

Lecture Plan		
Name of the college: Government College of Arts, Science and Commerce, Sanquelim – Goa.		
Name of Faculty: Ms. Anushka Panjekar	Subject: Physics	
Paper code: PHY-100 : Foundations of Physics	Program: FY BSc	Division: -
Academic year: 2026- 2027	Semester: I	Total Lectures: 45L + 30P
Course Objectives: This course aims at providing the fundamental concepts of Physics and correlating them to solve the real-world problems.		
Expected Course Outcome: Student will be able to 1. Recall the fundamental concepts of Physics for critical thinking & problem solving. 2. Understand the fundamental concepts to comprehend the physical phenomena happening around us. 3. Apply fundamental concepts of Physics to solve these problems. 4. Analyse the concepts in different scenarios.		
Student Learning Outcome: The course will enable students to understand fundamental principles of mechanics, properties of matter, heat, light, sound, electrostatics, magnetism, and modern physics, while applying these concepts to solve real-world problems and develop a strong foundation for advanced studies in physics.		

Month	Lecture From	Lecture To	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
JUNE	19-06-26	20-06-26	0				
JUNE	22/06/26	27/06/26	3L + 2P	1. Introduction 2. Standards and units 3. Vectors Practical 1	Group discussion	Powerpoint presentation	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015.
JUNE, JULY	29/06/26	04/07/26	3L + 2P	1. vectors: Triangle law, parallelogram law 2. components of vector, Force	Group discussion	Powerpoint presentation	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Fracis W. Sears and Mark W. Zemansky,

				3. Newton's Laws of motion. Mass and Weight. Practical 2			Hugh D. Young, University Physics,
JULY	06/07/26	11/07/26	2L + 2P	1. Motion with constant acceleration, freely falling body 2. Problem solving Practical 3	MCQ Quiz	Powerpoint presentation	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Fracis W. Sears and Mark W. Zemansky, Hugh D. Young, University Physics, 6th ed., Narosa Publishing House, 1997.
JULY	13/07/26	18/07/26	3L + 2P	1. Frictional force, Newtons law of Gravitation. 2. Work done by constant and varying force. 3. Work and kinetic energy, gravitational potential energy, conservative and	MCQ Quiz	Powerpoint presentation	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Fracis W. Sears and Mark W. Zemansky, Hugh D. Young, University Physics, 6th ed., Narosa Publishing House, 1997.

				dissipative forces			
				Practical 4			
JULY	20/07/26	25/07/26	3L + 2P	1. Impulse and momentum, Conservation of momentum. 2. Collisions 3. Rotation: Angular velocity, angular acceleration, Torque Practical 5	Group discussion	Powerpoint presentation	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Fracis W. Sears and Mark W. Zemansky, Hugh D. Young, University Physics, 6th ed., Narosa Publishing House, 1997.
JULY, AUGUST	27/07/26	01/08/26	3L + 2P	1. moment of inertia 2. Angular momentum, conservation of angular momentum. 3. Properties of Matter: Elasticity. Practical 6	Group discussion	Powerpoint presentation	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Fracis W. Sears and Mark W. Zemansky, Hugh D. Young, University Physics, 6th ed., Narosa Publishing House, 1997.
AUGUST	03/08/26	08/08/26	3L + 2P	1. Surface tension. ISA 1 SUBMISSION	MCQ Quiz	Powerpoint presentation	P. G. Hewitt, Conceptual physics,

				2. pressure difference across a surface film, contact angle and capillarity. 3. Viscosity: Equation of Continuity, Bernoulli's equation			12th ed., Pearson, 2015. Fracis W. Sears and Mark W. Zemansky, Hugh D. Young, University Physics, 6th ed., Narosa Publishing House, 1997.
AUGUST	10/08/26	15/08/26	3L + 0P	1. Viscosity, Poiseuille's law, Stokes law, Reynolds number. 2. Heat: Concept of temperature, thermometers, temperature scale, Thermal expansion, thermal stresses, 3. heat transfer, Quantity of heat Heat capacity, change of phase Practical - HOLIDAY	MCQ Quiz	Powerpoint presentation	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Fracis W. Sears and Mark W. Zemansky, Hugh D. Young, University Physics, 6th ed., Narosa Publishing House, 1997.
AUGUST	17/08/26	22/08/26	4L + 2P	1. conduction, convection,	MCQ Quiz	Powerpoint presentation	P. G. Hewitt, Conceptual physics,

				radiation, Stefan's Boltzmann law. 2. Light: The nature, Sources, speed, em spectrum, waves, wavefronts and rays, 3. reflection and refraction Total internal reflection, 4. Huygens' principle, dispersion, Interference and coherent sources, interference fringe, Young's double slit experiment Practical 7 (pn diode) Practical 8 (plotting of graphs)			12th ed., Pearson, 2015. Fracis W. Sears and Mark W. Zemansky, Hugh D. Young, University Physics, 6th ed., Narosa Publishing House, 1997.
SEPTEMBER	24/08/26	29/08/26	2L + 2P	1. Newtons rings, Fresnel diffraction, Fraunhofer diffraction by	MCQ Quiz	Powerpoint presentation	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015.

				single slit, the plane diffraction grating, resolving power of an optical instrument. 2. Polarisation-Malus law, polarisers, Brewster's law Practical 9 (Helmholtz + Stefan Boltzmann law)			Frasis W. Sears and Mark W. Zemansky, Hugh D. Young, University Physics, 6th ed., Narosa Publishing House, 1997.
SEPTEMBER	31/08/26	5/09/26	3L + 2P	1. Sound and Acoustics Noises and Musical sounds, Loudness, Decibel, intensity of a sound. 2. Acoustics- acoustic powers of different sources of sound, pitch, quality of sound, Architectural acoustics, reverberation, acoustical demands on an auditorium, reverberation time	MCQ Quiz	Powerpoint presentation	D. R. Khanna and R. S. Bedi, A Textbook of Sound, Atma Ram and Sons, 1992 N. Subramanyam, Brij Lal, A textbook of Sound, Second Edition, Vikas Publishing House Pvt. Ltd., 2016.

				Practical 10 (Helmholtz + Stefan Boltzmann)			
SEPTEMBER	7/09/26	12/09/26	3L + 2P	1. ISA II WRITTEN 2. Electric charge, Coulomb's law, conductors and insulators, electric field, electric field lines 3. Gauss's law Electric field potential, current, resistance. Practical Revision	MCQ Quiz	Powerpoint presentation	N. Subramanyam, Brij Lal, A textbook of Sound, Second Edition, Vikas Publishing House Pvt. Ltd., 2016. P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015.
SEPTEMBER	21/09/26	26/09/26	3L + 2P	1. electromotive force. magnetic field, magnetic field lines 2. magnetic dipoles 3. Electromagnetic induction, Faradays' law, Lenzs' law.	MCQ Quiz	Powerpoint presentation	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Fracis W. Sears and Mark W. Zemansky, Hugh D. Young, University Physics, 6th ed., Narosa

				Practicals Revision			Publishing House, 1997.
SEPTEMBER, OCTOBER	28/09/26	03/10/26	3L + 2P	1. Modern physics: Dual nature of light, de Broglie waves 2. uncertainty principle 3. Bohr atom, Bohr's postulates Practicals : Revision	MCQ Quiz	Powerpoint presentation	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. David Halliday, Robert Resnick, Jearl Walker, Fundamentals of Physics, Extended Fifth edition, Wiley publication, 1987.
OCTOBER	05/10/26	10/10/26	3L + 2P	1. ISA III 2. Semiconductors: Intrinsic semiconductors, doping a semiconductor, p-type and n-type semiconductor, 3. Unbiased diode, depletion layer,	MCQ Quiz	Powerpoint presentation	A. Beiser, Concepts of Modern Physics, 6th ed., McGraw-Hill, 2003

				Forward bias, and reverse bias. Practical EXAM			
OCTOBER	12/10/26	14/10/26	3L + 2P	1. Revision 2. REVISION 3. REVISION PRACTICAL EXAM	Test		

Assessment Rubrics

Component	Max Marks
ISA 1 Assignment	7.5
ISA 2 Written Test	7.5
ISA 3 Presentation	7.5
Practical	25
Semester End Exam	60

