FISH @ UVA

Arduino Getting Started Guide

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

Any time you feel unsure or unsafe, please call over a Mentor or Exec Member. We're more than happy to help!

New to electronics? No problem. This guide gets you from opening the kit to blinking your first LED, and shows you how to power your project safely.

> **Read this first**
>
> **IF YOU ARE NOT SURE WHAT YOU ARE DOING, DON'T PLUG THE BATTERY OR YOUR COMPUTER INTO THE ARDUINO.**
>
> **SHORT CIRCUITS CAN FRY THE BOARD. THAT HURTS YOUR TEAM AND FUTURE TEAMS.**

What's in Your Kit

Every team's kit includes the following for electronics work:

Item	Qty	Used for
Elegoo Arduino Kit	1	The Arduino board, breadboard, LEDs, sensors and more
9-volt battery	1	Powering your circuit
9-volt connector	1	Connecting the battery to a circuit
Safety goggles	2	Eye protection

The Arduino kit has its own **inventory list** inside, so check it to see exactly what's in the box.

Tool Guides

The Elegoo Arduino Kit

Basic Info:

An Arduino is a **microcontroller**, which is basically a small computer. You program it to control things like LEDs, motors and sensors. The kit comes with lots of examples of what you can build, and there are online tutorials for almost anything you can imagine.

Prototype on the breadboard (the white board in the kit) before anything gets soldered. It's much easier to change.

Safety Info:

BE CAREFUL WITH ELECTRONICS. MANY OF THESE PARTS ARE SMALL AND FRAGILE.

IF YOU ARE NOT SURE WHAT YOU ARE DOING, DON'T PLUG THE BATTERY OR YOUR COMPUTER INTO THE ARDUINO.

DISCONNECT POWER BEFORE CHANGING ANY WIRING.

9-Volt Battery and Connector

Basic Info:

The battery provides power, and the connector lets you attach it to a circuit. **Red is positive. Black is ground.** When connecting to an Arduino:

Wire color	Meaning	Connects to
Red	Positive (+)	VIN on the Arduino
Black	Ground	GND on the Arduino

Safety Info:

- **DO NOT TOUCH ANY METAL OR CONDUCTIVE OBJECT TO BOTH BATTERY TERMINALS. IT WILL GET HOT.**
- **DO NOT PUNCTURE THE BATTERY OR PUT HOT GLUE ON ITS SIDE.**
- **ONLY CONNECT + AND – WITH THE PROPER CONNECTOR.**

Your First Project: Blink an LED

This is the classic first Arduino program, and it's a great way to check that everything works. You'll use the free **Arduino IDE** (the program you write and upload code with) and a USB cable. No battery is needed for this one.

> **Before you plug in**
>
> **MAKE SURE NOTHING IS WIRED ONTO THE BREADBOARD YET. THIS WALKTHROUGH USES THE LED BUILT INTO THE BOARD. NOT SURE? CALL OVER A MENTOR OR EXEC MEMBER FIRST.**

1. **Open the Arduino IDE** on your computer. If it isn't installed yet, download the free version from arduino.cc/en/software.
2. **Connect the Arduino to your computer** with a USB cable.
3. **Choose your board and port.** In the IDE's Tools menu, pick the Arduino board from your kit under Board, then pick its port under Port.
4. **Open the Blink example.** Go to File → Examples → 01.Basics → Blink.
5. **Upload.** Click the Upload button (the right-pointing arrow). Wait for the IDE to say it's done.
6. **Watch the board.** The small built-in LED on the Arduino should blink: on for one second, then off for one second.

7. **Make it your own.** Find the two delay numbers in the code, change them, and upload again. Your LED will blink at a new speed. Congrats, you're programming!

Troubleshooting Checklist

If something isn't working, go through these in order:

- **Is the USB cable plugged in at both ends?** Try a different USB port on your computer.
- **Is the right board and port selected** in the Tools menu?
- **Did the upload finish** without error messages? Read any red text at the bottom of the IDE, and try uploading again.
- **Is everything seated firmly?** Wires and parts can pop loose on the breadboard.
- **Is your wiring correct?** Check the battery: red to VIN, black to GND.
- **Did you follow an example exactly?** Compare your code and wiring against it line by line.
- **Still stuck?** Look up your problem online (there are tutorials for almost everything) or ask a Mentor.

IF ANYTHING GETS HOT, DISCONNECT POWER RIGHT AWAY AND CALL OVER A MENTOR OR EXEC MEMBER.

Where to Get Help

- **Arduino workshop:** Saturday, 9:00–9:30 AM.
- **Mentors and Exec Members:** call one over any time you feel unsure or unsafe.
- **Your kit's inventory list:** see what each part is and what it's for.
- **Online tutorials:** search for your sensor, motor or idea. Someone has probably built it already.