

Physics Laboratory
(Common to all branches)

<i>Course Type : General Institute Requirement (GIR)</i>	<i>Pre-requisites: Nil</i>
<i>Course Code: PHIR12</i>	<i>No. of Credits: 02</i>

Course Objectives

- 1. To introduce the spirit of experiments to verify physics concepts such as reflection, refraction, diffraction and interference on light matter interaction.*
- 2. To perform experiments to estimate the materials properties and to check their suitability in science and engineering.*
- 3. To familiarize physics concepts and to design instruments and experimental set up for better and accurate measurements.*
- 4. To teach and apply knowledge to measure and verify the values of certain constants in physics.*
- 5. To perform experiments in electricity, magnetism and mechanics to understand their applications.*

LABORATORY

1. Determination of rigidity modulus of a metallic wire
2. Conversion of galvanometer into ammeter and voltmeter
3. Wavelength of laser using diffraction grating
4. Dispersive power of a prism – Spectrometer
5. Radius of curvature of lens-Newton's Rings
6. Numerical aperture of an optical fiber
7. Field along the axis of a Circular coil
8. Wavelengths of white light – Spectrometer
9. Calibration of Voltmeter – Potentiometer
10. Thickness of a thin wire – Air Wedge
11. Specific rotation of a liquid – Half Shade Polarimeter
12. Photoelectric effect – Planck's constant

References

1. *Physics Laboratory Manual, Department of Physics, National Institute of Technology Tiruchirappalli (2018).*
2. *Practical Physics, R.K. Shukla, Anchal Srivastava, New age international (2011).*
3. *B.Sc. Practical Physics, C.L Arora, S. Chand & Co. (2012).*

Course Outcomes

On completion of this course, the students will be able to:

1. *calibrate and operate voltmeter, ammeter, potentiometer and galvanometer.*
2. *demonstrate the principle of dispersion, diffraction, interference and polarization using optical instruments like spectrometer, travelling microscope and polarimeter.*
3. *design experimental setup in order to verify concepts of wave and particle nature of light.*
4. *explain the principle of light propagation in fibers and light matter interaction using lasers and conventional light sources.*
5. *acquire knowledge of electricity, magnetism and mechanics to estimate the fundamental constants in Physics.*

Laboratory <i>PHIR12</i>		Aligned Programme Outcomes (PO) with level of correlation Programme Outcomes (COs)											
Course Outcomes(Cos)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
	CO1	H	-	-	H	M	-	-	-	-	M	-	M
	CO2	H	-	-	H	M	-	-	-	-	M	-	M
	CO3	M	H	H	H	-	-	-	-	-	M	-	M
	CO4	H	-	M	H	H	-	H	-	-	M	-	M
	CO5	H	M	-	H	-	-	H	-	-	M	-	M