DEPARTMENT OF PHYSICS

BSc PHYSICS

PROGRAMME OUTCOME

Provide a solid foundation in all aspects of physics and to develop experimental, computational and mathematical skills of students. The syllabi are framed in such a way that it bridges the gap between the plus two and post graduate levels of physics by providing a complete and more logical framework in almost all areas of basic physics.

By the end of the 2 nd semester, the students should have, attained a common level in basic mechanics and properties of matter and laid a secure foundation in mathematics for their future courses. They also would have developed their experimental and data analysis skills through a wide range of experiments in the practical laboratories.

By the end of the fourth semester, the students will be introduced to powerful tools for tackling a wide range of topics in Thermodynamics, Statistical Mechanics and Electrodynamics. They will become familiar with additional relevant mathematical techniques, further developed their experimental skills through a series of experiments which also illustrate major themes of the lecture courses.

By the end of the sixth semester, the students should have covered a range of topics in almost all areas of physics including quantum physics, solid state physics, computational physics, electronics etc. They will have experience of independent work such as projects, seminars etc.

The program will provide education in physics of the highest quality at the undergraduate level and generate graduates of the caliber sought by industries and public service as well as academic teachers and researchers of the future.

THE OUTCOMES OF THE COURSES OFFERED BY THE DEPARTMENT OF PHYSICS

PY1141 BASIC MECHANICS & PROPERTIES OF MATTER

To understand the dynamics of Rigid bodies. Identify and describe oscillations of different kinds seen in physical systems. To acquire basic knowledge of elasticity, surface tension and fluid dynamics

PY1241 HEAT AND THERMODYNAMICS

To understand heat-transfer, Laws of thermodynamics and Entropy. To get preliminary understanding of Statistical Physics

PY1341 – ELECTRODYNAMICS

To get detailed knowledge of Electrostatics, Magnetostatics and Electromagnetic induction. Thoughtful concept of Maxwell's equations and its application. To obtain detailed knowledge of transient currents, alternating current and circuit theory

PY1441 -CLASSICAL AND RELATIVISTIC MECHANICS

Develop understanding of dynamics of particles, motion under central force field and basic theory of collisions. Describe how the symmetries of space and time lead to conservation laws and to develop preliminary understanding of Lagrangian dynamics

PY1541- QUANTUM MECHANICS

Understand the statistical interpretation of wave function and to develop knowledge of Schrodinger equation. To analyse and work on some exactly solvable problems in one dimension. To impart knowledge of the mathematical formalism of quantum mechanics

PY1542 STATISTICAL MECHANICS RESEARCH METHODOLOGY AND DISASTER MANAGEMENT.

To obtain an insight in the basics of Maxwell's, Fermi -Dirac and Bose -Einstein statistics. To understand basics of research methodology in scientific research. To enable students to respond, act and mitigate natural disasters.

PY1543-ELECTRONICS

To understand working, design and application of Diodes, Transistor circuits, Field Effect Transistors, Small and large signal amplifiers, Feedback circuits and Oscillators. To attain a basic knowledge level in preliminaries of modulation operational amplifiers and simple circuits using op-amps.

PY1544- ATOMIC AND MOLECULAR PHYSICS

To understand Vector atom model, Atomic spectra, X-ray spectra, molecular spectra and resonance spectra

OPEN COURSES

PY1551.2. ENERGY PHYSICS

To study various forms of energy, To understand concepts and design of Solar energy and utilization, Wind energy ,Biomass energy and energy from ocean. To study about the current energy consumption pattern and prepare the students face and find solutions for the existing global energy crisis.

PY1641- SOLID STATE PHYSICS

To study about Crystal structure and inter atomic forces X-ray, neutron and electron diffraction

Free electron theory and Band theory Magnetic, Dielectric and Optical properties of materials, and basics of superconductivity.

PY1642 – NUCLEAR AND PARTICLE PHYSICS

Tounder stand Nuclear structure and nuclear models, Radio-Activity, Nuclear forces Radiation detectors and particle accelerators Nuclear reactions, Nuclear fission and fusion

Cosmic rays and elementary particles

PY1643- CLASSICAL AND MODERN OPTICS

Detailed knowledge of Interference and Diffraction, Polarization and Dispersion. Preliminaries of Fiber optics and Lasers. Basics concepts of Holography

PY1644-DIGITAL ELECTRONICS AND COMPUTER SCIENCE

To study and work on Number systems, Boolean algebra and logic gates and some arithmetic and sequential circuits. To understand basics of computers and memory systems. To learn and apply C programming and computer oriented numerical methods

PY1442- BASIC PHYSICS LAB1

Familiarization with some simple experiments in mechanics, properties of matter, heat etc.

Analysis of experimental data with error calculations

PY1645-ADVANCED PHYSICS LAB2

Familiarization with some simple experiments in electricity and magnetism Analysis of experimental data with error calculations

PY1646—ADVANCED PHYSICS LAB3

Experiments in Electronics. Solving some simple problems in physics using numerical methods by implementing them in C programming language

PY1647—PROJECT

To encourage students to undertake projects based on their knowledge attained in the subject attained during their degree program. To develop and promote their research, scientific and experimental skills.

ELECTIVE COURSES

PY1661.2. SPACE SCIENCE

To introduce and impart basic knowledge on structure of universe, evolution of stars, Solar physics, Earth's atmosphere and Magnetosphere