

PHYSICS DEPARTMENT

B.Sc. - SEM.I

Course Code - PHSC-01T

Course Title - Mechanics

Course Type – Discipline Specific Course

Pre-requisite (if any) – As per program

Course Learning Outcomes (CLO)

After going through the course , the student should be able to:

- Analyze and apply the laws of motion to various dynamical situations.
- Explain and demonstrate the principle of conservation of momentum and energy including their application in real world scenario such as collision and energy transformation.
- Evaluate and calculate moment of inertia for objects of different shapes and analyse how these properties affect the motion of rotating bodies.
- Analyse flow of fluids.
- Describe special relativistic effects and their effects on the mass and energy of a moving object

LAB

Course Code – PHSC-01P

Course Title – Mechanics

Course Type – Discipline Specific Course

Pre-requisite (if any)- As Per Program

Course Learning Outcomes (CLO)

After the completion of the course, students are expected to understand working mechanics and laws of classical mechanics.

The students will be able to

- Assemble required parts/devices and arrange them to perform experiments.
- Record/observe data as required by the experimental objectives.
- Analyze recorded data and formulate it to get desired results.
- interpret results and check for attainment of proposed objectives related to laws of mechanics and its applications.

B.Sc. - Sem. II

Course Code - PHSC-02T

Course Title - Electricity & Magnetism

Course Type - Discipline Specific Course

Pre- requisite (if any) - As Per Program

Course Learning Outcomes (CLO)

After going through the course, the student should be able to:

- state various laws related with electrostatics, dielectric, electric current, magnetism and electromagnetic induction.
- Apply vector (electric field, Coulomb's law) and scalar (electric potential, electric potential energy) formalisms of electrostatics.
- Compare rise and decay of current in LR, CR, LCR circuits.
- Apply Biot-savart law for calculation of magnetic field in simple geographic situations .
- Derive and analyze Maxwell's equation.

LAB

Course Code - PHSC-02P

Course Title - Electricity & Magnetism

Course Type - Discipline Specific Course

Pre- requisite (if any) - As Per Program

Course Learning Outcomes (CLO)

After the completion of the course, students are expected to understand working laws of Electricity, Magnetism and EMWs. The students will also be able to

- Verify various circuit law , network theorems, using simple electric circuits. Assemble required parts/devices and arrange them to perform experiments.
- Verify various laws in electricity and magnetism such as Lenz's law, Faraday's law and learn about the construction, working of various measuring instruments.
- Record/observe data as required by the experimental objective. Analyze recorded data and formulate it to get desired results.
- Interpret results and check for attainment of proposed objectives related to laws of Electricity, Magnetism and applications.

B.Sc. - SEM.III

Course Code - PHSC-03T

Course Title – Heat And Thermodynamics

Course Type - Discipline Specific Course

Pre- requisite (if any) - As Per Program

Course Learning Outcomes (CLO)

After going through the course, the student should be able to.

- Demonstrate a deep comprehension of the fundamental principles of thermodynamics including concepts such as energy, entropy and laws of thermodynamics.
- Apply the laws of thermodynamics to analyze and solve problems related with energy transfer, heat energies refrigeration system and other thermodynamics process.
- Analyze basic aspects of kinetic theory and transport phenomenon in gases.

LAB

Course Code - PHSC-03P

Course Title - Electricity & Magnetism

Course Type - Discipline Specific Course

Pre- requisite (if any) - As Per Program

Course Learning Outcomes (CLO)

- Lab Proficiency: Thermometers, pressure gauges, calorimeters, heat transfer apparatus, experimental setup, data acquisition.
- Hands - on Learning**: Heat transfer, work done, entropy, phase transitions, experiments.
- Data Analysis: Experimental data, theoretical discrepancies, analysis.
- Predictive Skills: Thermodynamic behavior, varying conditions, experimentation.
- Theory - Practice Integration: theoretical knowledge, practical.
- Lab work, synthesis, applications.

B.Sc. - Final Year

Course Code – PHY-5T

Course Title – Digital Analogue Circuits Instrumentation

Course Type – Theory

Pre-requisite (if any) – Passed BSc II

Course Learning Outcomes (CLO)

At the end of the course, the students will be able to:

- Understand the basic principles and industrial applications of semiconductor diode, Zener diode and transistor.
- Understand the construction working and applications of transistor.
- Gain the knowledge of analogue and digital circuits.
- Understand the construction and working principle of various instruments that are used in the physics laboratory .
- Develop interest in electronic components.

B.Sc. - Final Year

Course Code – PHY-6T

Course Title – Elements Of Modern Physics

Course Type – Theory

Pre- requisite (if any) – BSc II

Course Learning Outcomes (CLO)

At the end of the course, students will be able to:

- Gain of advanced theoretical and experimental method including the use of numerical method.
- Understand the basic postulates of quantum mechanics.
- Gain knowledge about physical quantities as operators .
- Understand the Schrodinger equation and its applications.
- Gain knowledge about structure of nucleus, nuclear fission and fusion and be familiar of nuclear energy.

B.Sc. - Final Year Lab

Course Code – PHY-3P

Course Title – LAB 3

Course Type – Practical

Pre- requisite (if any) - No

Course Learning Outcomes (CLO)

At the end of the course, the students will be able to:

- Understand the working of semiconductor diode, LED, transistor and their characteristics.
- Understand the working of rectifier, filter, regulator etc.
- Understand the function of Zener diode as voltage regulator .
- Gain knowledge about amplifier and logic gates.

B.Sc. - Sem.III (DSE)

Course Code - PHSE-01

Course Title – Introduction to Statistical Mechanics

Course Type - Discipline Specific Elective

Pre- requisite (if any) - As Per Program

- Differentiate between macrostate and microstate and calculate their numbers.
- Comprehend the concept of ensembles and its requirement in study of physical phenomena.
- Correlate and compare the classical and quantum statistical distribution laws.
- Apply concepts of statistical distribution laws for different physical systems.