EECS 215 Lab
Introduction to Electronic Circuits

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Fall 2025

About Me

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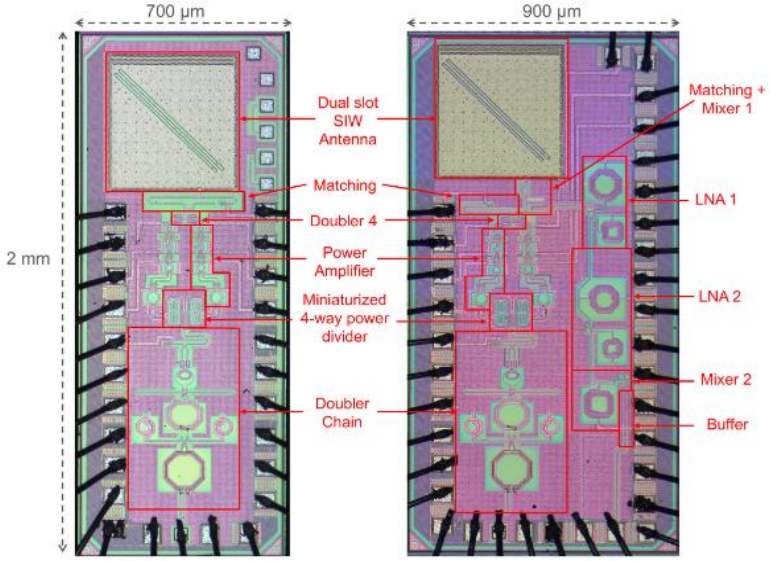
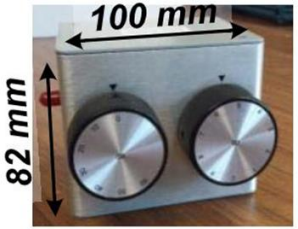
OH: Mondays and Tuesdays, 5-6pm – 1222A

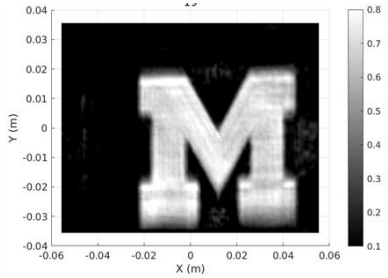
Come to the OH's if you have any questions about Lab or HWs.

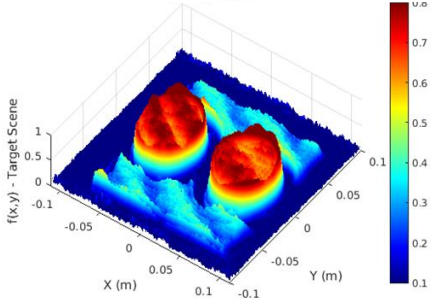
If you need any help, feel free to send me an email, we can have a zoom call.

About Me


700 µm
900 µm
2 mm
Dual slot SIW Antenna
Matching
Doubler 4
Power Amplifier
Miniaturized 4-way power divider
Doubler Chain
Matching + Mixer 1
LNA 1
LNA 2
Mixer 2
Buffer


100 mm
82 mm


Y (m)
X (m)


f(x,y) - Target Scene
X (m)
Y (m)

Course Policy

- We are asking all students to **not use GenAI tools to solve homework problems or complete the labs in 215.**
- Students who are found to have used GenAI to complete their assignments **will receive a grade of zero for that assignment**.

Late Policy

- Lab reports should be turned in on **Gradescope**.
- There is **no late policy for lab deliverables.**

Kit Checkout

- Labs will be done **individually**. They are designed to be completed during your scheduled lab section.
- Kits **will not** be assigned to take home.
- If you need more time to complete the lab, you can either attend my other sections or checkout a kit for a week.

What is this course about?

The most fundamental and the most important course in EECS

If you learn this, you are done with half of the way!

Lectures: Theory!

Labs: Building circuits, measuring and simulating them, kind of fun!

Do not hesitate to ask any question you may have!

What are we going to learn?

- How to implement circuit
- Passive elements like resistors, capacitors
- How to use op-amps
- How to use breadboard
- How to use wave generator and oscilloscope
- How to use multimeter to measure current, voltage and passive's size.
- How to simulate a circuit (we use LT-Spice)

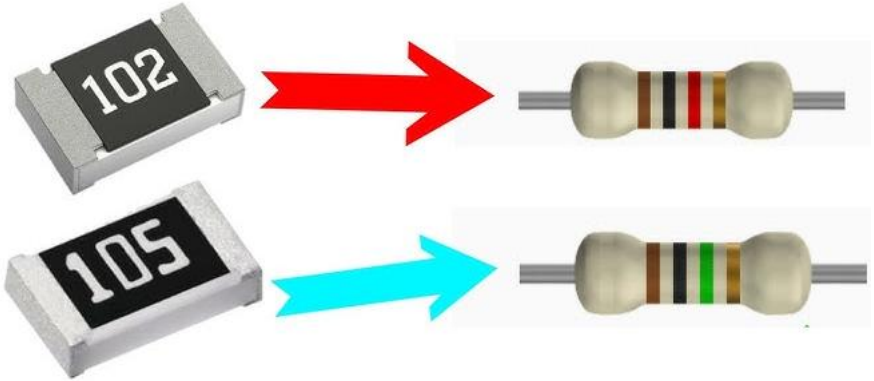
Circuit Parts

Resistor

Element in all of the circuits

Two terminals, does not have polarity, so does not matter how you connect that

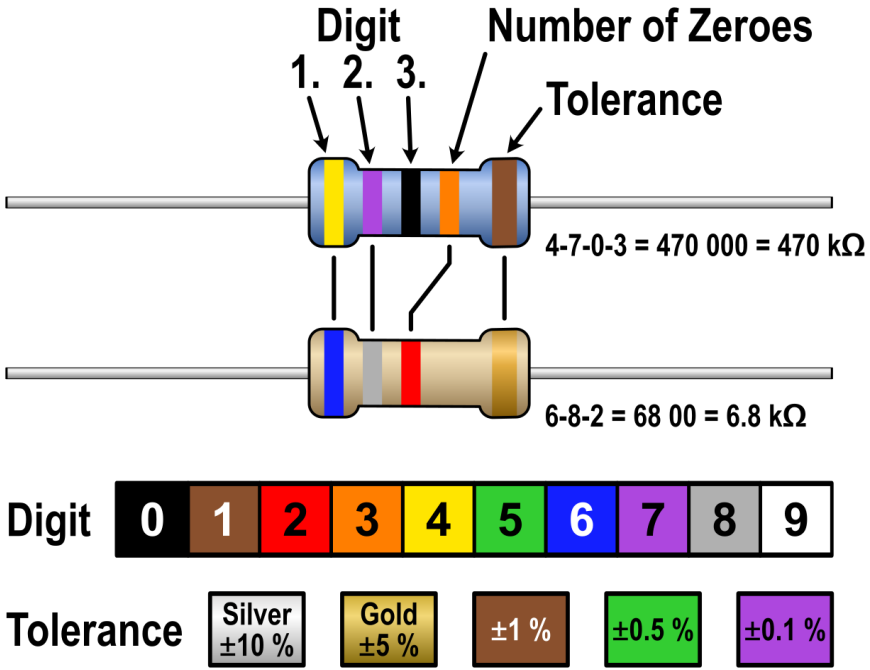
- **Through Hole**
- **Surface Mount (SMT)**



How to read the Resistor value

Use color code

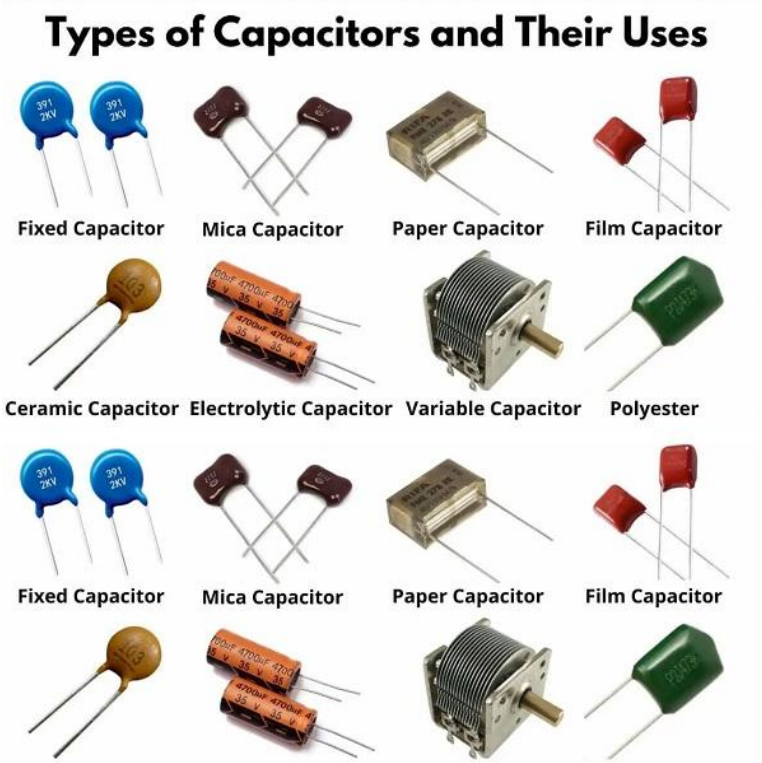
Color	Code	Color	Code
Black	0	Green	5
Brown	1	Blue	6
Red	2	Violet	7
Orange	3	Grey	8
Yellow	4	White	9



Capacitor

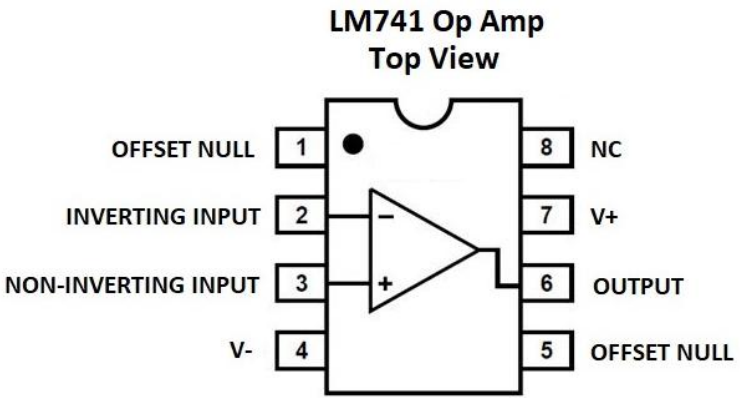
Store voltage

Polarity?



LM 741

It’s Operational Amplifier we call this op-amp in the course



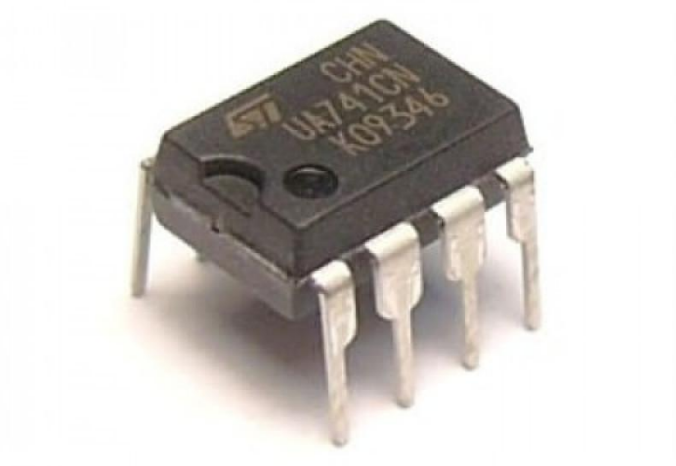
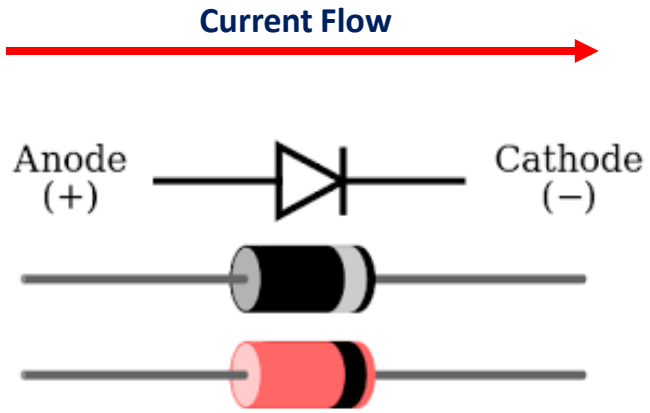
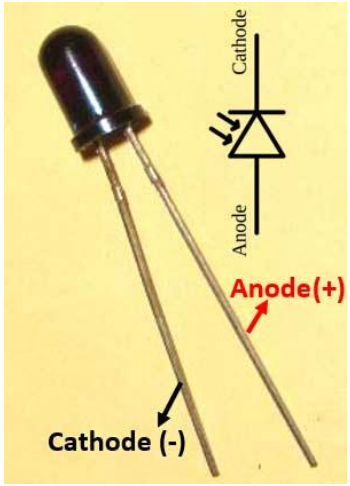
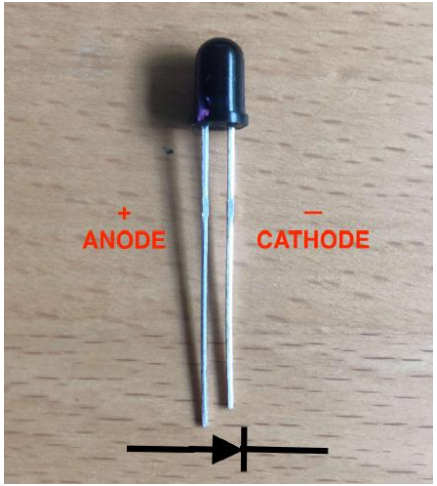


Photo Diode

Two terminal element which, when exposed to light a resistance would be changed







Measurement Devices

Multimeter

- Measures voltage
- Measures current
- Measures value of the resistor, capacitor

Wave-Generator

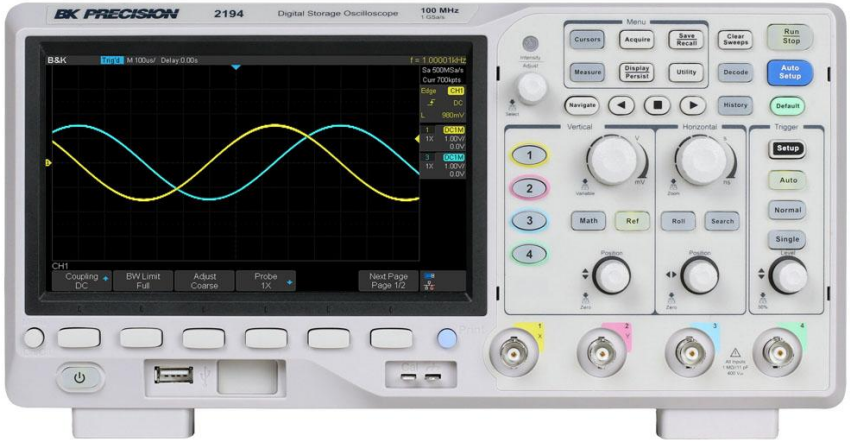
- Sinusoid
- Pulse
- DC
- Ramp
- Square-wave

Oscilloscope

It’s a measurement device

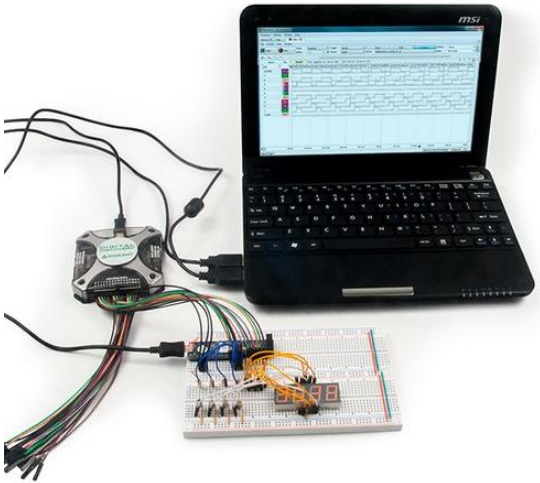
You can sense the voltage

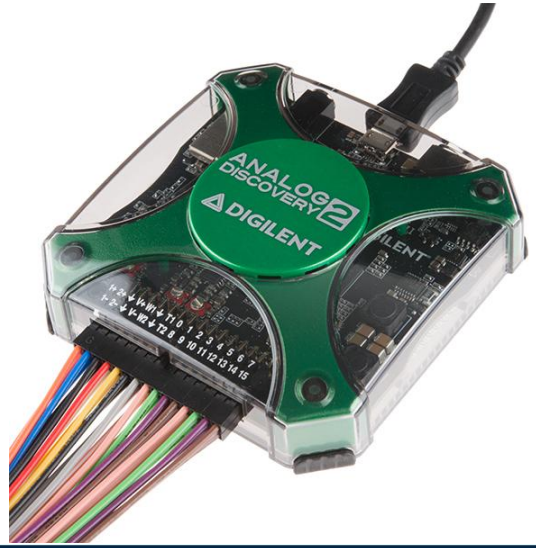
and show the waveform with this equipment



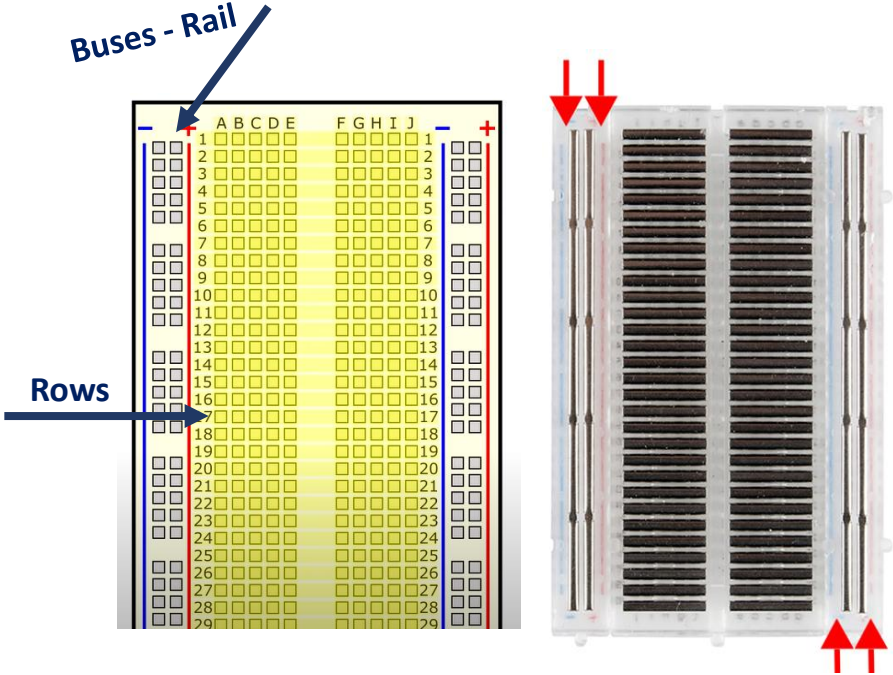
Discovery 2 Kit

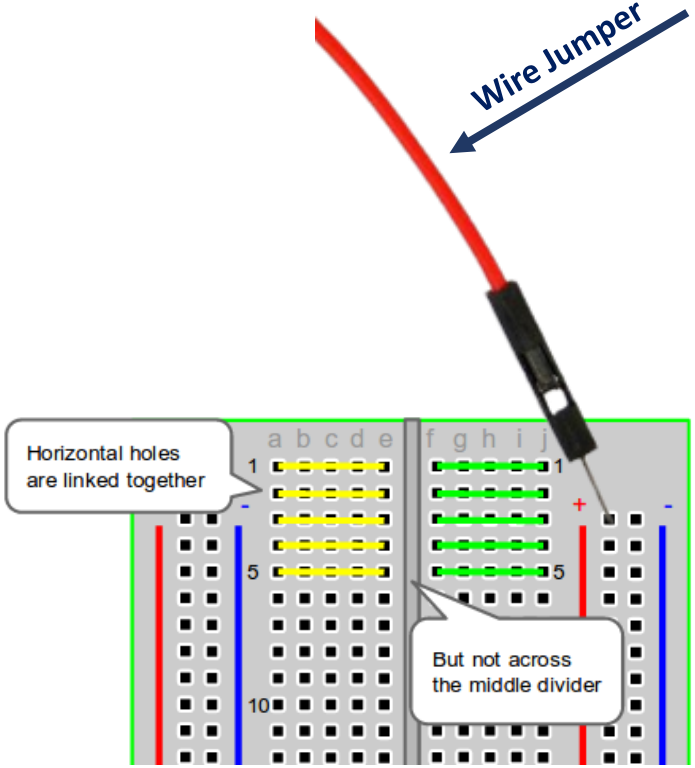
This kit has both oscilloscope and waveform generator inside!
So, we do not need to use them in this lab





Breadboard


Buses - Rail
Rows
A B C D E F G H I J

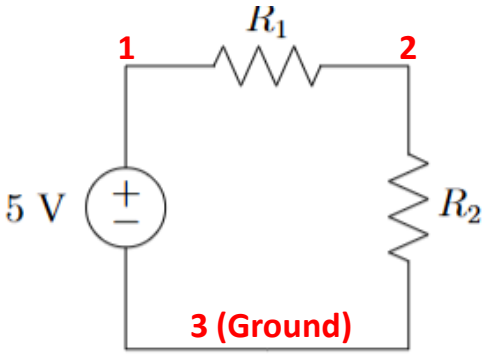

Wire Jumper
Horizontal holes are linked together
But not across the middle divider
a b c d e f g h i j
1
5
10

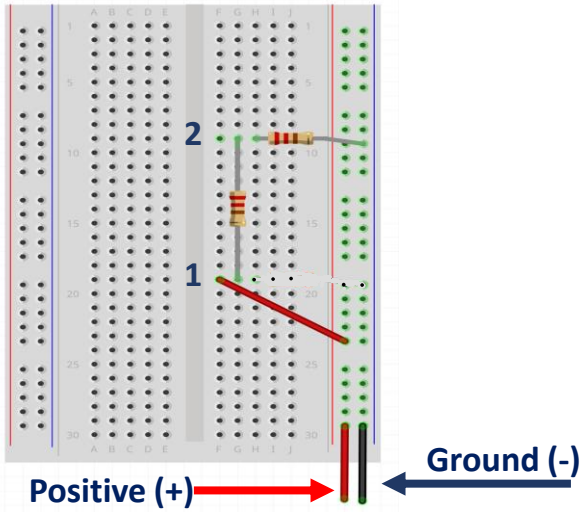
Implement Circuit with breadboard

Assume the negative node of the voltage source to the ground

Define one bus as positive and one bus as the negative (ground)

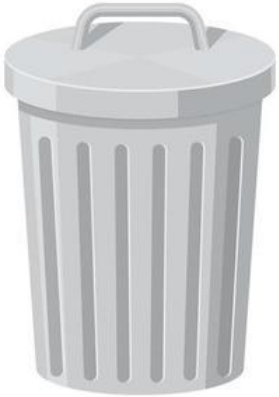
Start from one element and put other elements step-by-step





Lastly…please clean your work area!

- Pick up all wire insulation scrap → place in the waste bin.



This Session

- ✓ **Part 1: Running the Discovery2 kit in demo mode, in this part you do not need to connect the kit to your computer.**
- ✓ **Part 2: Implement Resistive Divider (You need the kit to be connected)**
- ✓ **Part 3: Implement Light Detector Sensor (You need the kit to be connected)**
  - **After each part, please show your work!**
- **NO submission for this week, first submission is for Lab 1**