

**Department of Physics**  
**PROGRAMME OUTCOMES OF BSC PHYSICS**

<b>Department of Physics</b>	<b>After successful completion of three year degree program in physics a student should be able to;</b>
Programme Outcomes	<p>PO-1. Gain the knowledge of Physics through theory and practicals.</p> <p>PO-2. Understand good laboratory practices and safety.</p> <p>PO-3. Develop research oriented skills.</p> <p>PO-4. Make aware and handle the sophisticated instruments/equipments.</p> <p>PO-5. Gain the knowledge of Physics through theory and practical's.</p> <p>PO-6. Understand good laboratory practices and safety.</p> <p>PSO-7. Develop research oriented skills. PSO-4. Make aware and handle the sophisticated instruments/equipments.</p>
<b>Course Outcomes B. Sc Physics SEMESTER-I</b>	
<b>Course</b>	<b>Outcomes After completion of these courses students should be able to;</b>
CORE-I (Mathematical physics I)	<p>CO-1. To study the plotting of different functions</p> <p>CO-2. To study the differential equations.</p> <p>CO-3. To understand the coordinate system.</p> <p>CO-4. To study the vector integration and differentiation.</p>
CORE-II (Mechanics)	<p>CO-1. Grasped the fundamentals of different types of frames of references and transformation laws Both Galilean and Lorentz</p> <p>CO-2. Learned conservation laws of energy and linear and angular momentum and apply them to solve problems</p> <p>CO-3. Learn the basics of potentials and fields, central forces and Kepler's laws</p> <p>CO-4. Familiarize with Lagrangian and Hamiltonian formulations of classical mechanics</p> <p>CO-5. Fundamental ideas of special theory of relativity such as length contraction and time dilation and mass –energy invariance</p>
GE-I (Mechanics and properties of matter, oscillation and waves, Thermal physics, Electricity and magnetism, electronics)	<p>CO-1. To understand the moment of inertia in different system.</p> <p>CO-2. To understand the S.H.M and it's characteristics.</p> <p>CO-3. To understand the different laws in electricity and magnetism.</p>

<b>SEMESTER-II</b>	
CORE-III (Electricity and magnetism)	<p>CO-1. To introduce the basic mathematical concepts related to electromagnetic vector fields. CO-2. To impart knowledge on the concepts of electrostatics, electric potential, energy density and their applications. CO-3. To impart knowledge on the concepts of magnetostatics, magnetic flux density, scalar and vector potential and its applications.</p> <p>CO-4. To impart knowledge on the concepts of Faraday's law, induced emf and Maxwell's equations.</p> <p>CO-5. To impart knowledge on the concepts of Concepts of electromagnetic waves and Transmission lines.</p>
CORE-IV (Waves and optics)	<p>CO-1. To study of superposition of harmonic oscillations, waves motion (general), oscillators, sound, wave optics, interference, diffraction, polarization</p> <p>CO-2. The course is important for the students to make their career in various branches of science and engineering, especially in the field of photonic engineering.</p>
GE-II (Optics, special theory of relativity, Atomic physics, Quantum mechanics and Nuclear physics)	<p>CO-1. To understand the electromagnetic nature of light.</p> <p>CO-2. To understand the Schrodinger's equation.</p> <p>CO-3. To understand the nucleus and it's properties.</p>
<b>SEMESTER-III</b>	
CORE-V ( Mathematical physicsII)	<p>CO-1. Know the Cartesian, spherical polar and cylindrical co-ordinate systems.</p> <p>CO-2. To understand the Special Theory of Relativity.</p> <p>CO-3. Discuss the Michelson- Morley Experiment.</p> <p>CO-4 To obtain the series solution by Frobenius method .</p> <p>CO-5 Study the Generating function for Legendre, Hermite polynomials.</p>
CORE-VI (Thermal physics)	<p>CO-1. To acquire working knowledge of the zeroth, first and second law of thermodynamics.</p> <p>CO-2. To apply the laws of thermodynamics and its application to understand thermo dynamical behavior.</p> <p>CO-3. to study the relationship and correct usage of work, energy, heat capacity, specific heat, latent heat, and enthalpy.</p> <p>CO-4.To compute entropy for simple systems such as the ideal gas (Sakur-Tetrode equation), the Einstein solid, and</p>

	<p>the two-level paramagnet.</p> <p>CO-5. To study the value of selected thermodynamical variables at thermal, mechanical, and/or diffusive equilibrium.</p>
<p>CORE-VII ( Analog systems and applications)</p>	<p>CO-1. Understand Semiconductor diodes, bipolar junction transistor.</p> <p>CO-2. Sketch, explain and design the amplifier circuit for given specification and analyze them discuss oscillator principles, and frequency stability.</p> <p>CO-3. Analyze the different types of Oscillators</p>
<b>SEMESTER-IV</b>	
<p>CORE-VIII (Mathematical physics III)</p>	<p>CO-1. Solve differential equations like Legendre, Bessel and Hermite that are common in physical sciences.</p> <p>Co-2. Solve the different partial differential equations encountered in physical problems and draw inferences from solutions.</p> <p>CO-3. Solve transfer functions in Instrumentation using Laplace transforms.</p>
<p>CORE-IX ( Element of modern physics)</p>	<p>CO-1. To provide simple and clear explanations of main physical concepts and theories of the 20-th century.</p> <p>CO-2. To clarify these concepts and theories through a broad range of current applications and examples.</p> <p>CO-3. Develop an understanding of the current basis of broad knowledge in modern physics.</p> <p>CO-5. Enhance the critical thinking, analytical reasoning and problem solving skills.</p> <p>CO-6. Discuss the atomic models</p>
<p>CORE-X (Digital systems and applications)</p>	<p>CO-1. To make the student understand the digital system.</p> <p>CO-2. To understand the Boolean algebra and data processing circuit.</p> <p>CO-3. Knowing computer architecture.</p> <p>CO-4. Understanding the arithmetic and sequential circuit and microprocessors</p>

<b>SEMESTER-V</b>	
CORE-XI (Quantum mechanics and applications)	CO-1. Understand De-Broglie hypothesis and Uncertainty principle CO-2. Derive Schrodinger's time dependent and independent equations CO-3. Solve the problems using Schrödinger's steady state equation CO-4. Get knowledge of rigid rotator CO-5. Understand different operators in Quantum Mechanics
CORE-XII (Solid state physics)	CO-1. Know the principles of structures determination by diffraction CO-2. To understand the principles and techniques of X-rays diffraction CO-3. Know the fundamental principles of semiconductors and be able to estimate the charge carrier mobility and density CO-4. To give an extended knowledge about magnetic properties.
DSE-1 ( Classical Dynamics)	CO-1 To demonstrate knowledge and understanding of the following fundamental concepts in: <ul style="list-style-type: none"> <li>● The dynamics of system of particles,</li> <li>● Motion of rigid body,</li> <li>● Lagrangian and Hamiltonian formulation of mechanics</li> </ul> CO-2 To represent the equations of motion for complicated mechanical systems using the Lagrangian and Hamiltonian formulation of classical mechanics. CO-3 To develop math skills as applied to physics.
DSE-2 ( Nuclear and particle physics)	CO-1. Know the properties of nucleus like binding energy, magnetic dipole moment and electric quadrupole moment CO-2. To understand the concept of radioactivity and decays law CO-3. To study achievement of Nuclear Models of Physics and its limitations CO-4. To give an extended knowledge about nuclear reactions such as nuclear fission and fusion CO-5. To understand the basic concept of Particle Physics
<b>SEMESTER-V</b>	
CORE-XIII (Electromagnetic Theory)	CO-1 To introduce the basic mathematical concepts related to electromagnetic vector fields. CO-2 To impart knowledge on the concepts of electrostatics, electric potential, energy density and their applications. CO-3 To impart knowledge on the concepts of magnetostatics, magnetic flux density, scalar and vector potential and its applications. CO-4 To impart knowledge on the concepts of Faraday's law, induced emf and Maxwell's equations.

	CO-5 To impart knowledge on the concepts of Concepts of electromagnetic waves and Transmission lines.
CORE-XIV (Statistical mechanics)	CO-1.To study kinetic theory of Gases. CO-2. To study Maxwell Relations and Application. CO-3. Know the elementary concept of statistics. CO-4. Understand statistical distribution of system of particles. CO-5.To study statistical ensembles. CO-6.To study Quantum statistics. CO-7.To learn Postulates of statistical mechanics CO-8.To learn statistical interpretation of thermodynamics micro canonical, canonical and grand canonical ensembles CO-9.To study the methods of statistical mechanics are used to develop the statistics for Bose-Einstein and Fermi-Dirac
DSE-3 (Nano materials and Applications)	CO-1. To foundational knowledge of the Nanoscience and related fields. CO-2.To make the students acquire an understanding the Nanoscience and Applications CO-3. To help them understand in broad outline of Nanoscience and Nanotechnology. CO-4 To study the different instruments for categorization of nanoparticles.