Semester-II		
Paper Code	**Theory**	**Credits:2**
203101	**Title: Electricity &Electromagnetism**	**30 L**
Unit 1	**Electricity**	**15 L**
	Electric forces and fields: The origin of electricity, charged objects and electric force, conductors and insulators, charging by contacts and induction, coulomb's law, Electric field, Electric field lines, The Electric field inside the conductor, Gauss's law, Copiers and computer printers, Concepts and calculations. Ref: PHY 18.1 to 18.11 ***Electric potential energy and electric potential*** Potential energy, Potential difference, Electric potential difference by point charges, Equi-potential surfaces, Capacitors and dielectrics, Biomedical applications. Ref: PHY 19.1 to 19.7 ***Electric Circuits:*** Electromotive forces and Current, Ohm's law, Resistance and resistivity, Electric power, Alternating current, Series wiring, Parallel wiring, Circuits wired partially in series and partially in parallel, Internal resistance, Kirchoff's rules, measurements of currents and voltage, Capacitors in series and parallel, RC circuits, Safety and physiological effects, Ref: PHY 20.1 to 20.15	

Unit 2	Electromagnetism	15 L
	Magnetic forces and fields: Magnetic fields, forces exerted by magnetic fields on moving charges, motion of charged particles in magnetic field, mass spectrometer, forces on current in magnetic field, torque on current carrying coil, magnetic field produced by current, Ampere's law, Magnetic materials. Ref: PHY 21.1 to 21.10 ***Electromagnetic Induction:*** Induced EMF and current, Motional EMF, Magnetic flux, Faradays laws of electromagnetic induction, Lenz's law, Application of electromagnetic induction, The Electric generator, Mutual inductance and self inductance, Transformers. Ref: PHY 22.1 to 22.10 ***Alternating currents:*** Capacitors and capacitive reactance, Inductors and inductive reactance, Circuits with L C R, Resonance in electric circuits, Semiconductors devices Ref: PHY 23.1 to 23.6.	

References:

Physics byCutnell and Johnson--- Wiley India Edition (5^{th} Edition). (PHY)

Additional References:

1. Fundamentals of physics by Alan Giambattista, betty McCarthy Richardson, Robert C Richardson- Tata McGraw Hill.
2. Physics: (Volumes I and II) H. C. Verma
3. Physics: (Volumes I and II) by Resnick, Halliday and Krane-Wiley India Edition (5^{th} Edition)