B.Sc. 1st Year		
Course	**Objective**	**Learning Outcome**
Mechanics	To effectively help students apply theoretical concepts of mechanics to real-world phenomena while providing a strong foundation in mechanics.	• Explain and apply Newton's laws of motion to solve problems involving forces, acceleration, and motion in one, two, and three dimensions. • Comprehend and apply the concepts of conservation of energy, linear momentum, and angular momentum. • Calculate work done by a force and understand the relationship between work, energy, and power in mechanical systems. • Solve problems involving rotational kinematics and dynamics, including the moment of inertia, torque, angular momentum, and rotational energy. • Understand and apply Newton's law of universal gravitation to problems involving planetary motion and orbits, such as Kepler's laws.
Electricity, magnetism, and EMT	The objectives of this paper are to provide a comprehensive understanding of the fundamental principles of electricity, magnetism, and electromagnetic theory. It aims to enhance students' ability to solve problems related to electric and magnetic fields, forces, and potentials by applying theoretical knowledge to practical situations. Additionally, the paper seeks to establish a solid foundation for future studies in advanced electromagnetic theory.	• Apply Coulomb's law to compute electric forces between charges and calculate electric fields from point charges, charge distributions, and dipoles. Understand and use Gauss's law to solve for electric fields in symmetric charge distributions. • Define and compute electric potential and potential energy for systems of charges. • Apply the Biot-Savart law and Ampère's law to calculate magnetic fields due to currents. Understand the forces on moving charges and current-carrying wires in magnetic fields, as well as the magnetic dipole and torque on current loops. • Understand and apply Maxwell's equations in both differential and integral forms, analyzing their implications for the propagation of electromagnetic waves.
Differential Calculus	This book focuses on key concepts such as limits, continuity, and derivatives. Students learn differentiation techniques	• Understanding the fundamental theorems of calculus. • Understanding continuity and differentiability.

	(product, quotient, and chain rules) and explore applications in real-world problems like motion, optimization, and curve analysis. The course covers higher-order derivatives, implicit differentiation, and the use of differentials for approximation and error analysis. It provides a foundation for integral calculus and prepares students for advanced mathematical applications across various fields.	• Using derivatives to solve real-life problems.
Differential Equations	This book provides students with a foundational understanding of differential equations, covering essential concepts, terminology, and classifications. It teaches methods for solving first-order equations (separable, exact, and linear) and higher-order linear differential equations, along with initial and boundary value problems and their real-world applications.	• Will be able to explain the concept of differential equation. • Classifies the differential equations with respect to their order and linearity. • Explains the meaning of the solution of a differential equation. • Expresses the existence-uniqueness theorem of differential equations.
Atomic structure, bonding, general organic chemistry & aliphatic hydrocarbons	Provide students with a comprehensive understanding of atomic structure, including the concepts of atomic theory, atomic models, subatomic particles (protons, neutrons, and electrons), and isotopes.	• Students will be able to describe the structure of an atom, including the roles of protons, neutrons, and electrons, and explain the significance of quantum numbers and electron configurations. • Students will demonstrate knowledge of different types of chemical bonds (ionic, covalent, and metallic), including how these bonds form and their impact on the properties of substances.
States of matter, chemical kinetics & functional organic chemistry	Provide students with a comprehensive understanding of the three primary states of matter (solid, liquid, and gas), including their	• Students will be able to describe the characteristics and properties of solids, liquids, and gases, and explain phase transitions and their underlying principles.

	characteristics, properties, and the changes between these states (phase transitions).	• Students will demonstrate knowledge of gas laws and apply the ideal gas law to solve problems related to the behavior of gases under various conditions.