5V dc step down converter  </td><td>
<table>
<tr><th>Specification</th><th>Value</th></tr>
<tr><td>Input range</td><td>8~23v</td></tr>
<tr><td>Output voltage</td><td>5V</td></tr>
<tr><td>Output current/power</td><td>3A</td></tr>
<tr><td>Efficiency</td><td>>96%</td></tr>
<tr><td>Weight</td><td>30g</td></tr>
<tr><td>Size(LxWxH)</td><td>26×36×21(mm)</td></tr>
<tr><td>Cable length</td><td>100mm</td></tr>
</table>

All epoxy sealed containers with Waterproof Housing; Non-isolated
High efficiency: >96%; Reliable, low heat dissipation max. 40
With overload / over-current / over / low voltage protection, stable performance.

</td></tr>
<tr><td>Fuse Block  </td><td>
<table>
<tr><th>Specification</th><th>Value</th></tr>
<tr><td>Input Terminal Rating</td><td>#10-32 threaded studs (100A max)</td></tr>
<tr><td>Output Terminal Rating</td><td>30A max per circuit</td></tr>
<tr><td>Temperature Rating</td><td>–20°F (0°C) to 150°F (65°C).</td></tr>
<tr><td>Materials</td><td>Black thermoplastic</td></tr>
<tr><td>Termination</td><td>.250" x .032" quick-connect terminals</td></tr>
<tr><td>Ground terminal pad</td><td>option available</td></tr>
<tr><td>Input wire size</td><td>#4-6 AWG</td></tr>
<tr><td>Output wire size</td><td>#12-16 AWG</td></tr>
<tr><td>Torque Rating</td><td>20in-lb (2.25Nm) max</td></tr>
<tr><td>Mounting Torque Rating</td><td>8in-lb (0.9Nm) max</td></tr>
</table>
</td></tr>
<tr><td>Fuses  </td><td>3 amp (shown) & 4 amp</td></tr>
</table>



Available Components/Materials

Component Name and Image	Brief Description (links provided where available)
Solid Core Hookup Wire 	Product Info *(various colors provided)*
Multimeter	How to use a multimeter
Multimeter pin adapters 	
Wire Cutters 	Be Careful!
Crimping Terminals	
MicroRax - 900mm (Silver) 	Panel Inset Drawing MicroRax is cool stuff!
Nut Plates	
Drive Shafts 	Material Type: Steel Size: 0.25” (6.35mm) square bar Length: 12”
Shaft Collars 	Material Type: Steel Threads: 8-32 Hex Key: 5/64”



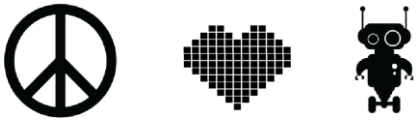
Available Components/Materials

Component Name and Image	Brief Description (links provided where available)
Electrical Tape 	Wrap exposed wires!

Stocked in/on Supply Wall

Component Name and Image	Brief Description (links provided where available)
Resistors	
Fuses 	
LEDs	
Phototransistor	
Hex Inverter	
Screws	
Nuts	
Washers	
Lock Washers	
Joining Plates	
MicroRax (non-modifiable lengths)	

Limited Supply Available	
Component Name and Image	Brief Description (links provided where available)



Linear Motion Kit 	Product Info
Tread Kit 	Inventor's Guide
Tread Upgrade Kit 	Product Info Inventor's Guide