


















## Hardware Components

Component		Qty	Link for more information
Grid Plate 17 x 29 Hole		2	<a href="https://www.servocity.com/1116-series-grid-plate-17-x-29-hole-136-x-232mm/">https://www.servocity.com/1116-series-grid-plate-17-x-29-hole-136-x-232mm/</a>
U-Channel 1 Hole		6	<a href="https://www.servocity.com/1120-series-u-channel-1-hole-48mm-length/">https://www.servocity.com/1120-series-u-channel-1-hole-48mm-length/</a>
2-Post Clamping Mount		4	<a href="https://www.servocity.com/1401-series-2-side-2-post-clamping-mount-43mm-width-22mm-bore/">https://www.servocity.com/1401-series-2-side-2-post-clamping-mount-43mm-width-22mm-bore/</a>
Lightweight Set Screw Hub 4mm		4	<a href="https://www.servocity.com/1308-series-lightweight-set-screw-hub-4mm-bore/">https://www.servocity.com/1308-series-lightweight-set-screw-hub-4mm-bore/</a>
Lightweight Set Screw Hub 6mm		2	<a href="https://www.servocity.com/1308-series-lightweight-set-screw-hub-6mm-bore/">https://www.servocity.com/1308-series-lightweight-set-screw-hub-6mm-bore/</a>
Omni Wheel		4	<a href="https://www.servocity.com/3604-series-omni-wheel-14mm-bore-96mm-diameter/">https://www.servocity.com/3604-series-omni-wheel-14mm-bore-96mm-diameter/</a>
Disc Wheel		4	<a href="https://www.servocity.com/3607-series-disc-wheel-14mm-bore-96mm-diameter-black-2-pack/">https://www.servocity.com/3607-series-disc-wheel-14mm-bore-96mm-diameter-black-2-pack/</a>
ServoBlock		2	<a href="https://www.servocity.com/servoblock-standard-size-25-tooth-spline-hub-shaft/">https://www.servocity.com/servoblock-standard-size-25-tooth-spline-hub-shaft/</a>
Round-End Pattern Plate 7 Hole		2	<a href="https://www.servocity.com/1105-series-round-end-pattern-plate-7-hole-176mm-length/">https://www.servocity.com/1105-series-round-end-pattern-plate-7-hole-176mm-length/</a>
Round-End Pattern Plate 5 Hole		1	<a href="https://www.servocity.com/1105-series-round-end-pattern-plate-5-hole-128mm-length/">https://www.servocity.com/1105-series-round-end-pattern-plate-5-hole-128mm-length/</a>
L-Channel 1 Hole		3	<a href="https://www.servocity.com/1113-series-l-channel-1-hole-48mm-length/">https://www.servocity.com/1113-series-l-channel-1-hole-48mm-length/</a>
Parallel Gripper Kit A		2	<a href="https://www.servocity.com/parallel-gripper-kit-a/">https://www.servocity.com/parallel-gripper-kit-a/</a>
Flanged Ball Bearing		2	<a href="https://www.servocity.com/1611-series-flanged-ball-bearing-6mm-id-x-14mm-od-5mm-thickness-2-pack/">https://www.servocity.com/1611-series-flanged-ball-bearing-6mm-id-x-14mm-od-5mm-thickness-2-pack/</a>
Stainless Steel D-Shaft		1	<a href="https://www.servocity.com/2101-series-stainless-steel-d-shaft-6mm-diameter-300mm-length/">https://www.servocity.com/2101-series-stainless-steel-d-shaft-6mm-diameter-300mm-length/</a>
26 or 116 RPM DC brushed Motors <i>* make sure you got 4 motors with same rpm value</i>		4	<a href="https://www.servocity.com/26-rpm-premium-planetary-gear-motor/">https://www.servocity.com/26-rpm-premium-planetary-gear-motor/</a> <a href="https://www.servocity.com/116-rpm-premium-planetary-gear-motor/">https://www.servocity.com/116-rpm-premium-planetary-gear-motor/</a>
High-torque servo motors		2	<a href="https://www.servocity.com/2000-series-dual-mode-servo-25-2/">https://www.servocity.com/2000-series-dual-mode-servo-25-2/</a>
High-speed servo motors		2	<a href="https://www.servocity.com/2000-series-dual-mode-servo-25-3-speed/">https://www.servocity.com/2000-series-dual-mode-servo-25-3-speed/</a>

## Electronic Components

Component	Qty	Link for more information
Teesny 4.1	2	<a href="https://www.pjrc.com/store/teensy41.html">https://www.pjrc.com/store/teensy41.html</a>
USB cable type A and type B male	2	<a href="https://www.amazon.com/MaGeek-Samsung-Motorola-Android-Smartphones/dp/B00WMARA04/ref">https://www.amazon.com/MaGeek-Samsung-Motorola-Android-Smartphones/dp/B00WMARA04/ref</a>
Ultrasonic Module HC-SR04 Sensor	2	<a href="https://www.amazon.com/Dorhea-Ultrasonic-Distance-Duemilanove-Rapsberry/dp/B07L68X65N/ref">https://www.amazon.com/Dorhea-Ultrasonic-Distance-Duemilanove-Rapsberry/dp/B07L68X65N/ref</a>
IR Obstacle Avoidance Sensor	2	<a href="https://www.amazon.com/HiLetgo-Infrared-Avoidance-Reflective-Photoelectric/dp/B07W97H2WS/ref">https://www.amazon.com/HiLetgo-Infrared-Avoidance-Reflective-Photoelectric/dp/B07W97H2WS/ref</a>
RGB Color Recognition Sensor	3	<a href="https://www.amazon.com/DEVMO-TCS3200-Recognition-Detector-Compatible/dp/B07Y88WRNQ/ref">https://www.amazon.com/DEVMO-TCS3200-Recognition-Detector-Compatible/dp/B07Y88WRNQ/ref</a>
Thin Film Pressure Sensor	4	<a href="https://www.amazon.com/Pressure-Precise-Force-Sensitive-Resistor-Resistance-type/dp/B07T1CHY58/ref">https://www.amazon.com/Pressure-Precise-Force-Sensitive-Resistor-Resistance-type/dp/B07T1CHY58/ref</a>
Rotary Angle Sensor	2	<a href="https://www.amazon.com/ACEIRMC-CJMCU-103-SV01A103AEA01R00-Trimmi-Potentiometer/dp/B094XT5WMS/ref">https://www.amazon.com/ACEIRMC-CJMCU-103-SV01A103AEA01R00-Trimmi-Potentiometer/dp/B094XT5WMS/ref</a>
L298 7A motor controllers	2	<a href="https://www.amazon.com/Controller-Regulator-Industrial-Optocoupler-Isolation/dp/B0B8RL7PXM/ref">https://www.amazon.com/Controller-Regulator-Industrial-Optocoupler-Isolation/dp/B0B8RL7PXM/ref</a>
Buck Converter 12v to 5-7v	2	<a href="https://www.amazon.com/AITRIP-Mini360-Converter-Airplane-Step-Down/dp/B09MVK48KY/ref">https://www.amazon.com/AITRIP-Mini360-Converter-Airplane-Step-Down/dp/B09MVK48KY/ref</a>
12V DC Power Connector	1m 1f	<a href="https://www.amazon.com/Power-Connector-Female-Adapter-Camera/dp/B07C61434H/ref">https://www.amazon.com/Power-Connector-Female-Adapter-Camera/dp/B07C61434H/ref</a>
TalentCell Rechargeable 12V	1	<a href="https://www.amazon.com/TalentCell-Rechargeable-12000mAh-Multi-led-indicator/dp/B00ME3ZH7C/ref">https://www.amazon.com/TalentCell-Rechargeable-12000mAh-Multi-led-indicator/dp/B00ME3ZH7C/ref</a> <i>*make sure you got the battery with USB output</i>
Breadboard	4	<a href="https://www.amazon.com/Breadboard-Solderless-Prototype-Male-Female-Female-Female/dp/B073X7GZ1P/ref">https://www.amazon.com/Breadboard-Solderless-Prototype-Male-Female-Female-Female/dp/B073X7GZ1P/ref</a>
PCB Solder-able Breadboard	1	<a href="https://www.amazon.com/EPLZON-Solder-able-Breadboard-Electronics-Compatible/dp/B0B27XB69M/ref">https://www.amazon.com/EPLZON-Solder-able-Breadboard-Electronics-Compatible/dp/B0B27XB69M/ref</a>
Push button	2	
Thumb Joystick Module	2	<a href="https://www.amazon.com/Wishiot-Joystick-Controller-Breakout-Arduino/dp/B089VXPHDH/ref">https://www.amazon.com/Wishiot-Joystick-Controller-Breakout-Arduino/dp/B089VXPHDH/ref</a>
Organizer box	2	<a href="https://www.amazon.com/DEVMO-TCS3200-Recognition-Detector-Compatible/dp/B07Y88WRNQ/ref">https://www.amazon.com/DEVMO-TCS3200-Recognition-Detector-Compatible/dp/B07Y88WRNQ/ref</a>

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## TOOLS

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Component	Qty
Wire Stripper, 20-30 AWG	1
Wrench	1
Philip screwdriver	1
2.5 mm Allen/Hex key wrench	1
3 mm Allen/Hex key wrench	1
Paper box 2"x 2"x 1"	1
Paper box 2"x 2"x 2"	2
Sample of project floor sheet	1

### Available on Integration room (ECS 158)

- Soldering stations with solder
- Circuit wires
- 22 Gauge Wires
- Color tapes
- Flat Head Screwdrivers
- Header pins
- M4 screws, nuts and washers
- Cable zip ties
- Clear Double Sided Adhesive Tape
- Power energy meter