

Physics

This course focuses on electromagnetism, which deals with electrostatics and simple electric circuits. Electrostatics: Electric charge. Conductors, insulators and induction. Coulomb's Law. The principle of superposition. Electric Fields: Field lines. Electric fields and conductors. Electric dipoles in an electric field. Gauss's Law: Electric flux, the relationship between flux and enclosed charge. Electric fields and conductors revisited. Electrostatic Potential: Potential energy of a charge and electrostatic potential. Potential of point and spherical distributions. Deriving electric fields from potentials. The potential energy of systems of charges and charge distributions. Capacitors and Dielectrics: Capacitors and capacitance. Combinations of capacitors in series and parallel. The energy stored in a capacitor. Dielectric materials. Resistance and Resistivity: Current and resistance. Current in a wire. Resistivity. Ohm's Law. Electric Circuits: Electromotive.