FIRST SEMESTER 2015-2016

Course Handout Part II

Date: 03.08.2015

In addition to part-I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

Course No. : PHY F112

Course Title : **General Physics**

Instructor-in-charge: Kaushar Vaidya

Scope and Objective of the Course

The objective of this course is to give a general overview of the fundamentals of basic Physics. The course will broadly cover the following topics: Mechanics, Waves, Oscillation, Optics, and Special Relativity.

Textbook

- **Fundamentals of Physics** (Eighth Edition) *Halliday, Resnick & Walker*, John Wiley & Sons.

Reference Books

- **Principles of Physics** (3rd edition), *R.A. Serway and J.W. Jewett*, Thomson Brooks/Cole
- **Sears & Zemansky's University Physics** (11th edition) *H.D. Young and R.A. Freedman*, Pearson Education (LPE).

Course Plan

Lecture Number	Learning objective	Topics to be covered	References/Chapters
1-2 (2)	Basic Applications of Newton's Laws	Newton's Laws, Friction, Drag force, Uniform Circular Motion	5.2-5.8, 6.1-6.4
3-5 (3)	Energy and Work	Kinetic and Potential Energy, Work, Conservation of Energy	7.1-7.7, 8.1-8.7
6-8 (3)	Newton's Laws for the Systems of Particles	Center of Mass, Linear Momentum, Conservation of Linear Momentum, Systems with Varying Mass	9.1-9.8
9-11 (3)	Rotation	Rotation, Rotational Variables, Torque, Work and Rotational Kinetic Energy	10.1-10.10
12-14(3)	Rotational Dynamics	Rolling, Kinetic Energy of Rolling, Angular	11.1-11.12

		Momentum	
15-17(3)	Simple Harmonic Motion	Simple Harmonic Motions, the force law for SHM , Energy in SHM, Angular SHM	15.1-15.9
18-24 (7)	Waves	Waves & particles, Transverse and Longitudinal Waves, Wave Equation, Superposition of Waves, Standing Waves, Resonance, Sound Waves, Interference, Beats	16.1-16.13; 17.1-17.10
25-29 (5)	Interference	Light as a wave, Young's interference, intensity in double-slit experiment	35.1-35.8
30-34 (5)	Diffraction	Diffraction in single and double-slit. Diffraction grating, dispersions and resolving power, X-ray diffraction	36.1-36.10
35-40 (6)	Special Relativity	Postulates, The Relativity of Simultaneity, Time, and Length, Lorentz Transformation, Doppler Effect for Light	37.1-37.11

Evaluation Scheme:

EC No.	Evaluation component	Duration	Weightage	Date & time	Nature of Component
1	Tutorials	15-20 min.	30 %	TBA	Closed Book
3	Mid-term	1.5 hour	30 %	<test_1>	Closed Book
4	Comp exam	3 hour	40 %	<test_C>	Closed/Open Book

Chamber consultation Hours To be announced in the class.

Notices: Notices and solutions will be displayed only on the Physics notice board.

Make-up policy: Make up will be granted ONLY on a case-by-case basis and for serious medical emergencies only.

Instructor-In-Charge, PHY F112

Instructor-in-charge

PHY F112