ENGINEERING PHYSICS LABORATORY

I I Semester: AE / CE / ME

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
AHS105	**Foundation**	-	-	3	2	30	70	100
Contact Classes: Nil	**Tutorial Classes: Nil**	**Practical Classes: 45**				**Total Classes: 45**		

OBJECTIVES:
The course should enable the students to:
I. Upgrade practical knowledge in optics.
II. Analyze the behavior and characteristics of various materials for its optimum utilization..
III. Enrich the knowledge of electric and magnetic properties.

COURSE LEARNING OUTCOMES (CLOs):
The students should enable to:
1. Ddetermine the thickness of a wire and radius of a disc using screw gauge and vernier calipers.
2. Determination of rigidity modulus of the material of given wire using a torsional pendulum .
3. Magnetic field along the axis of current carrying coil-Stewart and Gee's method.
4. Determination of frequency of a given tuning fork in longitudinal mode.
5. Determination of frequency of a given tuning fork in transverse mode.
6. To determine the wavelength of given source of laser using a plane transmission grating..
7. To study about spectrometer and to adjust spectrometer in minimum deviation position.
8. Determination of the dispersive power the material of the given prism.
9. Determination of radius of curvature of a given plano-convex lens.
10. To determine the numerical aperture of a given optical fiber..
11. Studying V-I characteristics of LED.
12. To study L-I characteristics of a laser diode.
13. Evaluate time constant of a RC circuit.
14. Evaluate the energy gap of a semiconductor diode
15. Correlate the basic principles of physics with laboratory experiments.

LIST OF EXPERIMENTS

Week-l	**INTRODUCTION TO PHYSICS LABORATORY**

Do's and Don'ts in physics laboratory. Precautions to be taken in laboratory.

Week-2	**MEASUREMENT OF THICKNESS OF A WIRE AND RADIUS OF DISC**

To determine the thickness of a wire and radius of a disc using screw gauge and vernier calipers .

Week-3	**TORSIONAL PENDULUM**

Determination of rigidity modulus of the material of given wire using a torsional pendulum .

Week-4	**STEWART GEE'S APPARATUS**

Magnetic field along the axis of current carrying coil-Stewart and Gee's method.	
Week-5	**DETERMINATION OF FREQUENCY OF LONGITUDINAL WAVES**
Determination of frequency of a given tuning fork in longitudinal mode.	
Week-6	**DETERMINATION OF FREQUENCY OF TRANSVERSE WAVES**
Determination of frequency of a given tuning fork in transverse mode.	
Week-7	**WAVELENGTH OF LASER SOURCE-DIFFRACTION GRATING**
To determine the wavelength of given source of laser using a plane transmission grating.	
Week-8	**ADJUSTMENT AND MINIMUM DEVIATION IN SPECTROMETER**
To study about spectrometer and to adjust spectrometer in minimum deviation position.	
Week-9	**DISPERSIVE POWER OF A MATERIAL OF PRISM**
Determination of the dispersive power the material of the given prism.	
Week-10	**NEWTONS RINGS**
Determination of radius of curvature of a given plano-convex lens.	
Week-11	**NUMERICAL APERTURE OF GIVEN FIBER**
To determine the numerical aperture of a given optical fiber.	
Week-12	**LIGHT EMITTING DIODE**
Studying V-I characteristics of LED	
Week-13	**CHARACTERISTICS OF LASER DIODE**
To study L-I characteristics of a laser diode.	

Text Books:

1. C. L. Arora, "Practical Physics", S. Chand & Co., New Delhi, 3rd Edition, 2012.
2. Vijay Kumar, Dr. T. Radhakrishna, "Practical Physics for Engineering Students", S M Enterprises, 2nd Edition, 2014.

Reference Books:

1. C.F. Coombs,"Basic Electronic Instrument Handbook", McGraw-Hill Book Co., 1972.
2. C.H. Bernard and C.D. Epp, John Wiley and Sons, "Laboratory Experiments in College Physics" Inc., New York, 1995.

Web References :

1. http://www.iare.ac.in
2. http://physics.nist.gov./