

1.	Title of the course	Mechanics, Electricity and Magnetism Laboratory
2.	Course number	PH203P
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 introduce basic experimental techniques for measuring various physical quantities in mechanics, electricity, magnetism and thermodynamics. To discuss data interpretation, graphical presentation and error analysis.	
9.	Course Content: Basic understanding of error analysis, significant figures, histogram and graph plotting, curve fitting; Pohl's pendulum: damped and forced oscillation; Coupled pendulum: determine the pendulum's characteristic frequency in various modes; Determination of moment of inertia of various bodies; Torsional vibrations and shear modulus; Acoustic Doppler effect; Study the resonances and radial distribution of the acoustic radiation from a tuning fork; Determine mass to charge ratio of electron by Millikan oil drop experiment; Biot-Savart law; Magnetic moment in the magnetic field; Probing the phase transition using thermal gravity analysis and differential scanning calorimetry; Heat capacity of metals; Understanding the magnetic properties using ferromagnetic hysteresis; Magnetic susceptibility using Gouy's balance.	
10.	Textbook(s): 1. Melissinos C A and Napolitano J, Experiments in Modern Physics, 2nd Edition, Academic Press (2003). 2. Taylor R J, An Introduction to Error Analysis: The Study of Uncertainties in Physical Measurements, 2nd Edition, University Science Books (1997).	
11.	Reference(s): 1. Beiser A, Mahajan S and Choudhury S, Concepts of Modern Physics, 7th Edition, McGraw-Hill Education (2017). 2. Feynman R, Leighton R and Sands M, The Feynman Lectures on Physics - Vol. I, II & III, Millenium Edition (2012).	