	National Institute of Technology Meghalaya An Institute of National Importance	**CURRICULUM**

Programme	**Bachelor of Technology**		Year of Implementation						**2024-2025**
Department	**Physics**		Semester						**I/II**
Course Code	Course Name	Pre-Requisite	Credit Structure				Marks Distribution		
			L	T	P	C	Continuous Assessment		Total
PH 151	**Engineering Physics Laboratory**	----------	**0**	**0**	**2**	**1**	**01 Experiment**	**10**	**100**

		CO's	**Statement**	**Bloom's Taxonomy**
Course Objectives	To understand the fundamentals of electromagnetism	Course Outcomes	PH151.1	Able to gain the **knowledge** of electromagnetism **applied** to Engineering	Understanding Applying
	To understand various concepts of Optical phenomena in Physics and Engineering		PH151.2	Able to gain the **knowledge** about Geometrical and Physical Optics	Understanding
	To understand the fundamentals of General Physics		PH151.3	Able to **understand** the concepts of General Physics and its **applications**	Understanding Applying
	To understand the fundamentals of Semiconductor Physics		PH 151.4	Able to gain the **knowledge** of Semiconductor Physics and its **applications**	Understanding Applying

COs	Mapping with Program Outcomes (POs)											Mapping with PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
PH 151.1	**3**	**2**													
PH 151.2	**3**	**2**													
PH 151.3	**3**	**2**													
PH 151.4	**3**	**2**													
PH 151	**3**	**2**													

SYLLABUS

S. No.	Title of the Experiment	Hours	COs
I	To verify inverse square law (using a point source of light)	**02**	**PH 151.1**
II	To verify Coulomb's Law of force between two electric poles	**02**	
III	To determine the variation of magnetic field along the axis of the current carrying coil	**02**	
IV	To find resonance frequency in series and parallel LCR circuit	**02**	
V	To find the refractive index of prism by measuring angle of prism and angle of minimum deviation	**03**	**PH 151.2**
VI	Determination of wavelength of monochromatic light (LASER) using Fresnel Biprism	**02**	
VII	To determine the wavelength of sodium light by measuring the diameters of Newton's rings	**03**	
VIII	To determine the wavelength of LASER using Diffraction grating	**02**	
IX	To find the refractive index of a glass plate & water by using a travelling microscope	**02**	
X	To determine frequency of A.C. Mains using sonometer	**03**	**PH 151.3**
XI	To determine the Young's modulus of elasticity of the material of a sample beam by bending	**02**	
XII	I-V characteristic curve of a P-N junction in forward bias and reverse bias	**02**	**PH 151.4**
XIII	Half-wave rectifier circuit without and with filter (HWR)	**02**	
XIV	Evaluation and Viva of all experiments	**03**	**PH 151.1, PH 151.2, PH 151.3, PH 151.4**
XV	Laboratory written test	**01**	**PH 151.1, PH 151.2, PH 151.3, PH 151.4**
	Total Hours (for any 10 experiments from Sl. No. I to XIII)	**27**	

Essential Readings

1. R. A. Serway and J. W. Jewett, "Physics for Scientists and Engineers with Modern Physics", CENGAGE Learning Custom Publishing, 10th edition, 2017.

2. Paul G. Hewitt, "Conceptual Physics", Pearson, 13th edition, 2022.

3.D. J. Griffiths, "Introduction to Electrodynamics", Prentice-Hall of India, 5th Edition, 2023

4.A. Ghatak, "Optics", Tata McGraw-Hill, 7th Edition, 2020

Supplementary Readings

1. D. Kleppner, and R. J. Kolenkow, "An Introduction to Mechanics", Cambridge University Press, 2nd Edition, 2021.

2. R. Eisberg, and R. Resnick, "Quantum Physics of Atoms, Molecules, Solids, Nuclei and Particles", Wiley, 2nd Edition, 2006