

DEPARTMENT OF PHYSICS

PROGRAMME OUTCOME.

→ To develop the ability of the students in understanding the basic concepts of Physics, carrying out skills on experimental Physics that will foster them for further higher studies and by the by day to day research programmes which ultimately enable them to be the assets for the nation building programmes in the challenging global scenario.

 16/12/22

DEPARTMENT OF PHYSICS

PROGRAMME SPECIFIC OUT COMES

- To enable the students' academic abilities particularly on the major branches of Basic Science, Physics.
- To motivate the students to pursue P.G. courses in reputed institutions; viz, IITs, NISERS, ISERS, NITS, MCA, etc.
- To provide a hands on learning experiences on branches of Physics; viz, Mechanics, Optics, Electricity, Magnetism, Thermodynamics, electronics, Modern Physics, Statistical Physics, Solid state Physics, Particle Physics, Nano Physics, Quantum Mechanics, Mathematical Physics and with equal importance on experimental skills.
- To develop the activities like Periodic Seminars, Wall magazines, poster presentation, study tour and national level examinations etc.
- To foster the students to acquire skills on Solving real time problems and provide themselves to be good and responsible Technical experts in the emerging World.

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COURSE OUTCOMES:-

MECHANICS:-

This course provides the basic concepts related to the motion of physical objects around us in our daily life. The course comprises of the study of vectors, laws of motion, momentum, energy, rotational motion, gravitation, fluids, elasticity & special relativity.

ELECTRICITY AND MAGNETISM:-

It gives an opportunity for students to learn about one of the fundamental interactions of electricity and magnetism, both as separate phenomena and as a singular electromagnetic force. The course contains vector analysis, electrostatics, magnetism, electromagnetic induction and Maxwell's equations.

THERMAL PHYSICS AND STATISTICAL MECHANICS:-

This course makes the students able to understand the basic physics about heat & temperature, and their relation with energy, work, radiation, and matter. The course consists of the laws of thermodynamics, thermodynamic description of systems, thermodynamic potentials, kinetic theory of gases, theory of radiation and statistical mechanics.

WAVE & OPTICS:-

The course comprises of the study of superposition of harmonic oscillations, wave motion oscillators, sound, wave optics, interference, diffraction, polarization. This course helps students to make their in various branches of science, especially in the field of photonics.

MATHEMATICAL PHYSICS:-

This topic covers various mathematical tools/methods to solve the various problems in physics. The course includes the calculus of functions, Fourier transform, Laplace transform, special functions & special integrals, partial differential equations, complex analysis and variables.

QUANTUM MECHANICS:-

Quantum Mechanics provides a platform for physicists to describe the behaviour of matter and energy at atomic and subatomic level. The course plays a fundamental role in explaining how things happen beyond our normal observations. The topic includes the study of Schrödinger equations, particle in one dimension potential, quantum theory of Hydrogen and Hydrogen like atoms.

Elements of Modern physics:-

This course covers the basic principles in the development of Modern physics. The topic build up foundation for under graduate student to study the advance



branches: Quantum mechanics, Nuclear physics, particle physics and High energy physics. The course contains the study of the Planck's hypothesis, photoelectric effect, Compton effect, matter waves, atomic models, Schrödinger wave equations, and brief idea of nuclear physics.

SOLID STATE PHYSICS :-

The course comprises of the study of crystal structures, elementary lattice dynamics, magnetic properties of matter, Dielectric properties of materials, lasers, elementary band theory, superconductivity. The course build a theoretical basis of experimental material science & technology.

STATISTICAL PHYSICS :-

The course includes the classical statistics, quantum statistics, and radiation. The course is helpful for students to understand the dynamics of the bulk material in macroscopic as well as microscopic levels. This course makes students to understand how statistics of the microscopic world can be.

NUCLEAR AND PARTICLE PHYSICS :-

The topic includes the general properties of Nuclei, Radioactive decays, Nuclear models, Detector for nuclear radiation, particle accelerators, Basics of particle physics, Symmetries and conservation laws. This course is important for students to learn about ^{the} most fundamental building blocks of matter and radiation.

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