

Course Outcome of M.Sc – PHYSICS

MATHEMATICAL PHYSICS – I

- Understand the basic concept of Grad Div and Curl and hence verify Gauss, Greens and Stroke's theorem
- Understand the rank and inverse of a matrix and verify Cayley Hamilton's theorem
- Analyse first and second order differential equations
- Find the basic ideas of complex variables and verify Cauchy's integral and Residue theorem
- Understand the Fourier sine and cosine series

CLASSICAL DYNAMICS AND RELATIVITY

- Study the basic ideas of laws of conservative laws – constraints – Coordinates hence verify Lagrangian equation of motion
- Know the equation of motion and analyse the Keplers – inverse square law
- Verify the theory of small oscillation and wave equation
- Analyse Lagrange, Hamilton's equation and hence Hamilton Jacobi method
- Verification of Mass – Energy relation and Lorentz transformation

ADVANCED ELECTRONICS

- Understand the basic principle of semiconductors various types of diode characteristics and opto electronic devices and its working
- Construction of Op- Amp. Then characterization of its various types of working modes.
- Understands the basic principle of various types of logic gates – Registers' and counter and also the memory device

- Understands the construction and working of various types of oscillators.
And then converts its into various types of oscillations
- Studying the principle, construction and working of signal modulators.
Perform the working of various types of microwave devices.

SOLID STATE PHYSICS

- Find out the relationship between crystals detector, structure analysis by various methods
- Understand the elastic constant of crystals and lattice vibration
- Understand the Energy levels and define Electrical conductivity – Hall Effect and free electron model and band gap energy
- Analyse the relationship between dielectric and Ferro electric proportion of crystal
- Perform and verify the theory and experimental procedure for magnetism and super conductivity phenomenon

NUMERICAL METHOD

- Understand the general ideas about Errors
- Analyse the method for writing the C – programme for its algebraic equation
- Understand the theory for Gauss Forward and Backward difference rule.
- Perform the theory and derivations for numerical differentiations and integral.
- Study the importance of Eulers method and Runge – kutta second and third order and first order differential equations

PHYSICS PRACTICAL -1

- Perform the theoretical expression for young's modulus experiments by forming Newton's rings and verifying experimental
- Understand nature of water
- Study the electrical behaviour of semiconductor
- Analyse the characteristics of electrical circuit
- Verify the physical concepts with computer programme

MATHEMATICAL PHYSICS – II

- Understand the properties of laplace transform and laplace inverse transform and apply with neat equation
- Verify the equation of vibrating string and heat flow by one , two and three dimension
- Understand the basic concept of Tensor application of Tensor with dynamics of particle
- Analyse of basic concepts of group explanation of symmetric and asymmetric operators
- Understand the Legendre, Bessel , Hermite differential equation

ELECTROMAGNETIC THEORY

- Understand the basic properties of Coulomb's law, Gauss law for electric potential
- Analyse the relation between electrostatics & magnetostatics, Biot Sarvat law, Ampere's law
- Study the Faraday's Electromagnetic induction & Verify with Vector and Scalar potential

- Basic ideas about plane waves, their properties, linear, circular and elliptical electromagnetic waves
- Study the parameters of different Scattering

THERMODYNAMICS AND STATISTICAL PHYSICS

- Verify the laws of thermodynamic equation
- Analyse the Boltzmann transport equation and its distribution
- Understand the Maxwell Boltzmann distribution law
- Study the basic ideas of Bose-Einstein and Fermi –Dirac distribution law
- Study the Planck's black body radiation

NANOSCIENCE

- Study the various types of Nano technology
- Verify the various methods of preparation of Nanomaterials
- Study the properties of Carbon Nano tube and preparation
- Various types of Optics, Photonics and Solar energies
- Verify the birth of Nanoelectronics and Quantum electronic devices

PHYSICS PRACTICAL -II

- To study the basic properties of materials
- To construct the different type of electronic devices and verify its behaviours
- Understand the logic truth tables
- Programme for Application device using Microprocessor
- Writing C – programme for solving equation

QUANTUM MECHANICS

- Study the basic physical concept of quantum mechanics
- To understand to solve the one dimensional Schrodinger wave equation
- To verify the first order and second order Perturbations theory
- Understand the basic ideas of spin angular momentum
- Verify Klein –Gordon equation for a free particle in a electromagnetic field

ATOMIC AND MOLECULAR PHYSICS

- Study the Quantum state of electrons in atoms
- Analyse the Quantum chemistry of molecule
- Study the microwave and infrared spectroscopy
- Study the Raman and electronic spectra of molecules
- Understand the basic concept of NMR and ESR spectrometers

NUCLEAR AND PARTICLE PHYSICS

- To study the basic properties of nuclear forces.
- To understand the radiative decays and nuclear radiative detectors
- To study the various types of accelerator and nuclear fission and fusion.
- Study the various types of nuclear reactors.
- To understand the basic ideas about elementary particle

ENERGY PHYSICS AND ENVIRONMENTAL SCIENCE

- To understand the world and Indian renewable and non-renewable energy sources
- Study the principle construction and working of solar radiation measuring instrument.

- To study the working of solar air and water heaters
- study the basic ideas about the construction and working of fuel and solar cell.
- Study the various types of air and water pollution.

PRACTICAL

- Study the construction and working of Michelson interferometer
- Study the electrical and magnetic behaviour of materials by four probe and hall experiment
- Analyse the planck's constant by photo cell.
- Analyse of microprocessor based programme to source working instrument
- Finding C-programe for solving mathematical equation.

MICROPROCESSOR AND MICROCONTROLLER

- To study the basic ideas of 8085 Microprocessor
- To analysis the data transfer techniques peripheral devices
- Study the 8051 microcontroller architecture
- Study the instructions of 8051 Microcontroller and simple programme.
- Analyse the applications of 8051 Microcontroller

PROJECT WORK

- To understand the basic ideas of the materials
- Prepare and optimize the materials by various methods
- Characterize the materials using various methods
- Study the materials into application side
- Useful results obtained by the project work for future studies.