



# Workshop Intro

Hi!



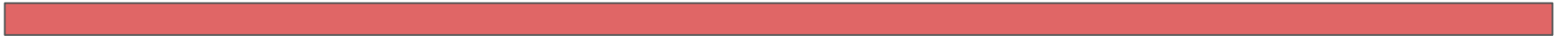
# What is a PCB and Why Should You Care?

## Printed **C**ircuit **B**oard

Connects electronic components on a single board

Examples: Inside your phone, computer, smart watch, etc

Take a prototype from breadboard to polished product!

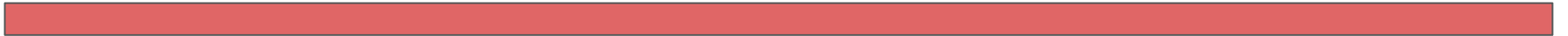




# Some terminology

**Schematic** - A **symbolic** representation of how electronic components will connect based on their input and output ports. **Logical** connections

**Layout** - Placing components where they will actually go on a board and connecting them with copper. **Physical** connections



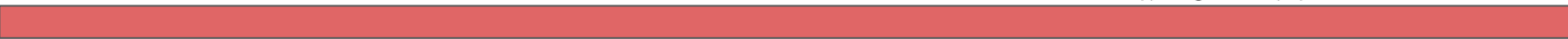
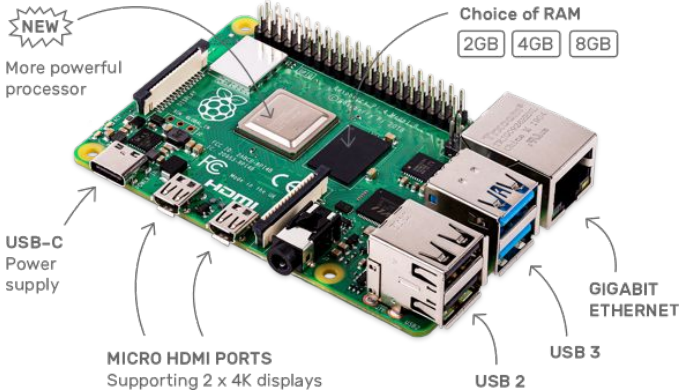


# Some PCBs You May Know

Arduino - PCB built around the ATmega microcontroller. Open source - you could make your own by the end of this seminar!

Raspberry Pi - an entire computer on one board!

Often PCBs are shielded and we don't see them directly, but they are in all of your electronics





# Workshop Overview

## Topics

- Intro to PCBs (this one)
- Intro to basic electronics
- Design planning
- Component selection and creation
- Schematic
- Layout
- Manufacturing
- Testing and Verification
- Advanced topics

## Labs

1. Soldering practice
2. Design pre-made PCB
3. Open-ended final design

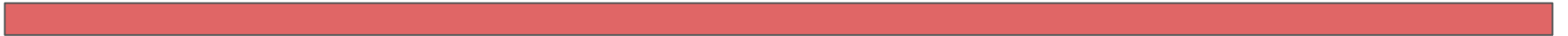


# Software

## Altium

Industry standard PCB design software

Free student licensing!

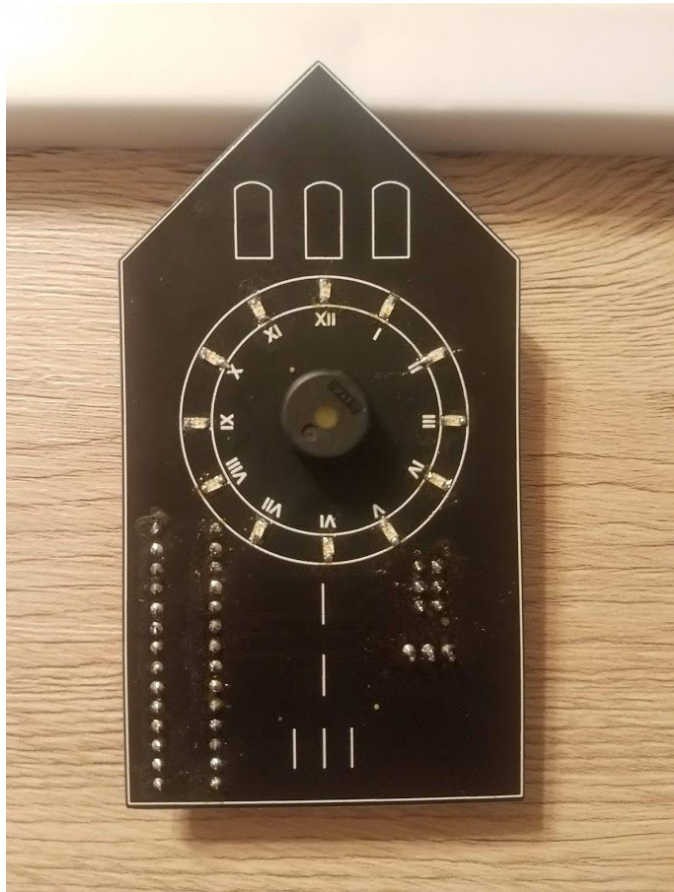




# 1st Project

Step by Step instructions on how to build clock tower PCB

Lights up and plays the Alma Mater!





# Final Project

Build your own board!

Examples

- DIY Arduino
- On-board game
  - Snake
  - Simon
- Business Card








# Check it out and consider enrolling!

[makerclub.ece.cornell.edu/pcb-seminar/](http://makerclub.ece.cornell.edu/pcb-seminar/)

VCC


GND



## PCB Design Seminar

7 week seminar  
Sep 14 - Nov 2

Sign ups & info here:



Virtual seminar to learn soldering, PCB design, manufacturing, and fabrication

Boards, tools, components all provided by CMC

Questions? Contact [cornellmakerclub@gmail.com](mailto:cornellmakerclub@gmail.com) or [keb278@cornell.edu](mailto:keb278@cornell.edu)