

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

B. Sc. PHYSICS - SEMESTER – II (PRACTICAL COURSE)

PROGRAMME CODE: SCIUG101

(Effective from June 2023 Under NEP – 2020)

| TYPE OF COURSE | CREDIT | COURSE CODE |
|---------------------------------------|-------------|--------------------|
| Major Discipline Core Course (MJDSCP) | 2(Group A) | SC23MJDSC P PHY201 |
| Major Discipline Core Course (MJDSCP) | 2 (Group B) | SC23MJDSC P PHY202 |
| Minor Discipline Core Course (MIDSCP) | 2 | SC23MIDSC P PHY203 |
| Inter-Discipline Core Course (MDSCP) | 2 | SC23MDSC P PHY204 |

Teaching Hours

Teaching Hours per Week : 08 Hours for 4 Credit practical (120 Hours per Semester)
Teaching Hours per Week : 04 Hours for 2 Credit practical (60 Hours per Semester)

Course Objectives:

- To gain practical knowledge by applying the experimental method to correlate with the Physics theory.
- To provide hands on experience with equipment such as, spectrometer, Pendulum, Flywheel and electronic circuits.
- To learn the usage of electrical and optical systems of various measurements.
- To impart practical knowledge by performing experiments based on the principles of theory courses.
- To provide training how to analyze the experimental data and graphical analysis.
- To develop intellectual communication skills and discuss the basic principles of scientific concepts in the group.

LABORATORY EXPERIMENTS Group A

MAJOR COURSE (2 Credit)

COURSE CODE: SC23MJDSC P PHY201(A)

1. Bar Pendulum: Determination of 'K' and 'g'
2. Melde's Experiment. T/L^2 constant
3. Find out Refractive index of the prism using spectrometer.
4. To determine the ratio of magnetic moments of two magnets by using Vibrational Magnetometer.
5. To determine the magnetic moment of a given Bar magnet using Deflection Magnetometer in Gauss A and B position.
6. Determine wavelength of LASER Light.
7. Numerical Analysis: Jacobi interaction Method.
8. Plotting of a Graph and Error estimation on graphical plot. Linear and nonlinear graph, Logarithmic Graph Polar Graph
9. To Find the vertical distance between two points using Sextant.
10. Determine Modulus of Rigidity (Moment of Inertia) of Disk using Torsional pendulum
11. Numerical: Gauss Backward Interpolation Formula
12. Determination of angular acceleration (α) and find MI of a Fly wheel using Formula
13. To Determine the value of Cauchy's Constants of material of Prism

LABORATORY EXPERIMENTS Group B

MAJOR COURSE (2 Credit)
COURSE CODE: SC23MJDS P PHY201(B)

1. Determination of self-inductance 'L' of Inductor.
2. Study of Parallel Resonance with variable frequency and Fix capacity
3. P-N Junction diode as Full Wave Rectifier Without filter. Calculation of Percentage of Regulation.
4. P-N Junction diode as Full Wave Rectifier (i) With Series Inductor Filter, (iii) With Shunt Capacitor Filter. Calculation of Percentage of Regulation.
5. Study of Characteristics of Tunnel Diode.
6. Study of Series Resonance with Capacitor variation and Fix Frequency
7. Study of Parallel Resonance with variable capacitor and Fix Frequency
8. Decay of Potential across Condenser
9. LDR Characteristics: obtain IV Characteristics of given LDR and calculate its resistor. (For three different light level)
10. To find the value of an unknown Inductor by using Owen's Bridge circuits
11. Measurement of Boltzmann constant using Diode.
12. PN Junction IV characteristics and Load Line analysis.
13. Study of Step Down Transformer. To determine Turn Ratio, % of Efficiency, Energy loss due to copper loss for a given transformer.

Course Outcome

By the end of the course, the students will be able to understand.

- The basic principles of Physics related to their courses in the practical way.
- The operational details of spectrometer, electronic circuits etc.
- The experimental design aspects to determine various properties of like gravity, quality factor, Refractive index, determination of Cauchy's Constants, analysis of spectra, Analysis of error, determine value of unknown frequency etc.
- The process to analyze the observations and infer the outcome of the experiments.
- How to analyze the experimental data and graphical analysis.