**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 lr and lc circuits)

3. Maxwell’s equations

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