



Code	Subject Title	Cr. Hrs	Semester
PHY-211	Physics-III (Electricity & Magnetism)	3	III
Year	Discipline		
2	Chemistry-II, Mathematics-I, Statistics-I		

Electrostatics

Electric Charge; Conductors and Insulators; Vector form of coulomb's law.

Electric Field

Electric field of continuous charged distribution; Point charge in an electric field; Dipole in an electric field. Gauss's Law; Application of Gauss's Law (Integral Form).

Electric Potential

Calculating the field from the potential; Capacitors and dielectrics; Capacitor with dielectric.

Electric Current

Electric Current; Ohm's Law; Energy transfer in the electric circuit; Semiconductors; Super conductor.

DC Circuits

Calculating the current in a single loop, multiple loops; voltages at various elements of a loop; RC circuits.

Magnetism Magnetic Field Effects

Magnetic field, B. Magnetic force on a charged particle magnetic force on a charged particle magnetic force on a current; Torque on a current loop; Magnetic dipole.

Ampere's Law

Biot-Savart Law; Ampere's Law.

Faraday's Law of Electromagnetic Induction

Faraday's Law; Lenz's Law; Motional E.M.F. Induced electric fields.

Magnetic Properties of Matter

Gauss Law for Magnetism; Origin of Atomic and Nuclear magnetization; Magnetic Materials.

Inductance

Inductance; LR Circuits; Energy stored in magnetic field; Electromagnetic; Oscillation.

Alternating Current Circuits

Alternating Current; Single loop RLC circuit; Power in a.c. circuits; Transformer.

Maxwell's Equations

Summarizing the electromagnetic equation; Induced magnetic fields & displacement current; Maxwell's equations.

Electromagnetic Waves

Generating an electromagnetic wave; Traveling waves and Maxwell's equation; Energy transport and the Poynting Vector.

Electronics

Semiconductor materials; Junction diode; Transistor; Transistor, biasing; Transistor as an amplifier; Amplification with feedback; Oscillators; Logic Gates

Recommended Books:

1. Physics Vol. I & II (extended) by Resnick, Halliday and Karne, 4th and Sons Inc, New York.
2. Fundamentals of Physics by Halliday Resnick and Krane, John Wiley and Sons Inc, New York.

BS (4 Years) for Affiliated Colleges



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3. University Physics 8th Edition by Sears, Zemansky and Young, Addison – Wesley, Reading (MA), USA.
 4. Physics by Alonso and Finn; Addison-Wesley, Reading (MA) USA.
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