

Course Type	Course Code	Name of Course	L	T	P	Credit
DP	NPHC513	Experimental Physics IV	0	0	3	1.5

Course Objective

- To familiarize students with fundamental experiments of optics and spectroscopy;
- To increase observational and analytical power of students.

Learning Outcomes

- Students will learn:
- Basic physics of working mechanism of each experiment.
- Some techniques to determine few physical parameters and constants, and how to correlate them with the physical phenomena.
- To enhance experimental capability.

Exp. Number	Tentative Title of Experiments	Tentative No. of classes
1	To study the Zeeman Effect and calculate the line separation	2*3
2	To study of e/m ratio using Millikan's oil drop experiment	2*3
3	To determine separation between the double slit using Young's diffraction method	1*3
4	To study the Hydrogen spectrum and hence determine the Rydberg's constant	2*3
5	To learn and record the absorption and emission spectra using CCD spectrometer and then to verify Beer Lambert law from absorption spectra	1*3
6	Study of Thermoluminescence of F-Centre in Alkali Halides	2*3
7	For a given X-ray diffraction (XRD) spectrum calculate: (a) Index the XRD spectrum (b) Determine lattice constants (c) Identify the Bravais Lattice and draw the crystal structure. (d) For full width at half maxima (FWHM) = 2.38 nm, determine the crystallite size (given: $\lambda = 1.5405 \text{ \AA}$) for the most prominent XRD peak of given spectra.	2*3
8	To Study Thermoelectric Effect and to measure inversion temperature, neutral temperature and Seebeck Coefficient	2*3
Total (Tentatively 42 hours)		14*3

References:

- 1 An Advanced Course in Practical Physics by D. Chattopadhyay, P. C. Rakshit; New Central Book Agency (P) Ltd., 2007 (8e)
- 2 A Textbook of Advanced Practical Physics by S. K. Ghosh; New Central, 2000 (4e)
- 3 Advanced Practical Physics, V - I and II, by Chauhan and Singh; Pragati Prakashan