

1.	Title of the course	Applied Optics and Material Physics Laboratory
2.	Course number	PH301P
3.	Structure of credits (L-T-P-C)	0-0-3-2
4.	New course/modification to	New
5.	To be offered by	Physics
6.	Proposed by	Reetesh Kumar Gangwar
7.	Prerequisite	None
8.	Course Objective(s): To explain basic experimental techniques for measuring various physical quantities in optics and solid state physics. To explain data interpretation, graphical presentation and error analysis.	
9.	Course Content: Diffraction of light by single and double slit; Two slit interference: one photon at a time, Michelson's interferometer; Fabry-Perot interferometer; Studies of emission spectroscopy of inter gases; Black body radiation; Photoelectric effect; Laser cavity characteristics; Fibre optics : single and multi-mode fibre; Faraday rotation: a magneto optical effect; Zeeman effect; Kerr effect: quadratic electro-optic effect; Magnetic susceptibility: Quincke's method; Spin-lattice relaxation time using NMR spectrometer; g-value using ESR spectrometer; Carrier concentration using Hall measurement in metals; Structural characterisation using powder X-ray diffraction.	
10.	Textbook(s): 1. Bevington R P and Robinson K D, Data Reduction and Error Analysis for the Physical Sciences, 3rd Edition, McGraw-Hill Education (2015).	
11.	Reference(s): 1. Lipson S G, Optics Experiments and Demonstrations for Student Laboratories, IOP Series in Emerging Technologies in Optics and Photonics (2020). 2. Mahamuni S, Sidhaye D and Kulkarni S, Foundations of Experimental Physics, CRC Press (2020).	