Newton South High School

Robotic Arm Component List

Electrical Components:

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| Component: | # | Obtained From: | Price:  (Total) | Properties: | Energy Source: |
| Arduino Mega 2560 R3 | 1 | Sparkfun Electronics | $58.95 | ATmega2560  USB Serial io | MacBook Pro USB Port |
| UCC37322 Gate Drive IC | 1 | Texas Instruments | Free Sample | Non-inverting  9A Low-Side | 9.9V A123 Battery |
| AD712 Operational Amplifier | 1 | Digikey Electronics | $4.54 | J-FET Input  4MHz -3db | 9.9V A123 Battery |
| IRFZ42N N-ch. Power MOSFET | 2 | Digikey Electronics | $3.02 | 45W Power  60Vds Max. | 9.9V A123 Battery |
| 16 Pin Male Header | 1 | Digikey Electronics | $1.00 | Male  2.5mm Space | N/A |
| 20 Pin Female Header | 4 | Digikey Electronics | $1.00 | Female  2.5mm Space | N/A |
| 1uF 50V Ceramic Capacitor | 5 | Digikey Electronics | $2.05 | 1uF  50V | 9.9V A123 Battery |
| 10nF 100V Ceramic Capacitor | 1 | Digikey Electronics | $0.20 | 10nF  100V | 9.9V A123 Battery |
| 1k 1/4W Resistor | 1 | Digikey Electronics | $0.05 | 1k Ohms  1/4W | 9.9V A123 Battery |
| 15k 1/4W Resistor | 1 | Digikey Electronics | $0.05 | 15k Ohms  1/4W | 9.9V A123 Battery |
| 22k 1/4W Resistor | 1 | Digikey Electronics | $0.05 | 22k Ohms  1/4W | 9.9V A123 Battery |
| 8 Pin DIP IC Socket | 2 | Digikey Electronics | $0.40 | 8 Pins  DIP Package | N/A |
| 4” x 5” Single-Sided Board Material | 1 | You-Do-It Electronics | $3.99 | Single-Side  Copper | N/A |
| 0.093” Double Molex Connector | 2 | You-Do-It Electronics | $4.99 | 0.093” Dia.  Molex Type | N/A |
| Hitec HS-645MG Standard Servo | 1 | Lynxmotion Robotics | $31.49 | 133 oz.-in  4.8 – 6.0vdc | 9.9V A123 Battery |
| Hitec HS-311HD Small Servo | 1 | Lynxmotion Robotics | $9.99 | 51 oz.-in  4.8 - 6.0vdc | 9.9V A123 Battery |
| Hitec HS-430BH | 1 | Robot Shop | $14.49 | 69 oz.-in  6.0 – 7.4vdc | 9.9V A123 Battery |
| Hitec HS-805BB Quarter Scale Servo | 2 | Lynxmotion Robotics | $79.88 | 343 oz.-in  4.8 – 6.0vdc | 9.9V A123 Battery |
| 9.9V A123 Battery | 1 | A123 Systems | $124.99 | 2200mAh  7.2V Output | N/A |
| 12" Servo Extension Cable | 5 | Lynxmotion Robotics | $7.80 | Female-Male  24awg Wire | 9.9V A123 Battery |
| 24" 24awg Sold Core Insulated Wire | 1 | Radio Shack | $0.50 | Solid Core  24awg Wire | 9.9V A123 Battery |
| 100' 26awg Enameled Wire | 1 | You-Do-It Electronics | $4.99 | Enameled  26awg Wire | 9.9V A123 Battery |
| Laminated Electromagnet Core | 1 | Microwave Oven Fan | $2.99 | Stacked Sheet  Iron | 9.9V A123 Battery |
| 12" NTE 1/16" Heat Shrink Tubing | 1 | You-Do-It Electronics | $1.80 | 125 Deg. C  600V Insul. | N/A |
| Type A-B Male USB Cable | 1 | Microcenter | $3.99 | Type A-B  Male-Male | MacBook Pro USB Port |
| Type A USB Cable Extender | 1 | Microcenter | $3.99 | Tape A-A  Male-Female | MacBook Pro USB Port |
| Apple MacBook Pro 13" | 1 | Apple | $1099 | Intel i5 2.4GHz  4GB RAM  Xcode 4.2 | MacBook Pro Battery |

Mechanical Components:

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| Component: | # | Obtained From: | Price:  (Total) | Properties: | Energy Source: |
| Base Rotate Platform | 1 | Lynxmotion Robotics | $19.95 | Standard Scale Servo Size  Ball Bearing | N/A |
| Quarter Scale Servo C Bracket | 2 | Lynxmotion Robotics | $17.95 | Quarter Scale Servo Size  Aluminum | N/A |
| Quarter Scale Servo Holding Bracket | 2 | Lynxmotion Robotics | $15.95 | Quarter Scale Servo Size  Aluminum | N/A |
| Aluminum Tubing Connector Hub | 4 | Lynxmotion Robotics | $16.00 | Aluminum | N/A |
| Quarter Scale Servo Dampener | 2 | Lynxmotion Robotics | $3.95 | Quarter Scale Servo Size  Plastic | N/A |
| Aluminum Tubing L Connector | 2 | Lynxmotion Robotics | $5.95 | Standard Scale Servo Size  Aluminum | N/A |
| Standard Scale Servo C Bracket | 1 | Lynxmotion Robotics | $6.45 | Standard Scale Servo Size  Aluminum | N/A |
| Standard Scale Servo Holding Bracket | 1 | Lynxmotion Robotics | $5.95 | Standard Scale Servo Size  Aluminum | N/A |
| Hitec Tapped Metal Servo Horn | 2 | Lynxmotion Robotics | $6.50 | Hitec Gear Pitch  Aluminum | N/A |
| 10" Aluminum Tubing | 1 | Lynxmotion Robotics | $7.35 | 10" Length  Aluminum | N/A |
| 8" Aluminum Tubing | 1 | Lynxmotion Robotics | $6.25 | 8" Length  Aluminum | N/A |
| 2.5" Load-Balancing Spring | 2 | Lynxmotion Robotics | $2.45 | 2.5" Unstretched  Screw Terminal | N/A |
| Little Grip Attachment Device | 1 | Robot Shop | $5.95 | Lexan  Standard Size | N/A |
| Little Grip Mechanical Set | 1 | Robot Shop | $15.00 | Standard Servo  1.3" Jaw | N/A |
| TO-220 Transistor Heatsink | 1 | Digikey Electronics | $2.99 | TO-220 Size  Aluminum | N/A |
| 6mm Acrylic Sheet | 1 | Blick Art Supplies | $4.99 | 30cmx20cm  6mm Thick | N/A |
| Rubber Adhesive Supports | 4 | Lowes | $1.99 | Self-Adhering  High Friction Rubber | N/A |
| Aluminum U Channel Bracket | 1 | [Scrap] | ~$2 | Aluminum  20cm x 30cm | N/A |