FISH @ UVA

2026 Make-a-thon Tacklebox Guide

Medical Device Make-A-Thon | November 5–8, 2026 | University of Virginia

Any time you feel unsure or unsafe using a tool, please call over a Mentor or Exec Member. We're more than happy to help, and we don't want anyone getting hurt!

Toolbox Inventory:

Item	#
Gorilla Hot Glue Gun	1
Hot Glue Stick	5
X-Acto Knife	1
Cutting Mat	1
Scissors	1
9-volt Connector	1
9-volt Battery	1
Elegoo Arduino Kit	1
Safety Goggles	2

Tool Guides:

(1x) Gorilla Brand Hot Glue Gun + (x5) Hot Glue Sticks





There will be more hot glue sticks available in the prototyping rooms, this is just to get each team started.

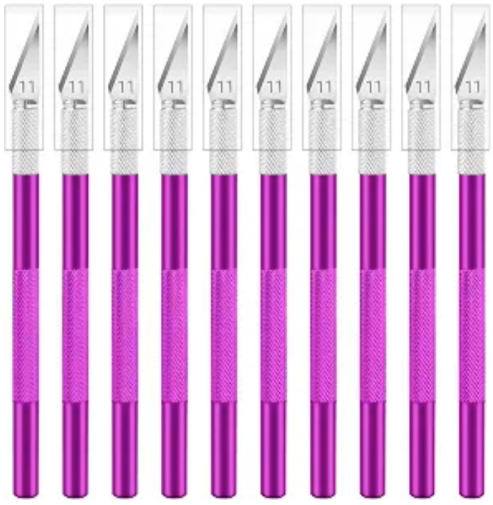
Basic Info:

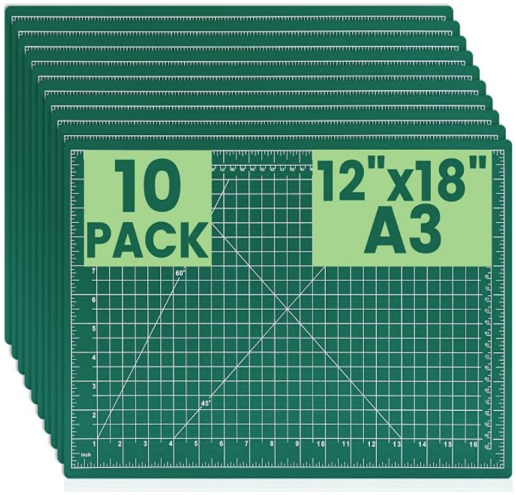
Used to melt glue from the glue sticks and apply it to attach surfaces. Has two heat modes (Low or High), and an indicator light to show if it is on or off.

Safety Info:

HOT. DO NOT TOUCH THE TIP OR LEAVE IT AGAINST A FLAMMABLE MATERIAL. Turn off the hot glue gun by unplugging it when it is not in use.

(x1) Cutting Mat + (x1) X-Acto Knife





Basic Info:

Used to cut things. X-Acto blades can be replaced, so make sure the handle is screwed on fully to make sure the blade doesn't fall out!

Safety Info:

ALWAYS CUT AWAY FROM ANY PART OF YOU OR YOUR TEAMMATES BODIES! DO NOT FORCE A CUT IF IT IS NOT GOING THROUGH. Always use the cutting mats when cutting material. Take good care of our workstations!

(x1) Pair of Scissors



Basic Info:

Used to cut things, generally safer than an X-Acto but cannot do certain things X-Acto blades can do (sharp corners, interior holes) as easily.

Safety Info:

Don't run with scissors (has nobody told you?)

(x1) 9-Volt Battery + (x1) 9-Volt Battery Connector





Basic Info:

Battery to provide power, plus an adapter to connect the battery to a circuit. Red is Positive, Black is Ground. When connecting to an Arduino, Red -> VIN, Black -> GND.

Safety Info:

Be careful with electricity in general. This is a small battery, but is still no joke. DO NOT PUNCTURE THE BATTERY OR PUT HOT GLUE DIRECTLY ON THE SIDE OF IT, AND ONLY CONNECT THE + AND – ON THE BATTERY WITH THE PROPER CONNECTOR. Do not touch any metal or conductive object to both terminals! It will get hot.

(x1) Elegoo Arduino Kit



Basic Info:

See the Arduino Guide for more information. An Arduino is a microcontroller (essentially a small computer) that allows you to program basic information and programs into objects like LEDs, Motors, Sensors, etc. This kit comes with many examples of what you can program an Arduino to control, and see the inventory list included in the kit for more information on each one. There are online tutorials for almost anything you can imagine making with this kit, so feel free to look up any ideas you have or things you are confused about!

Safety Info:

Be careful with electronics as usual. Lots of these parts are small and somewhat fragile, so be careful when handling them! IF YOU ARE NOT SURE WHAT YOU ARE DOING, DON'T PLUG THE BATTERY OR YOUR COMPUTER INTO THE ARDUINO! If you short circuit the board, it can get fried and become unusable. This will not only hinder your team but future Make-a-thon groups as well!

(x2) Safety Goggles



Basic Info:

Protect your eyes from little bits of shrapnel that fly off during certain operations. There will be more of these in the Prototyping rooms as well.

Safety Info:

These are the safety. They should be worn at all times by team members performing the following actions:

- **SOLDERING. ALWAYS WEAR SAFETY GOGGLES WHEN SOLDERING. Bits of molten metal can fly off and you don't want that to get into your eyes.**
- **Snipping or cutting 3D prints. The plastic is brittle and can shoot off small pieces as you cut them.**
- **Cutting any other hard or brittle materials. Any time you feel like something could fly off at high speed, you should be wearing safety goggles.**

Additional Tools at Your Disposal:

3D Printers and Filament:



Basic Info:

We will be using Bambu Lab 3D printer for any 3D prints needed during the competition. Make-a-thon volunteers will be starting all prints, so all you need to do is submit your files to the website (www.frugal-innovations.com).

We will have a combination of printers available, with the largest build volume being **256mm x 256mm with a height of 256mm**.

We also have several types of filament available, although most prints will be PLA unless we are given a good reason for another type:

- **PLA Basic**
- **PLA Pure** (Food Safe in certain applications)
- **PETG Basic** (Stronger and less brittle than PLA)
- **TPU 85A** (Flexible and rubbery but can only print somewhat simple shapes)

Soldering Irons and Solder:



Basic Info:

Used to melt metal to combine electronic components so that electricity can still flow. Soldering isn't permanent, but is more of a pain to change than a breadboard (white board in the Arduino kit) so prototype on those first!

Safety Info:

SUPER HOT! DO NOT UNDER ANY CIRCUMSTANCES LEAVE THE SOLDERING IRON TOUCHING ANYTHING AND DON'T TOUCH THE TIP! Because of how hot these get and the fumes they create, we will be restricting the use of these to the prototyping rooms where we have exhaust fans and proper workstations. Teams may not remove the soldering irons from the prototyping rooms.

WEAR SAFETY GOGGLES AT ALL TIMES WHEN USING A SOLDERING IRON.