

Semester 5 Major
Course- 353P
Major Course – 4 Credits

Semester: 5	Course No.: 353(P)	Course Code: PHM 353(P) Course Title: Physics lab
Credits: 4	1 Session = 2 hour	Course Category: Major Paper

The course objectives for physics lab generally focus on developing practical skills in measurement, experimentation, and understanding of fundamental concepts in optical physics and electronic circuits.

Key objectives include:

Understanding and applying principles of optics through hands-on experiments such as measuring physical quantities, optical phenomena and verifying theoretical laws.

Gaining proficiency with electronic instrumentation and optical instruments like Michelson interferometer, Giger muller counter, Electromagnets, digital multimeter, AFO, CRO etc.

Understand how to connect basic electronic circuits including amplifier. Oscillator, power supply etc.

Developing the ability to interpret experimental data, analyse errors, and relate practical observations to theoretical physics concepts.

Learning to operate and maintain physics laboratory equipment used in mechanics and electronics

Course Outcomes:

On successful completion of the course, learners will be able to.

CO	COURSE OUTCOME	BLOOMS VERB
CO1	Set up the instruments as per the instructions, Connect the circuit as given in the circuit diagram.	Remember Understand
CO2	Develop measurements techniques, record observations, use the given formula, do calculations and draw your conclusion from the result..	Understand Apply
CO3	Find uncertainty involved in the observations	Evaluate
CO4	Analyse the observations for scientific inference	Analyse

Unit No.	Unit Contents	Sessions Allotted
1	GROUP-A 1. Determine the acceleration due to gravity using Kater's pendulum (fixed knife edges). 2. Determination of viscosity of liquid by Log Decrement method. 3. Study of Hall Effect and determine Hall coefficient. 4. Determination of Mutual Inductance of two coils using Ballistic Galvanometer. 5. Determination of capacitance using Schering Bridge. 6. Determination of Curie temperature of given ferroelectric material. 7. Refractive index by total internal reflection using Gauss eye piece. 8. Study of characteristics of G. M. Tube. 9. To determine the polarizability of a polar liquid using Hollow prism. 10. Study of Hysteresis B-H loop of Ferromagnetic Material. Determine the area of B-H loop (energy loss) drawn using Excel software.	60 Hours
2	GROUP B 1. Determination of thickness of air film and wavelength of monochromatic light using Fabry-Perot Etalon. 2. To determine the wavelength of monochromatic light using Michelson Interferometer. 3. Determine the frequency response curve and Bandwidth of CE amplifier. 4. Study of Lissajous figures and measurement of frequency and phase difference using CRO. 5. Determination of unknown frequency using Wein Bridge.	60 Hours

6. Heaviside Mutual Inductance Bridge. 7. Self Inductance of coil by Rayleigh's method. 8. Measurement of frequency by CRO using Hartley Oscillator. 9. Study of series resonance by varying frequency and determine the resonance frequency, band width and Q factor. 10. Study of parallel resonance by varying frequency and determine the resonance frequency, band width and Q factor.	
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Suggested Text Books:

1. Sc. Practical Physics by C. L. Arora, 20th Edition, 2020 S. Chand and Company
2. Practical Physics by G. L. Squires. 4th edition, Cambridge, 2001.
3. Practical Physics with viva – voce Dr. S. L. Gupta and Dr. V. Kumar, 22nd edition, 1997 Pragati Prakashan