



# Birla Institute of Technology & Science, Pilani

Hyderabad Campus

## INSTRUCTION DIVISION FIRST SEMESTER 2016 - 2017 Course Handout Part II

Date: 01.08.2016

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** : B. Harihara Venkataraman

### 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: Oscillations, Waves and Optics.

### Textbook

- **Fundamentals of Physics** *Halliday, Resnick & Walker*, John Wiley & Sons.

### Reference Books

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

### Course Plan

Lecture Number	Learning objective	Topics to be covered	References /Chapters
1 - 5	Oscillations	Simple harmonic motion, Damped simple harmonic motion, Forced oscillations and resonance	16
6 - 10	Waves	Speed, Energy and Power of a wave, Principle of super position, Beats	17 and 18.7
11 - 17	Optics - Interference	Wave nature of light, Interference, Young's interference experiment, Coherence, Double slit interference, Michelson's interferometer	36



18 - 22	Diffraction	Diffraction and wave theory of light, Single slit, Double slit diffraction, Grating, Dispersion, Resolving power, X – ray diffraction	37
23 - 27	Polarization	Electromagnetic spectrum, Polarization, Reflection and refraction, Total internal reflection, Polarization by reflection	34.6 – 34.9
28 - 30	Photons and matter waves	Quantum of light, Photo electric effect, Matter waves, Schrödinger wave equation, Heisenberg's uncertainty principle	39
31 - 42	Atoms, molecules and solids	Electron spin, Angular and magnetic dipole moments, Stern – Gerlach experiment, Magnetic resonance, Pauli exclusion principle, X – rays and the numbering of elements, Lasers, Insulators, Metals, Semiconductors, Electrical properties of solids	41.1 – 41.7, 41.10 42.1 – 42.6

### Evaluation Scheme

EC No.	Evaluation component	Duration	Weightage	Date & time	Nature of component
1	Test 1	1 hour	20 %	10 - 9 - 2016 (2.30 - 3.30PM)	Closed Book
2	Test 2	1 hour	20 %	22 - 10 - 2016 (2.30 - 3.30PM)	Closed Book
3	Assignment		20 %		Open Book
4	Compre exam	3 hours	40 %	12 - 12 - 2016 (FN)	Closed 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 for serious medical emergencies.

**Instructor-in-charge  
PHY F112**

