

Semester Lecture Plan

Name of the college: Government College of Arts, Science & Commerce, Sanquelim-Goa

Name of Faculty: Mahendra R. Pednekar

Subject: Physics Major

Paper code: PHY 206

Program/Course: S.Y. B.Sc.

Division:

Academic year: 2025 - 2026

Semester: III

Total Lectures: 45

Course Objectives:

This course provides a comprehensive overview of the learning outcomes for a course covering circuit analysis, inductance, DC and AC circuits, and the magnetic forces on moving charges and conductors. They serve as a guide for structuring lectures, laboratory work, and assessments in the course.

Course Learning Outcome: The students will be able to

1. Understand the basic principles of electric circuits.
2. Understand the behaviour and characteristics of inductors and analyze the role of inductance in electrical circuits.
3. Analyze the response of DC and AC circuits.
4. Understand the Lorentz force acting on a moving charged particle in a magnetic field.
5. Apply the right-hand rule to determine the direction of the force experienced by a current-carrying conductor in a magnetic field.
6. Understand the torque experienced by a current loop in a magnetic field.

Month	Lectures From: To:	No. of lectures allotted	Topic, Subtopic to be covered	ICT Tools	Reference books
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June	20/6/25	28/6/25	05	Circuit Analysis Steady current, concept of constant current source and constant voltage source, Maxwells cyclic current method for circuit analysis, Thevenin's theorem		
June/July	30/6/25	5/7/25	03	Practical : LCR series		
				Nortons theorem, Superposition theorem, Practical : LCR Parallel		
July	7/7/25	12/7/25	03	Maximum power transfer theorem. Inductance 10 Self-inductance, Self-inductance of two parallel wires carrying equal current in opposite directions,		
				Practical : TheveninTheorem		
July	14/7/25	19/7/25	03	Self-inductance of co-axial cables, Mutual inductance, Coefficient of coupling. Response of circuits containing L, C and R to DC 5 Growth and decay of current in L-R circuit,		
				Practical : LR circuit		
July	21/7/25	26/7/25	03	charging and discharging of capacitor in C-R circuit and in a series LCR circuit.		

July/August	28/7/25	2/8/25	03	Practical : Repeat 1		
August	4/8/25	9/8/25	03	A.C. circuits Content 5 8 A.C. applied to L-R and C-R circuits, Inductive and Capacitive reactance, Impedance and Admittance, the j operator,		
				Practical : CR charging discharging		
August	11/8/25	16/8/25	03	AC applied to L-C-R circuits, Series and Parallel resonance. AC applied to mutually coupled L-R circuits,		
				Practical : CR circuit		
August	18/8/25	23/8/25	03	Transformers. Force on a Moving Charge Magnetic induction B and magnetic intensity H,		
				Practical : Repeat 2		
September	2/9/25	6/9/25	03	Lorentz force law, Work done by a magnetic field on a moving charge, Force on a moving charge, Magnetic flux.		
				Practical : Magnetic sensor		

				Force on conductor carrying current 5 Force on a conductor carrying current in uniform magnetic field, rectangular current loop in external magnetic field,		
September	8/9/25	13/9/25	03	Practical : resistance of galvanometer		
	15/9/25		03	Dead beat galvanometer, Theory of Ballistic galvanometer. Torque on current loop 6 Torque on a current loop, Magnetic moment of a current loop,		
September		20/9/25		Practical : Magnetic field lines		
				Equivalence of current coil to a bar magnet, Magnetic moment of atomic dipole, Angular momentum and gyromagnetic ratio.		
September	22/9/25	27/9/25	03	Practical : Revision		
				Revision		
Sept/october	29/9/25	4/10/25	03	Practical Examination		
October	6/10/25	15/10/25	05	Problem solving	.	