

Subject Code: 2SC1050302

Subject Title: Physics 302

COURSE OBJECTIVE:

Physics is a science to understand the nature. This course is designed to get basic understanding of the physical world.

LEARNING OUTCOMES:

- Develop an actual understanding of the Electrostatics in Dielectric and Magnetostatics.
- To know the basic concept of Electronics.
- Understand the Fourier series and Schrodinger Equations.

Teaching scheme (hours) per week		credit		Theory Marks		Practical Marks		Total
Theory	Practical	Theory	Practical	University Assessment	Cont. Assessment	University Assessment	Cont. Assessment	
3	--	3	--	70	30	--	--	100

A. Physics Theory:

Unit	Content	Lectures	Weight (%)
1	Electrostatics in Dielectric: Gaseous Non-Polar Dielectrics, Gaseous Polar Dielectrics, Non-Polar Liquids, Solid Dielectrics-Electrets. Magnetostatics: The Magnetic Potentials, Magnetic Vector Potential due to Small Current Loop, An alternative method for finding the Vector Potential A and the Field B due to Current Loop, Magnetization, Magnetic Field Vector, Magnetic Susceptibility and Permeability, Boundary conditions, Uniformly Magnetized Sphere in External Magnetic Field, A Comparison of Static Electric and Magnetic Fields.	15	34
2	Basic Transistors: (Review of Construction of Transistor) Transistor Current Component, Detailed Transistor Leakage Currents, (Collector to Base and Collector to Emitter Leakage Current, C-B configuration static (Input and Output) characteristics), Load Line, Operating Point. Transistor as a four pole, h-parameters with h-parameters equivalent circuit, Grounded Emitter Circuit - Mathematical analysis using h-parameters only, Comparative Study of three types of Amplifiers. Transistors Biasing and Stabilization: Bias Stabilization (Operating point stabilization), Stability factor, Stabilization by Collector Base Resistance, Stabilization by potential divider and Emitter resistor. Solid state Devices: JFET, UJT.	15	33

3	Co-ordinate Transformation: Curvilinear Coordinates, Scale factors and basis vectors for orthogonal systems Hand book of Electronics by Gupta & Kumar 30th Revised Edition, 2002 Pragati Prakashan 2. Electronics and Radio Engineering by M.L.Gupta (9th Edition-2002) DhanRaj & Sons. (For Ch-(9))ms Schrodinger Equations: A free particle in one dimension, Generalization to three dimensions, The operator correspondence and the Schrodinger equation for a particle subject to forces, Normalization and Probability Interpretation, Non-Normalizable Wave functions and Box Normalization.	15	33

Basic Reference book:

1. Electricity and Magnetism by Maharajan and Rangwala, THM
2. Electricity and Magnetism Berkeley Physics course Vol.-II by EDWARD M PURCELL, McGraw Hill Publication.
3. Electronic Devices and Circuits by A.Mottershead Prentice – Hall of India.
4. Integrated Electronics by Millman & Halkias
5. Basic Electronics and Linear Circuits by N.N.Bhargava, D.C.Kulshreshtha, S.C.Gupta.
6. Atomic Physics by Rajam (S. Chand New Delhi)
7. Quantum mechanics by Powell and Creaseman
8. Mathematical Physics by B.D.Gupta
9. Electronics and Radio Engineering by M.L.Gupta (9th Edition-2002) DhanRaj & Sons.
10. A textbook of oscillation, Waves and Acoustics by Dr.M.Ghosh and D Bhattacharya(S Chand)
11. waves and oscillation by N subramaniam, Brijlal
12. Hand book of Electronics by Gupta & Kumar 30th Revised Edition, 2002 Pragati Prakashan
13. Electronics and Radio Engineering by M.L.Gupta (9th Edition-2002) DhanRaj & Sons.