

## APPLIED PHYSICS LAB

**I B. Tech: ECE-II Semester**

**L T P C**

**Course Code: A3HS08**

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### Course Overview:

Applied physics laboratory course includes the experimental methods for the determination of the mechanical property (Rigidity modulus of a given material), frequency of an AC Signal, basic electronic circuits (LED, RC, LCR circuits), and to study characteristics of LASERS & Optical fiber (LASER wavelength, divergence, Numerical aperture of fiber, Losses in fibers) and Polarisation of light. And also about study of Hall effect, Planck's constant. This interdisciplinary knowledge is designed for the continuous innovation occurring with technology.

### Course Objectives:

- I. Describe the rigidity modulus of given wire by using Torsional pendulum.
- II. Study of LED and SOLAR CELL characteristics
- III. Understanding the propagation of laser light and how it is used for communication in Optical Communication network
- IV. Learn how to calculate energy gap of given semiconductor
- V. Explain the magnetic field along axis of current carrying coil
- VI. Describe the phenomenon of interference.

### Course Outcomes:

Up on successful completion of this course, student will be able to:

1. Remember the property of elastic materials and modulus.
2. Understanding of characteristics of LED and SOLAR CELL.
3. Analyzing of energy gap of semiconductor.
4. Analyzing the wavelength of laser source using diffraction grating.
5. Explaining the magnetic field along the axis of a current carrying coil by using Stewart & Gee's apparatus.
6. Understanding numerical aperture of optical fiber.
7. Explaining the interference phenomenon by using Newton's ring apparatus

### List of Experiments:

**(Any 12 experiments compulsory)**

1. Study of V-I characteristics of an LED
2. Determination of numerical aperture – optical Fibers.
3. Study of V-I characteristics of Solar Cell
4. Determination of Energy gap of a given Semiconductor material
5. Determination of rigidity modulus of the material of a given wire-Torsional Pendulum
6. Determination of wavelength of given laser source by using diffraction grating
7. Study of variation of magnetic field along a circular current carrying conductor – Stewart & Gee apparatus.
8. Determine the radius of curvature of given convex lens by forming Newton's rings
9. Study the Charging and discharging of a capacitor
10. Determine the frequency of AC using Melde's Experiment
11. To calibrate a thermistor using a thermometer and using the calibrated thermistor as temperature sensor find the melting point of a given chemical compound
12. To measure the value of Planck's constant 'h'
13. To study Hall effect in extrinsic semiconducting samples and

- determine the type of Semiconductor
14. To study the polarization of light, to verify Malus law

**LABORATORY MANUAL:**

1. Laboratory Manual of Engineering Physics by Dr.Y.Aparna & Dr.K.Venkateswara Rao (V.G.S Publishers)
2. Solar photovoltaics – Technology Fundamentals system: A manual for Technics, Trainers & Engineers 2013