Techshop EEE-201: Basic programming

In this class, you will learn how to use an Arduino in simple projects. We will cover programming and the simple electronic circuits needed to connect an Arduino to LEDs, switches and dials in order to control LED brightness and on/off state. THe three hours will switch between instruction, hands-on and some free time.

A PDF of the course material can be downloaded (*right-click Save Link As...*) in order to get yourself familiar with all the course content or a ZIP with all the course material including code can also be downloaded.

This is a fast track class for people who want to add simple automation to their projects. Example programs will be provided. You can cut and paste from the examples to start writing your own programs.

The class fee includes a breadboard, switch, LEDs and various electronic components.

Prerequisites: You must have an Arduino or Arudino compatible

board

This is Part 2 of the Arduino Electronics Series. Part 1 is building your first Arduino board although you can skip that class and just buy one if you like. Please bring the Arduino board you built in the Arduino Part 1 class and a laptop with the Arduino software and drivers pre-installed. The software may be downloaded online.

If you bring your own laptop, you **MUST** pre-download and install the Arduino software and drivers.

You must make arrangements for a computer before signing up for the class - either be able to bring a laptop, or call the shop for assistance.

Course Suppplies

- 1 x Educato board (or any Arduino compatible board) **you must bring your own**
- 1 x small breadboard will be provided
- 1 x RGB LED will be provided
- 3 x 330 ohm resistors will be provided
- 1 x normally open (NO) switch button will be provided
- 1 x 10K potentiometer will be provided

Chapter 1

Let's get started with Arduino! In this chapter we are going to cover the most basic parts of getting a sketch running; we'll be covering the following topics:

- `setup()` function

- `loop()` function
- The serial monitor and the `println()` function
- Using comments

Chapter 2

Our Arduino examples haven't actually done much yet, let's change that! In this chapter we will learn how to control the blinking of a small light emitting diode (LED); we'll be covering the following topics:

- blinking an LED with `digitalWrite()`
- variable type `byte`
- using a normally open (NO) switch
- using a potentiometer to adjust the brightness of the LED

Chapter 3

- Analog input
- Fading a LED with PWM
- variable type `int`
- `if` control structure

Appendix

This appendix will cover the basics of how a breadboards work, will get you familiar with using them and will cover some of the basics of circuit diagrams.