COURSE- Master of Science Applied Physics

Program Outcome (PO)

After completing the two-year degree program, students will be able to attain a strong base to pursue higher education in the field of Physics. The course curriculum educates future leaders of the nation about how Physics underlies in the nature and in all natural processes.

Program Specific Outcome (PSO)

After Completing Master of Applied Physics, the student will be able to demonstrate a deep and analytical understanding of the Mathematics, Computer science and Physics subjects.

Course Outcomes

I Year Semester-I

Course: Classical Mechanics

The aim and objective of the course on Classical Mechanics is to train the students of M.Sc. class in the Lagrange's and Hamiltonian formalisms so that they can apply these methods to solve real world problems. The multi-disciplinary topic 'Chaos' will enable the students to learn the techniques to handle the problems from the field of non-linear dynamics.

Course: Applied Mathematics

This course has been developed to introduce students to some topics of mathematical physics which are directly relevant in different papers of M. Sc. Applied Physics course. It includes elements of group theory, special functions, and functions of a complex variable and calculus of residues. On completion of this course, students would be able to handle the mathematics that appears invariably in other papers such as Classical Mechanics, Quantum Mechanics, Nuclear Physics and Condensed Matter Physics etc.

Course: Applied spectroscopy

The course illustrates the fundamental aspects of atomic and molecular physics, and will use quantum mechanics at different levels to understand the structure and dynamics of both atoms and molecules. On completion of the course, the students shall have basic knowledge of modern atomic and molecular physics

Course: Laser Physics

This Course illustrates the fundamental properties of laser like stimulated and spontaneous emission , monochromaticity ,coherence etc to explain various physical phenomenon.

Course: Electronics-I

Through this course on electronic devices and circuits, the students are supposed to understand basic physics of semiconductor materials and the construction and operation of pn-diode and BJT under different operating conditions. The students will also be able to learn the importance and consequences of feedback in electronic circuits

I Year Semester-II

Course: Quantum Mechanics

This course aims at providing an elementary introduction to the basic principles of (non-relativistic) Quantum Mechanics, and its wave-mechanical and matrix-mechanics formulations. Starting with the mechanics of a single spin-less particle, formulation is extended to deal with spin and a system of many identical particles.

Course: Electromagnetic theory

On completion, the students will be able to: (i) Demonstrate an understanding of the use of scalar and vector potentials and of gauge invariance, (ii) Know and use methods of solution of Poisson/Laplace equation, (iii) Know and use principles of Lorentz covariant formalism and tensor analysis, (iv) Demonstrate the compatibility of electrodynamics in special theory of relativity

Course: Applied Nuclear Science

One of the primary goal of nuclear physics, since from its inception, is to understand the exact nature of nuclear interaction and hence the structural and behavioral aspects of atomic nucleus. The nuclear scattering and reaction experiments are the most effective tools to achieve this goal.

Course: Condensed Matter Physics and Nano Technology

The aim of Condensed Matter Physics-I is to expose students to topics like electron dynamics in semiconductors and metals, Fermi surface and its determination, optical properties of solids, dielectrics and ferroelectrics, and quantum-mechanical origin of magnetism. Theoretical formulation of these properties has been brought in direct contact with relevant experiments.

Course: Electronics-II

The topics of various number systems and their arithmetic, basic logic gates and simplification techniques for Boolean expressions will enable the students to enter into the fascinating world of digital electronics. The combinational and sequential digital systems will be used to understand the applications in day to day life, basic structure of the Microprocessor will help the student to understand various controlled application.

II Year- Semester-III

Course: Material Science-I

This course aims to provide the students with a basic understanding of different kind of imperfections, deformation, strengthening mechanisms, different phase diagrams and phase transformations in solids. It describes the understanding of fundamentals of ion implantation technique for materials processing besides various ion beam based methods of material characterization.

Course: Microwave Devices

Microwave technology has wide range of application areas. Traditionally it has been used for telecommunication purposes but it is also used for different kinds of sensing and imaging applications.

Course: Thin Film and Vacuum Technique

This course explain students how thin films are utilized in a wide variety of fields. And this will tell them how vacuum thin film coating system applies a thin coat on the object in a vacuum chamber.

Course: Surface Modification and Characterization Techniques

This course is the act of modifying the surface of the material by bringing physical , chemical characteristics by using different techniques like RBS,XPS,AES etc.

Course: Radiation Physics

This course is designed to provide a basic knowledge of physics as it pertains to the radiations. This course is aimed to understand the radiation, its measurement and conventional sources. This also explains the exposure to radiation, health hazards, maximum permissible radiation level and its units.

II Year- Semester-IV

Course : Material Science-II

This course will provide the students an understanding of basic fundamentals and properties of magnetic, dielectric, optical and ferroelectric materials. The course describes the various mechanical methods for tension, hardness, impact, fatigue and creep testing of materials.

Course : Applied Nuclear Techniques

This course will provide the students efficient knowledge about accelerators , Pixe spectrometers ,x ray analysis in various fields and explain them the analysis of NAA Spectrometer for soil science ,geological science etc.

Course : Computational Physics

In theoretical physics, one comes across very frequently with the situations where the analytical solutions of the equations describing the physical system are not possible. In these situations the numerical methods for solving equations, evaluating differentiation, integration etc. provide a powerful tools to describe the physical phenomenon quantitatively.

Course : Fiber Optics

This course provides students enough knowledge about using fibres for communication purposes and gives them a brief knowledge about A/D converters transreceivers and LED used in various fields .

Course : Communication System

This course provides students enough knowledge about communication systems , local area networks, and radar , TV systems which are used in today's world abundantly . This will also explain them the usage of techniques like ASK,PSK,PAM,PWM which are useful for the

design of communication systems