The Maharaja Sayajirao University of Baroda

Polytechnic

Department of Applied Physics

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Branch	1. Computer Engg. 2. Electronic & Communications	PAPER	50
Programme Part/Year	First Year (HPP PROGRAMME)	T.W. Incl. Viva (LAB)	50
Programme Part-Term/Semester	First Semester	Hours (LECT.)	2
Subject	Applied Physics	Hours (LAB)	2 / WEEK
Subject code	APH 3110 & APH 3111		

COURSE OUTCOMES

Upon successful learning in the course of APPLIED PHYSICS, the students will be able to;

1. Understand basic concepts of physics, related to system of units, scalar-Vector quantities and types of errors in measurement & its estimation.
2. Apply the Newton's laws of motion in engineering applications and understand the types of forces and energy in mechanics.
3. Understand the Concepts of electricity, magnetism and its applications.
4. Gain the knowledge of semiconductors, it's types and the application as a PN junction diode.
5. Basic knowledge of modern physics and its engineering application

UNIT - I	**Introductory Concepts** SI system of Units, Errors in measurement, Types of errors, Estimation of errors, Vectors and scalars quantities, Unit vector, resolution of vectors, scalar and vector products. law of parallelogram(qualitative only)	3	CO1
UNIT - II	**Mechanics** Concept of force, Newton's laws of motion, Uniform circular motion, centripetal force, concept of momentum and its conservation, angular displacement; velocity; angular momentum, torque, conservation of angular momentum Work and its units, concept of energy, kinetic and potential energy, work-energy theorem	6	CO2
UNIT - III	**Electricity and magnetism** Coulomb's law, electric Field, electric potential, application for single charge and dipole, Gauss' law and its applications, Concept of magnetic field, Ampere's circuital law and its applications(wire, solenoid, toroid), Lorentz force, Faradays law of electromagnetic induction, experiments, Lenz law, self and mutual induction	6	CO3
UNIT - IV	**Current Electricity** Electric current, Ohm's law, resistance, combination of resistances, resistivity, capacitors, parallel plate capacitor, energy stored in capacitor, energy dissipated in resistor, Kirchoff's laws, heating effect of electric current, Wheatstone bridge	5	CO3

UNIT - V	**Semiconductor Physics** Conductors, insulators and semiconductors, types of semiconductors, n-type and p-type semiconductors, p-n junction diode and its characteristics, types of diodes and their applications	4	CO4
UNIT - VI	**Modern Physics** Black-body radiation, Planck's constant, Photoelectric effect: Einstein's equation, application of photoelectric effect, X-rays their production, properties and applications, LASERS:-properties and applications, types of LASER, Fibre optics and its applications	4	CO5
	References		
1	Engg. Physics by R.K. Gaur and S.I. Gupta Published by Dhanpat Rai & Sons, Delhi.		
2	Physics, Vol 1 and 2 by Resnick, Halliday and Krane 5th Edition, Wiley Publishers		
3	Applied physics for diploma courses by G.G.Umrani, M.S.Pawar, and M.A. Sutar. Nirali Publication.		
4	Concepts of Physics by H.C.Verma, Bharati Bhawan Publishers,Volume 1 & II		