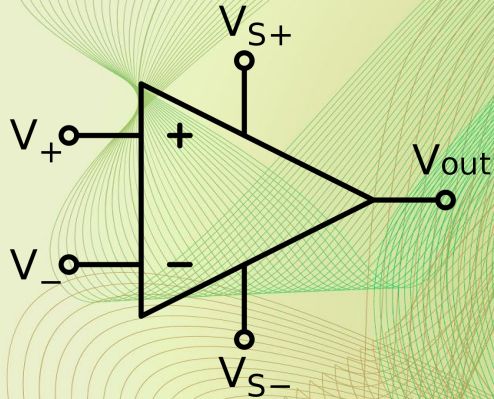# Introduction to Electronics
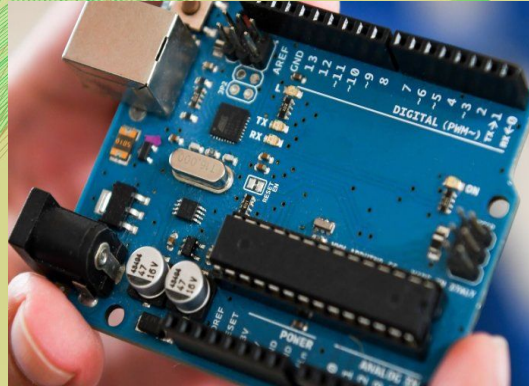## *For Robotics*

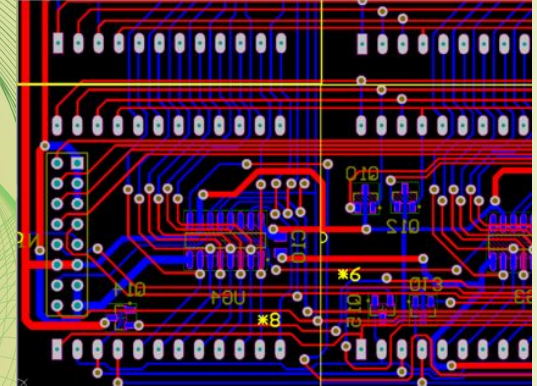Introduction to Robotics CTE
Lecture #1

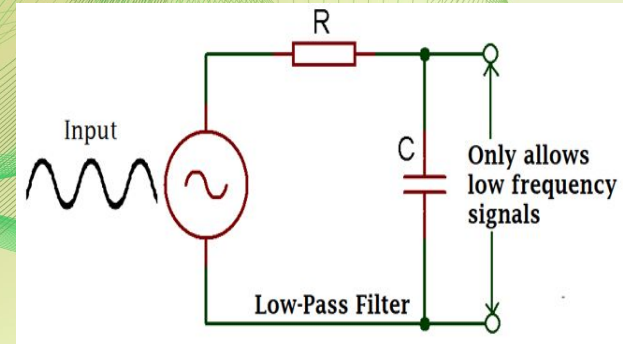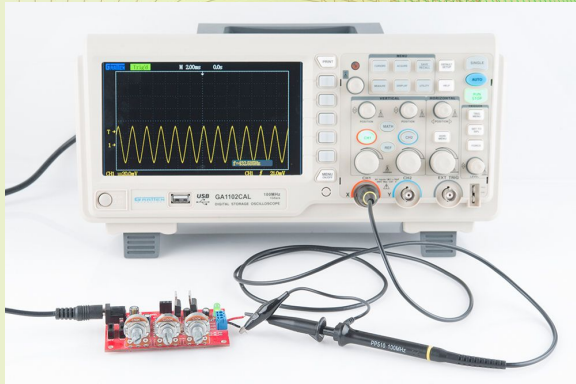# Main Areas

Analog Electronics

Digital Electronics and Microcontroller

PCB Design

Analog Electronics

- Electronic systems that involve continuous signals
- Comes up in sensors, audio, and radio applications
- Involves
    a. Operational Amplifiers
    b. Filters
    c. Transforms - Fourier, Laplace, etc.

Input

R

C

Only allows low frequency signals

Low-Pass Filter

Analog Electronics

Example: Heart Rate Monitor

Microcontroller Programming

- Computer on a single chip
- Includes CPU, IO pins, program memory, RAM, ADC etc.
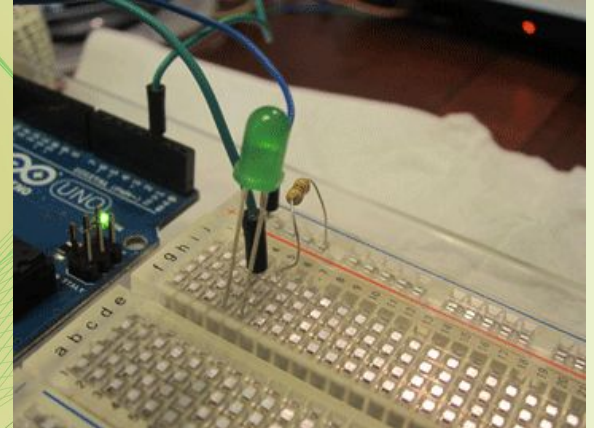- Most well known example: Arduino

Microcontroller Programming

Write code

Compile

Run on microcontroller

Microcontroller Programming

Example: Heart Rate Monitor

Tools we use

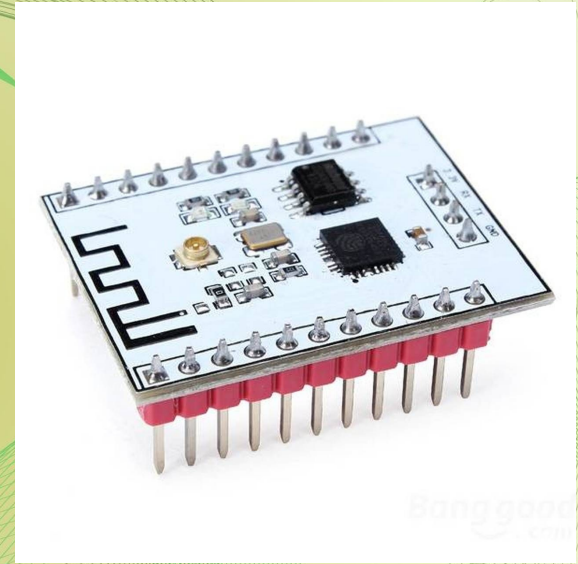Breadboard

Tools we use

PCB Designing Software
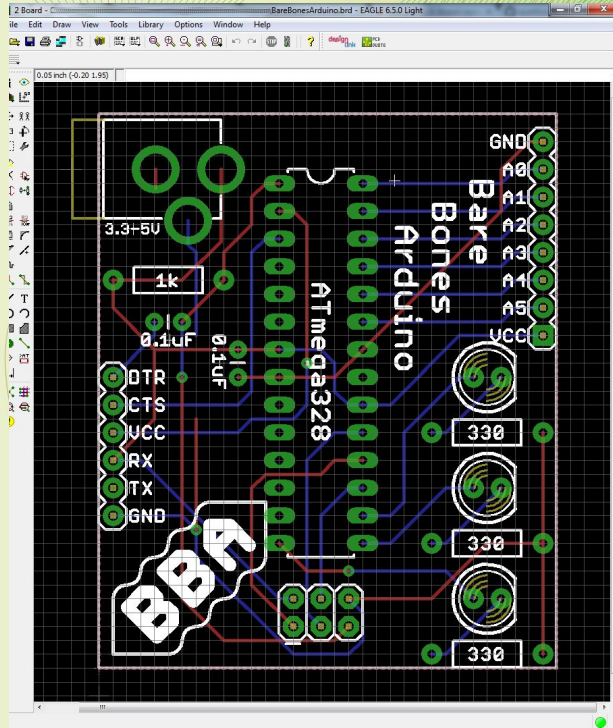
Other Areas

FPGAs

Radio Electronics

Where to start

1. Intro to Robotics CTE

2. ERC Mini Projects

3. ERC Workshops

Resources

1. QSTP Mechatronics 2020 Material

2. Jeremy Blum's Tutorials

3. https://www.learn-c.org/

Questions?