

ENGINEERING PHYSICS LAB

I B. Tech: ECE, EEE, CSIT, IT, AERO, MECH

Course Code:	Category	Hours / Week			Credits	Maximum Marks		
A5BS10	BSC	L	T	P	C	CIA	SEE	Total
		0	0	3	1.5	30	70	100
Contact Classes: 0	Tutorial Classes: 0	Practical Classes: 39			Total Classes: 39			

Course Objectives:

The course should enable the students to:

1. To provide an experimental foundation for the theoretical concepts introduced in the lectures
2. To teach how to make careful experimental observations and how to think about and draw conclusions from such data
3. To help students understand the role of direct observation in physics and to distinguish between inferences based on theory and the outcomes of experiments
4. To introduce the concepts and techniques which have a wide application in experimental science but have not been introduced in the standard courses
5. To teach how to write a technical report this communicates scientific information in a clear and concise manner

Course Outcomes:

By the end of the course students will be able:

- 1. Analyze** the electric properties of semiconductor materials by determining energy gap of semiconductors, threshold voltage of LEDs and efficiency issues of solar cell with careful experimental and draw conclusions from such data
- 2. Evaluate** the mechanical properties of a given material using dynamic method in torsional pendulum and analyze how stationary waves are produced to determine A.C frequency using Melde's experiment
- 3. Estimate** the optical properties of light such as interference and polarization by using Newton's rings, calculation of the wavelength of Laser using diffraction phenomenon and to determine acceptance angle, NA of optical fiber
- 4. Analyze** the electromagnetic properties in a current carrying conductor using Stewart Gee's experiment

LIST OF EXPERIMENTS

Experiment-1	Energy gap of P-N junction diode: To determine the energy gap of a semiconductor diode
Experiment-2	Solar Cell: To study the V-I and P-I characteristics of solar cell
Experiment-3	Light Emitting Diode: Plot V-I characteristics of light emitting diode Plot V-I characteristics of light emitting diode

Experiment-4	Plank's Constant: To determine value of plank's constant using by measuring radiation in fixed spectral range
Experiment-5	Melde's Experiment: To determine the frequency of a tuning fork by using Melde's experiment
Experiment-6	Optical fiber: To determine the numerical aperture and acceptance angle of an optical fiber
Experiment-7	LASER: To determine the wavelength of a given laser source by using diffraction grating method
Experiment-8	Malus Law: To Verify the cosine law by using polarization phenomenon of light.
Experiment-9	Newton's rings: To determine the radius of curvature of a given Planoconvex lens by forming Newton's rings
Experiment-10	Torsional Pendulum: To determine the rigidity modulus of a given metal wire by using Torsional pendulum
Experiment-11	PIN Photo Diode To study the V-I Characteristics of Photo Diode by calculating the photo current.
Experiment-12	Stewart Gee's experiment: To study the variation of magnetic field along the axis of a circular coil
Reference Books:	
<ol style="list-style-type: none"> 1. "Semiconductor Physics and Devices: Basic Principles" by Donald A Neamen 2. "Optics, Principles and Applications" by K K Sharma. 3. "Principles of Optics" by M Born and E Wolf. 4. "Oscillations and Waves" by Satya Prakash and Vinay Dua 5. "Waves and Oscillations" by N Subrahmanyam and Brij Lal 	
Web References:	
<ol style="list-style-type: none"> 1. http://www.arxiv.org/pdf/1510.00032 2. http://www.nptel.ac.in/courses/122103010/ 3. http://www.researchgate.net/.../276417736_Video_Presentations_in_Engineering-Ph... 4. http://www.wileyindia.com/engineering-physics-theory-and-practical.html 	