MGSC – B.Sc. – Physics Curriculum 2024 OBE Pattern
SEMESTER 1 MAJOR: PHM112 (P)
Compulsory Course: 4-Credits

Semester: 1 NEP-2020	**Course No.: 112 (P)**	**Course Category: core paper** **Course Code: PHM 112(P)** **Credits: 4** **Course Title: : Physics lab**

The course objectives for mechanics and electronics practical in physics generally focus on developing practical skills in measurement, experimentation, and understanding of fundamental concepts in mechanics and electronic circuits.
Key objectives include:
Understanding and applying principles of mechanics through hands-on experiments such as measuring physical quantities and verifying theoretical laws.
Gaining proficiency with electronic instrumentation like analog meter, digital multimeter
Understand how to connect basic electronic circuits including diodes, logic gates.
Developing the ability to interpret experimental data, analyse errors, and relate practical observations to theoretical physics concepts.
Learning to operate and maintain physics laboratory equipment used in mechanics and electronics.
Course Outcomes: On successful completion of the course, learners will be able to

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CO1	Set up the instruments as per the instructions, Connect the circuit as given in the circuit diagram.	**Remember Understand**
CO2	Develop measurements techniques, record observations, use the given formula, do calculations and draw your conclusion from the result.	**Understand Apply**
CO3	Find uncertainty involved in the observations	**Evaluate**
CO4	Analyse the observations for scientific inference	**Analyse**

Syllabus:

Practical Title	Practical (Hours)
GROUP-A 1. To find the prism angle and refractive index of a prism using spectrometer. 2. To find frequency of given tuning fork using Melde's Experiment. (i) To prove P/L constant. (ii) To prove T/L2 constant 3. To test the accuracy of relation n2 (V + Kv) = constant and to determine the frequency of unknown fork using Resonator. 4. To determine the moment of inertia of given Flywheel. 5. Simulation of Nuclear Radioactive decay using Calculator. 6. Using travelling microscope find inner and outer diameter of (i) Ring and (ii) Rubber tube. 7. Draw the Lissajous figure using Graphical method for different phase difference and ratio of angular frequencies. 8. To find the relaxation time and quality factor for simple pendulum. 9. Find the refractive index of the given liquid using convex lens(Liquid lens) 10. Analysis of error.	**60**
Group B 1. Measurement of resistance, capacitor and inductance using LCR meter. Resistance and capacitance value using colour code, Diode testing using multimeter. 2. Measurement of Boltzmann is constant using Diode. 3. To draw characteristic, to find voltage regulation and ripple factor of a Half wave rectifier circuit without and with filter. 4. To draw characteristic, to find voltage regulation and ripple factor of a full wave rectifier circuit without and with filter. 5. To draw load line and find Q point of a given diode. 6. For given two capacitors determine the value of capacitance for each of them. Also find capacitance By connecting them in series and (ii) by connecting them parallel. 7. Value of inductance: For given two inductors determine the value of inductance for each of them(I) by connecting them in series (2) by connecting them parallel. 8. To determine (i) turn ratio (ii) percentage efficiency (iii) energy loss due to Copper, for a given transformer. 9. Logic Gates (AND, OR, NOT) (Using discrete components): Verification of truth tables and giving understanding of voltage level for '0'and '1'level.	**60**

10. To determine the frequency of ac source using series resonance circuit with varying capacitance value keeping two different value of resistance constant.	

Reference books:

1. B. Sc. Practical Physics by C. L. Arora, 20th Edition, 2020 S. Chand and Company.
2. Practical Physics by G. L. Squires. Fourth edition, Cambridge, 2001.
3. Practical Physics with viva – voce Dr.S.L. Gupta and Dr.V.Kumar, 27th edition, 2010 Pragati publication