AP Physics Electricity and Magnetism

                A. Electrostatics

                                1. Charge and Coulomb’s Law

                                2. Electric field and electric potential

                                3. Fields and potentials of other charge distributions

                                                a. Planar

                                                b. Spherical symmetry

                                                c. Cylindrical symmetry

                                4. Gauss’ Law

B. Conductors, Capacitors, Dielectrics

                                1. Electrostatics with conductors

                                2. Capacitors

                                                a. Parallel plate

                                                b. Spherical and cylindrical

                                3. Dielectrics

                C. Electric Circuits

                                1. Current, resistance, power

                                2. Direct current circuits with batteries and resistors

                                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. Field of long current-carrying wires

                                4. Biot-Savart and Ampere’s law

                E. Electromagnetism

                                1. Electromagnetic induction (including Faraday’s and Lenz’s laws)

                                2. Inductance (including LR and LC circuits)

                                3. Maxwell’s equations