Arduino

What it is

Anatomy of an Arduino board

Anatomy of a Sketch

ANSIC and C++

What is an LED

How to use them

How to set a resistor for an LED

Anode / Cathode

Lab - Blink

Buttons and switches

Types of buttons and switches

Debouncing and Interrupts

Debugging with print statements

Lab – time a button press, time between button presses, try to see a button bounce. Time a print statement.

Transistors

What are they

MOSFET

Pull-down resistors

Lab – Mosfet to drive an LED

PWM

What is a potentiometer

Lab - Dimmer for LED using potentiometer

Soldering / protoboarding

Crimping / Molex / wiring

Motors

Types

Designing for

Steppers and stepper controllers

* Speed control without feedback controllers
* High torque without gearbox

Designette – micropump for microfluidic systems