

Cold Spring Harbor High School
AP Physics C: Electricity and Magnetism
Course Syllabus

Text : *Physics for Scientists and Engineers*, 9th Edition Raymond A. Serway | John W. Jewett

Electricity and Magnetism

A. Electrostatics

1. Charge and Coulomb's law
2. Electric field and electric potential (including point charges)
3. Gauss's law
4. Fields and potentials of other charge distributions

B. Conductors, capacitors, dielectrics

1. Electrostatics with conductors
2. Capacitors
 - a. Capacitance
 - b. Parallel plate
 - c. Spherical and cylindrical
3. Dielectrics

C. Electric circuits

1. Current, resistance, power
2. Steady-state direct current circuits with batteries and resistors only
3. Capacitors in circuits
 - a. Steady state
 - b. Transients in rc circuits

D. Magnetic Fields

1. Forces on moving charges in magnetic fields
2. Forces on current-carrying wires in magnetic fields
3. Fields of long current-carrying wires
4. Biot–Savart law and Ampere's law

E. Electromagnetism

1. Electromagnetic induction (including Faraday's law and Lenz's law)
2. Inductance (including I_r and I_c circuits)
3. Maxwell's equations

All Students are required to take the AP Physics C Exam.