ANIL NEERUKONDA INSTITUTE OF TECHNOLOGY & SCIENCES
UGC Autonomous
(Affiliated to AU, Approved by AICTE & Accredited by NBA & NAAC with 'A' Grade)
SANGIVALASA-531 162, Bheemunipatnam Mandal, Visakhapatnam District
Phone: 08933-225083/84/87 Fax: 226395
website: www.anits.edu.in email: principal@anits.edu.in

DEPARTMENT OF PHYSICS

ENGINEERING PHYSICS LAB (R-15)

(COMMON TO ALL BRANCHES)

L-T-P-E-O-C
0- 0-3-0-1–2
Sessional Marks : 50
End Exam Marks : 50

Course Objectives

- To enable the students to acquire skill, technique and utilization of the Instruments

Course Outcomes	
1	Ability to design and conduct experiments as well as to analyze and interpret data.**(L4)**
2	Ability to apply experimental skills to determine the physical quantities related to Heat, Electromagnetism and Optics.**(L3)**

CO-PO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	2				1	2	1	1	2
CO2	3	1	1	1				1	2	2		1

List of experiment (any eight to ten experiments have to be completed)

1. Determination of coefficient of thermal conductivity of a bad conductor- Lee's method.
2. Determination of radius of curvature of a convex lens - Newton's rings.
3. Determination of wavelengths of spectral lines in mercury spectrum-using diffraction grating in normal incidence position.
4. Determination of Cauchy's constants of the material of the prism using spectrometer.
5. Determination of thickness of a thin paper by forming parallel interference fringes-Wedge method.
6. Study of variation of magnetic field along the axis of a current carrying circular coil – Stewart and Gee's apparatus
7. Calibration of a low-range voltmeter using potentiometer.
8. Verification of laws of resistance and determination of specific resistance of wire by using Carey- Foster's bridge.
9. Determination of refractive indices o-ray and e-ray in quartz crystal (double refraction)
10. Determination of the frequency of an electrically maintained tuning fork - Melde's experiment.
11. Determination of Rydberg constant using hydrogen discharge tube.
12. Determination of band gap of semiconductor.
13. To determine the numerical aperture of a given optical fiber and hence to find its acceptance angle.
14. Determination of the velocity of ultrasound in liquids by using the phenomenon of diffraction of light by ultrasound
15. Determination of the particle size of micro particles (lycopodium powder) using laser diffracting grating.

Learning Outcomes:

The students will be able to

- **handle** optical instruments like microscope and spectrometer
- **determine** thickness of a hair/paper with the concept of interference
- **estimate** the wavelength and resolving power of different colors using diffraction grating
- **plot** the intensity of the magnetic field of circular coil carrying current with varying

distance

- **determine** the band gap of a given semiconductor
- **determine** thermal conductivity of good and bad conductors
- **evaluate** the acceptance angle of an optical fiber and numerical aperture
- **determine** resistance and resistivity of the given material
- **plot** the accuracy / correction of low range voltmeter using potentiometer
- **evaluate** the refractive index using double refraction phenomena
- **determine** frequency of electrically maintained tuning fork

Prescribed Book

Physics Laboratory Manual Prepared by Department of Physics ANITS

Reference books

1. D.P Siva Ramaiah and V. Krishna Murthy, "Practical Physics", Marutibook Depot, 2000.
2. A.R Vegi, "Comprehensive Practical Physics", Vegi Publishers Pvt.Ltd., 2004.