

# Robotic Ankle Exoskeleton

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# Design Efforts

- Changes this Semester
  - Spark Plug Bracket
  - Updated Pulley Design
  - Cover added for safety



# Purchasing Plan

Current Bill of Materials									
Part	Number in Category	Manufacturer/Source	Quantity Per Unit	Cost Per Unit	Quantity Needed	Item Number	Link	How it will be aquired	Part Status
Footplate	1	Provided by Lerner	1	-	2			Provided	
Torque Sensors	2	Provided by Lerner	1	-	2			Provided	
Tube - Square - Fabric - 0.75 X 0.88 X 66 Inch	3	Rockwestcomposites	1	215	1	25484	<a href="#">Link</a>	Purchased	Waiting For delivery
M5-.8 X 35 mm Phillip Screws	4	Home Depot	1	\$1.25	1		<a href="#">Link</a>	Purchased	Aquired
Chain (1ft, 05B, 8mm Pitch)	5	McMaster-Carr	1	\$9.00	2.00	6027k91	<a href="#">Link</a>	Purchased	Aquired
M4-.7 30mm Bolt	6	Home Depot	1	\$1.25	1.00		<a href="#">Link</a>	Purchased	Aquired
M4-.7 Hex Nut	7	Home Depot	4	\$1.25	1		<a href="#">Link</a>	Purchased	Aquired
M4.7 Washer	8	Home Depot	4	\$1.25	1		<a href="#">Link</a>	Purchased	Aquired
Stainless Steel Ball bearing	9	Mcmaster-Carr	1	\$13.17	2.00	57155k585	<a href="#">Link</a>	Purchased	Aquired
Stainless Steel Ball bearing 5mm	10	Mcmaster-Carr	1	\$9.20	4	7804k138	<a href="#">Link</a>	Purchased	Aquired
Stainless Steel Shoulder Screw	11	Mcmaster-Carr	1	\$6.31	2	91273A392	<a href="#">Link</a>	Purchased	Aquired
Steel Hex Nuts	12	Mcmaster-Carr	100	\$0.05	1	90592A095	<a href="#">Link</a>	Purchased	Aquired
M2 x .04mm Phillip Screws	13	Mcmaster-Carr	100	\$0.08	6	92000A015	<a href="#">Link</a>	Purchased	Aquired





# Purchasing Plan

Steel Cable 2mm diameter + Clamps	14	Amazon	1	\$12	1		<a href="#">Link</a>	Purchased	Aquired
PLA Material	15	Amazon	1	\$18	1		<a href="#">Link</a>	Purchased	Aquired
M5 x 0.80 mm Thread, 35mm Long	16	McMaster-Carr	10	\$10.36	1	90116A267	<a href="#">Link</a>	Purchased	Aquired
M4 x 0.70 mm Thread, 30mm Long	17	McMaster-Carr	50	\$16.24	3	90116A225	<a href="#">Link</a>	Purchased	Aquired
800cc Onyx Filament Spool	18	MarkForged	1	\$190	1	F-MF-0001	<a href="#">Link</a>	Purchased	Aquired
50cc Carbon Fiber CFF Spool	19	MarkForged	1	\$150	1	CF-BA-50	<a href="#">Link</a>	Purchased	Aquired
Sprocket (05B, 8 Teeth)	20	McMaster-Carr	1	\$13.05	2	2302K79	<a href="#">Link</a>	Provided	1/2 currently
Motor	21	Maxon	1	\$715.13	2	323218	<a href="#">Link</a>	Provided	1/2 currently
Gearbox	22	Maxon	1	\$294.65	2.00	370782	<a href="#">Link</a>	Provided	1/2 currently
Arduino Nano 33 BLE Sense Rev2 with headers	23	Arduino	1	\$37.43	1.00	ABX00070	<a href="#">Link</a>	Purchased	Waiting for delivery
Teensy No Ethernet(TEENSY41_NE_PINS)	24	PJRC	1	\$41.68	1.00	TEENSY41_NE_PINS	<a href="#">Link</a>	Purchased	Waiting for delivery
TMotor_Rev0_6_Maxon_2024-02-17_Second_REVISION_Y4	25	JLCPCB	1	\$9.53	5.00	Y4-5457140A	<a href="#">Link</a>	Purchased	Waiting for delivery
TMotor_Rev0_6_Maxon_2024-02-17_Second_REVISION_Y4	26	JLCPCB	1	\$33.80	5.00	SMT02402171606419-5457140A	<a href="#">Link</a>	Purchased	Waiting for delivery

# Purchasing Plan

- 100% parts purchased
- 75% on hand
  
- Nano Arduino
- Ethernet chip
- 10 Maxon Motors Chips
- Carbon fiber rod
- Future purchases up to Lerner's Discretion

# Manufacturing Plan

Current Bill of Materials												Lead Times	
Part	Number in Category	Manufacturer/Source	Quantity Per Unit	Cost Per Unit	Quantity Purchased	Item Number	Link	How it will be aquired	Part Status	Who will Manufacture	Start Date	Estimated End Date	
 LL-Spark Plug Motor Mount Mod1	1	ProtoLabs	1	\$500.14	1.00	1471-8919-00	<a href="#">Link</a>	Manufactured	Aquired	ProtoLabs	5-Feb	9-Feb	
 Spark Plug Motor Mount Mod1	2	ProtoLabs	2	\$422.72	2.00	1125-8486-00	<a href="#">Link</a>	Manufactured	aquired	ProtoLabs	5-Feb	9-Feb	
 3" Pulley (Moslikely 3D printed)	3	Lerners Lab	2					Manufactured	Needs To Be Manufactured	Lerners Lab	Unknown	Unknown	
 Carbon Fiber Tubing	4	Rockwestscomposite	1	\$215.00	1	25484	<a href="#">Link</a>	Manufactured	Needs To Be Manufactured	TBD from Lerner	Unknown	Unknown	

- Waiting to manufacture Rod
- Will 3D print Pulley out of Onyx after we print out of PLA first
- 75% Manufactured



# Demonstration







**Any Questions?**