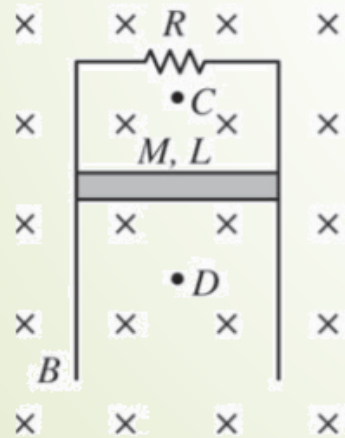


# AP Physics C: Electricity and Magnetism

$$\Phi_B = \int \vec{B} \cdot d\vec{A}$$

$$\mathcal{E} = \oint \vec{E} \cdot d\vec{\ell} = -\frac{d\Phi_B}{dt}$$



$$|\vec{F}_E| = \frac{1}{4\pi\epsilon_0} \left| \frac{q_1 q_2}{r^2} \right|$$

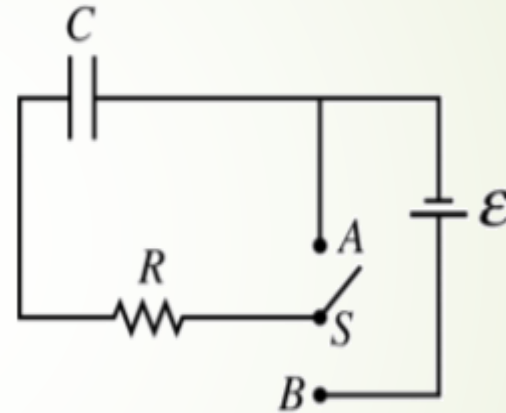
$$\vec{E} = \frac{\vec{F}_E}{q}$$

$$\oint \vec{E} \cdot d\vec{A} = \frac{Q}{\epsilon_0}$$

$$\oint \vec{B} \cdot d\vec{\ell} = \mu_0 I$$

$$d\vec{B} = \frac{\mu_0}{4\pi} \frac{I d\vec{\ell} \times \hat{r}}{r^2}$$

$$\vec{F} = \int I d\vec{\ell} \times \vec{B}$$

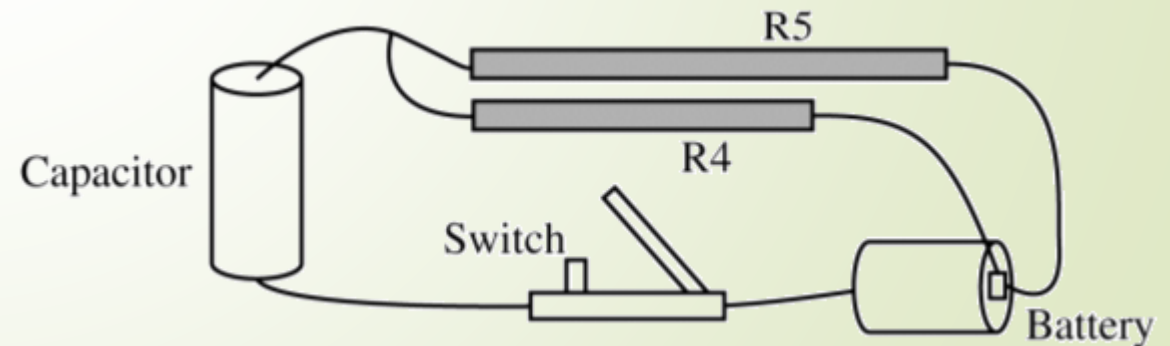


$$V = \frac{1}{4\pi\epsilon_0} \sum_i \frac{q_i}{r_i}$$

$$U_E = qV = \frac{1}{4\pi\epsilon_0} \frac{q_1 q_2}{r}$$

$$\Delta V = \frac{Q}{C}$$

$$C = \frac{\kappa\epsilon_0 A}{d}$$





# Overview

- AP Physics C is a continuation of concepts studied in AP Physics 1
- AP Physics C: Electricity and Magnetism includes concepts from the second semester of AP Physics 1 as well as concepts from AP Physics 2 (not offered at CHS)
- AP Physics C is **Calculus-Based**
- This is the highest-level Physics course offered in most public high schools, and subsequently it is among the most rigorous classes available
- Unlike AP Physics C: Mechanics, this class will introduce many concepts unfamiliar to the students, particularly towards the end of the year
- This class will be taken second semester and is preceded by Mechanics



# Prerequisites

- **Strongly Recommended**

- AP Physics 1
- AP Calculus BC (Or Taken Concurrently)

- **Recommended**

- AP Calculus AB

NOTE: If the student wants to take AP Physics C without taking Calculus BC or Physics 1, they are strongly encouraged to talk to Ms. Beldeanu and their counselor to discuss their commitment.



# Curriculum/Content

- Electrostatics
- Conductors
- **Capacitors**
- Electric Circuits
- **Magnetic Fields**
- **Electromagnetism**

**Bold denotes topics not covered in AP Physics 1**



# Why Take AP Physics C: E-Mag?

- Having AP Physics C if the student is applying as a STEM major is incredibly valuable in the eyes of college admissions officers
- Engineers and other STEM majors will be able to **exempt** their introductory Calculus-based college Physics course if they pass the AP exam; Georgia Tech is one of many that offer exemption for student that earn 5s (other colleges in GA accept 3,4 and 5's )
- The 5 rate for the AP Physics 1 exam lingers between 4 and 6 percent, while the 5 rate for AP Physics C: E-Mag is around **37 percent (CHS 88% of the students score 4 and 5's)**
- Although the course content is more difficult than AP Physics 1, those who choose to take it will not be harming their GPA as the class average is generally much higher than AP Physics 1
- Students looking to expand on the second semester of AP Physics 1 will have genuine interest in the material



For more information please  
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