

AP Physics C: Electricity and Magnetism

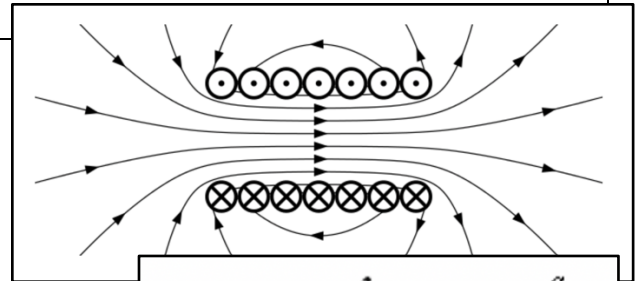
Collierville High School

Course Overview:

AP Physics C: Electricity and Magnetism is a one-semester, calculus-based, college-level physics course, especially appropriate for students planning to specialize or major in physical science or engineering. The course explores topics such as electrostatics; conductors, capacitors, and dielectrics; electric circuits; magnetic fields; and electromagnetism. Introductory differential and integral calculus is used throughout the course.

What makes this course interesting?

- Develop a deep understanding of foundational principles of physics in electricity and magnetism by applying these principles to complex physical situations that combine multiple aspects of physics rather than present concepts in isolation.
- Design and conduct inquiry-based laboratory investigations to solve problems through first-hand observations, data collection, analysis and interpretation.
- Develop critical thinking skills through applying methods of differential and integral calculus to formulate physical principles and solve complex physical problem.



$$\phi_{net} = \int_{surface} \mathbf{E} \cdot d\mathbf{A} = \sum \frac{q}{\epsilon_0}$$

$$\int_{surface} \mathbf{E} d\mathbf{A} = \sum \frac{q}{\epsilon_0}$$

$$E \int_{surface} d\mathbf{A} = \sum \frac{q}{\epsilon_0}$$

$$E(4\pi r^2) = \frac{Q}{\epsilon_0}$$

$$E = \frac{Q}{\epsilon_0 4\pi r^2}$$

$$E = \frac{1}{4\pi\epsilon_0} \left(\frac{Q}{r^2} \right)$$

$$E = \frac{kQ}{r^2}$$

AP Exam Fee: \$95

Prerequisites: AP Physics 1

Co-requisite: AP Calculus

