B.SC PHYSICS MODEL I

Programme Outcome:

The programme aims to develop the following abilities:

1. Read, understand and interpret physical information – verbal, mathematical and graphical.
2. Impart skills required to gather information from resources and use them.
3. To give need based education in physics of the highest quality at the undergraduate level.
4. Offer courses to the choice of the students.
5. Perform experiments and interpret the result of observation, including making assessment of experimental uncertainties.
6. Provide an intellectually stimulating environment to develop skills and enthusiasms of students to the best of their potential
7. Use Information Communication Technology to gather knowledge at will.
8. Attract outstanding students from all backgrounds.

Programme Specific Outcome

Subject Outcome (SO)	Learning Outcome (LO)	Cross critical Outcome (CCO)
SEMESTER I Core Course 1 – METHODOLOGY AND PERSPECTIVES OF PHYSICS Module 1- Concepts and Development in Physics Module II- Number System, Vector analysis Module III- Experimental methods and error analysis	Develops interest in learning Physics. Acquires mathematical base in learning physics. Familiarisation of various measuring devices and possible errors.	Inculcates a scientific spirit.
SEMESTER II Core Course II – MECHANICS AND PROPERTIES OF MATTER Module I –Wave motion , Oscillations Module II –Rotational Mechanics Module III- Elasticity, Hydrodynamics	Acquires the knowledge about periodic motion , translational and rotational motion The knowledge of elasticity helps the students to identify materials suited for constructions Study of hydrodynamics helps the students in their daily life	Develops engineering and practical skills

SEMESTER III Core Course III – OPTICS, LASER AND FIBRE OPTICS Module I –Interference Module II –Diffraction, Polarization Module III- Laser , Fiber Optics	Familiarization of various optical phenomena with concrete theoretical backgrounds. Acquires knowledge of data transmission	Creates an enthusiasm in various applications in Fiber optics
SEMESTER IV Core Course IV – SEMICONDUCTOR PHYSICS Module I –Semiconducting diodes and applications Module II –Transistors Configurations and Feedback Amplifiers and Oscillators Module III- FET, Operational amplifier & Modulation	Acquires the basic principles and applications of electronics Familiarizes with the electronic components and various circuits	Enables to design , construct and repairs different electronic devices
SEMESTER V Core Course V – ELECTRICITY AND ELECTRODYNAMICS Module I –Alternating Current and Network Theorems Module II –Transient Current and Thermo electricity Module III- Electrostatics and Magnetostatics Module IV- Maxwell's Equations and Electromagnetic wave propagation	Distinguishes current and static electricity Understands the production and transmission of ac Role of inductors and capacitors in electric circuits Gains basic concepts about e m theory	Enables to manage the power consumption and simple domestic electrical maintenance
SEMESTER V Core Course VI – CLASSICAL AND QUANTUM MECHANICS Module I – Lagrangian and Hamiltonian Formulations of Classical Mechanics Module II –Historical development and Origin of Quantum theory Module III- Schrodinger equation and its Applications	Understands the two era in Physics- classical and quantum Understands how quantum mechanics explains various natural phenomena	Develops skill s in mathematics
SEMESTER V Core Course VII – DIGITAL ELECTRONICS AND PROGRAMMING Module I –Boolean Algebra and Logic Gates Module II –Combinational Logic & Sequential Logic	Develops the knowledge in electronics in mathematical computations	Enables to develop programmes in C++

Module III- Programming in C++		
SEMESTER V Core Course VIII – ENVIRONMENTAL PHYSICS AND HUMAN RIGHTS Module I –Multidisciplinary nature of environmental studies, Natural resources and Ecosystems Module II –Biodiversity and its conservation, Environmental Pollution and Social Issues and the Environment Module III- Non-renewable and Renewable Energy Sources Module IV – Solar Energy Module V – Human Rights, Human Rights and United Nations, Human Rights in India and Environment and Human Rights	Creates concern on energy conservation and environmental protection Awareness of Rights and Responsibilities of a citizen	Enables to minimize the usage of non-conventional sources of energy Creates a better citizen
SEMESTER V Open Course – PHYSICS IN DAILY LIFE Module I –Units and Dimensions and Light Module II –Motion and Electricity Module III- Matter and Energy and Universe	Acquires basic awareness in elementary physics	Develops creative thinking
SEMESTER VI Core Course IX – THERMAL AND STATISTICAL PHYSICS Module I –Equation of State for gases, Zeroth law of Thermodynamics, First law of Thermodynamics And Heat engines and second law of Thermodynamics Module II –Entropy, Thermodynamic relations, Conduction and Radiation Module III- Statistical Mechanics and Statistical Distributions	To develop the basic concepts of thermodynamics, the working knowledge of different engines Enumerate classical and quantum statistics	Knowledge to expose various applications in material science

SEMESTER VI Core Course X – RELATIVITY AND SPECTROSCOPY Module I –Special Theory of Relativity Module II –Atomic Spectroscopy Module III- Molecular Spectroscopy NMR and ESR Spectroscopy	Acquaint the learners the concept that nothing in absolute and everything is relative Understands the principles of different spectroscopy	Urges an inquisitive spirit for higher studies
SEMESTER VI Core Course XI – NUCLEAR, PARTICLE PHYSICS & ASTROPHYSICS Module I –Nuclear structure, Nuclear radiation detectors, Counters and Particle accelerators Module II –Nuclear transformations, Cosmic rays Module III- Particle Physics, Astrophysics	Recognize the very basic concept with which the entire Universe is made of	Understands the pros and cons of nuclear reactions
SEMESTER VI Core Course XII – SOLID STATE PHYSICS Module I –Crystal Structure Module II –Bonding in Solids, Free electron theory and Elementary Band theory, Semiconducting Properties of Materials Module III- Dielectric properties of materials, Magnetic properties of materials, Superconductivity	Learns about crystal structures In depth study in material science Gains basic ideas in nanotechnology	Promotes research in material physics
SEMESTER VI Choice Based Course XIII – INFORMATION TECHNOLOGY Module I –Computer Networks and Internet Module II –HTML Module III- Basic Ideas of DBMS	Familiarise young minds about the fascinating world of IT and to use the tools available in internet and the WWW for a profound study of the subject related to physics in a better way	Helps to develop and design webpage