# Capacitor -Virtual Lab

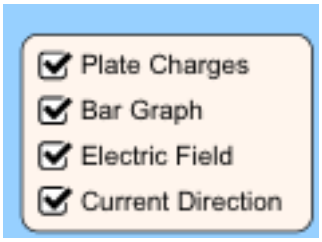
## Charging capacitor

## Method:

1. Open the simulation.

https://phet.colorado.edu/sims/html/capacitor-lab-basics/latest/capacitor-lab-basics_en.html

2. Click on capacitor.
3. Disconnect the capacitor.
4. Connect the capacitor across the battery.
5. All the parameters (plate charges, bar graph, electric field and current direction) must be selected as shown below



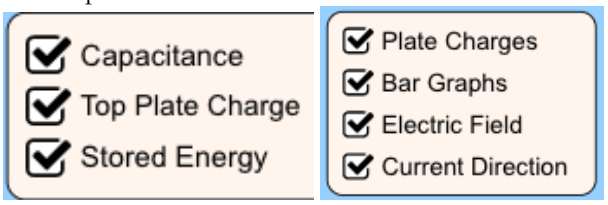

6. Connect the voltmeter across the capacitor and record your observations below:

| | What happens to the charge on the plates? | Charge on the upper plate | Charge on the lower plate | Direction of electric field | Potential difference across the capacitor | Capacitance |
|---|---|---|---|---|---|---|
| Increase the battery voltage to +1.5V. | | | | | | |
| Decrease the battery voltage to -1.5V. | | | | | | |
| Keep the battery voltage at 1.5 V and increase the plate area | | | | | | |
| Keep the battery voltage at 1.5 V and decrease the plate area | | | | | | |
| Keep the battery voltage at 1.5 V and decrease the separation | | | | | | |
| Keep the battery voltage at 1.5 V and decrease the separation | | | | | | |

# Discharging capacitor

## Method:

1. Click on the bulb from the bottom of the screen.
2. Make sure the capacitor is connected to the battery and its voltage is 1.5V.
3. Connect the voltmeter across the capacitor.
4. All the parameters must be selected as shown below:




5. Disconnect the charged capacitor from battery and connect it across the bulb and record your observations in the table below:

| **What happens to the following?** | **Increases/Decreases/stays constant** |
|---|---|
| Charge on the plates | |
| Potential difference across the capacitor | |
| Capacitance | |
| Energy stored in capacitor | |
| Glow of the bulb | |

## Conclusion:

1. How can we charge a capacitor?

2. How can we discharge a capacitor?

3. What are the ways to increasing the capacitance of a capacitor?

4. What would be the potential difference of the capacitor if it is connected to a battery of 3V?

5. On increasing the voltage of the battery what happens to the charge on the plates of the capacitor?