Lecture Plan

Name of the college: Government College of Arts, Science and Commerce, Sanquelim – Goa.

Name of Faculty: Ms. Anushka Panjikar	**Subject:** Physics	
Paper code: PHY-100 : Foundations of Physics	**Program:** FY BSc	**Division: -**
Academic year: 2025- 2026	**Semester: II**	**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
DEC	01-12-25	06-12-25	3L+2P	**Practical 1**			
DEC	08/12/25	13/12/25	3L + 2P	1. Introduction, Standards and units, Vectors, vector addition 2. Components of vector, Force, Newton's Laws of motion. Mass and Weight. 3. Motion under constant acceleration (derivation), Free fall, problems **Practical 2**	Group discussion	Powerpoint presentation	University Physics

DECEMBER	15/12/25	23/12/25	3L	TARANG 1) Frictional force: frictional force acting on a block moving on the flat surface and inclined surface 2) Newton's law of Gravitation, Work 3) Work done by varying force, work and kinetic energy, gravitational potential energy, conservative and dissipative forces.	Group discussion	Powerpoint presentation	Fracis W. Sears and Mark W. Zemansky, Hugh D. Young, University Physics,
DECEMBER	24/12/25	01/01/26	0	CHRISTMAS VACATION			

JANUARY	02/01/26	03/01/26	2P	**Practical 3**			
JANUARY	05/01/26	10/01/26	3L + 2P	1. Impulse and momentum, Conservation of momentum. 2. Collisions, problems 3. Rotation: Angular velocity, angular acceleration, Torque, moment of inertia **Practical 4**	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.
JAN	12/01/26	17/01/26	3L + 2P	1. Angular momentum, conservation of angular momentum. **ISA 1**	Group discussion	Powerpoint presentation	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015.

				2. Properties of Matter: Elasticity. 3. Surface Tension **Practical 5**			Fracis W. Sears and Mark W. Zemansky, Hugh D. Young, University Physics, 6th ed., Narosa Publishing House, 1997.
JAN	19/01/26	24/01/26	3L + 2P	1. Equation of Continuity, 2. Bernoulli's equation 3. Viscosity, Poiseuille's law, Stokes law, Reynolds number. **Practical 6**	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.
JAN	26/01/26	31/01/26	2L + 2P	1. Heat: Concept of temperature, thermometers, temperature scale, Thermal expansion, thermal stresses 2. Heat transfer, Quantity of heat Heat capacity, change of phase	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.

				Practical 7			
FEB	2/02/26	7/02/26	3L + 2P	1. conduction, convection, radiation, Stefan's Boltzmann law. 2. Light: The nature, Sources, speed, em spectrum, waves, wavefronts and rays, reflection and refraction 3. Total internal reflection **Practical 8**	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.
FEB	09/02/26	14/02/26	3L + 2P	**1. ISA 2 – WRITTEN TEST** 2. Huygens' principle, dispersion. Interference, Newtons rings, Diffraction: resolving power of an optical instrument.	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.

				3. Polarisation-Malus law, polarisers, Brewster's law, double refraction, optical activity. **Practical 9**			
FEB	16/02/26	21/02/26	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 3. problems **Practical 10**	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.
FEB	23/02/26	28/02/26	3L + 2P	1. Electric charge, Coulomb's law,	MCQ Quiz	Powerpoint presentation	N. Subramanyam, Brij Lal, A textbook of

				conductors and insulators, electric field, electric field lines 2. Gauss's law 3. Electric field potential, current, resistance. emf **Practical Revision**			Sound, Second Edition, Vikas Publishing House Pvt. Ltd., 2016. P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015.
MARCH	2/03/26	7/03/26	3L + 2P	1. magnetic field, magnetic field lines, magnetic dipoles 2. Electromagnetic induction, Faradays' law, Lenzs' law. 3. problems **Practicals Revision**	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.
MARCH	9/03/26	14/03/26	3L + 2P	**1. ISA 3 – WRITTEN TEST** 2. Dual nature of light, de Broglie waves, uncertainty principle.	MCQ Quiz	Powerpoint presentation	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. David Halliday, Robert Resnick, Jearl

				3. Bohr atom, Bohr's postulates. **Practicals Revision**			Walker, Fundamentals of Physics, Extended Fifth edition, Wiley publication,1987.
MARCH	16/03/26	21/03/26	3L + 2P	1. Semiconductors: Intrinsic semiconductors, doping a semiconductor, p-type and n- type semiconductor, 2. unbiased diode, depletion layer, Forward bias, and reverse bias. 3. revision **Practical REVISION**	MCQ Quiz	Powerpoint presentation	A. Beiser, Concepts of Modern Physics, 6th ed., McGraw-Hill, 2003
MARCH	23/03/26	31/03/26	5L + 2P	1. Revision 2. REVISION	Test		

				3. REVISION 4. REVISION 5. REVISION **PRACTICAL EXAM**			

Assessment Rubrics

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