DEPARTMENT OF PHYSICS

PROGRAM OUTCOMES (PO):
B.Sc Physics

After completion of three year degree course, the student will be able to

PO 1:   Apply the knowledge gained to solve the scientific problems.
PO 2:   Develop human resource with knowledge, ability and insight in physics and related fields required for career in academic and industry.
PO 3:   Identify, formulate and analyze scientific problems reaching substantial conclusions using first principles of mathematical and physical sciences.
PO4:   Design solutions for physics problems that meet the specified needs with appropriate attention to health and safely risk, applicable standards and economics, environmental, cultural and social consideration.
PO5:   Use research based knowledge and methods including design of experiments, analysis, interpretation of data, synthesis of the information to provide valid conclusion.
PO6:   Create, select and apply appropriate technique, resources and modern scientific tools to physics problems with an understanding of limitations.
PO7:   Enhance the student's academic abilities, personal qualities and transferable skill. This will give the students an opportunity to develop as responsible citizens.
PO8:   Motivate the students to pursue post graduate course in reputed institutions.

Course Outcome
B.Sc Physics
Semister-1
Subject Code: Phy-101
Subject Name: Mechanics

        At the end of the course the students will be able to
CO1:   Understand fundamentals of translational motion such as Newton's Law of motion, principle of conservation of momentum, impulse of a force, one stage and multistage rocket, work energy theorem, potential energy and conservation of energy.
CO2:   Understand the fundamental of rotational dynamics such as Torque, angular momentum, moment of inertia kinetic energy of a rotating body and fly wheel.
CO3:   Learn gravitational and central force motion such as law of gravitation, gravitational potential, gravitational potential energy, calculation of escape velocity of a rocket, motion under central force and Kepler's planetary motion.
CO4:   Learn simple harmonic motions such as simple pendulum, compound pendulum, and loaded spring.
CO5:   Learn differential equation of damped harmonic oscillator and superposition of harmonic oscillations.

CO6: Understand special theory of relativity and its applications to length contraction. Time dilation, relativistic addition of velocities, variation of mass, relativistic Doppler effect, equivalence of mass and energy and transformation of energy and momentum.

COURSE OUTCOME
B.Sc. Physics
Semester – 1
Subject Code   : Phy – 102
Subject Name   : Thermal Physics and optics
        At the end of the course, the student wil be able to
CO1:   Learn the basic concepts of thermodynamics, the first and second law of thermodynamics, the concept of energy, carnot's theorem.
CO2:   Learn the basic concepts of thermodynamics potentials and their physical interpretations. They are also expressed to learn Maxwell's thermodynamic relations.
CO3:   First and second order phase transitions claussius claperon's equation, Eherfest's equation and Joule-Thomson Effect.
CO4:   Learn about the derivation of Maxwell's law of distribution, transport phenomena, real gas equation, Vander Wall equation of state.
CO5:   Learn about the black body radiation, Wien's displacement law, Rayleigh-Jean's law and planck's law and their significance.
CO6:   Learn interference in their films, theory of Newton's rings, Michelson's interferometer and Fabry- perot interferometer.
CO7:   Understand the concept of interference and diffraction.
CO8:   Understand of plane wave diffraction grating, resolving power and dispersive power of plan diffraction grating.
CO9:   Understand the concept of polarization, Babinet compensator.
CO10:   understand the concept of stimulated emission, stimulated absorption and spontaneous emission.
CO11:   Understand the basic principle of laser and it's working.

COURSE OUTCOME
B.Sc. Physics
Semester – III
Subject Code   : Phy – 103
Subject Name   :
        At the end of the course the students will be able to learn
CO1   : Learn the gradients of vector field, divergence of vector field, curl of vector field, Gauss's theorem, stocks theorem and Green's Theorem.
CO3   : Understand Gauss's Law in electrostatics and its applications, electric potential, multipole , moment and multipole expansion.
CO4   : understand Poission's and Laplace equation, zonal harmonics.
CO5   : Learn the electrostatic energy system of point charge system of continuous charge distribution.
CO6   : Learn electric field caused by polarized matter boundary conditions of electric and magnetic field, derivation of claussius-mosseti equation.
CO7   : Calculation of magnetic field for a straight wire, a circular loop and a solenoid.
CO8   : Draw qualitative and quantitative conclusion about scalar and vector potential alterating and transient currents etc. by managing a number of physical concepts and laws such as Gauss's Law, Ampere's circuital law, Faraday's Law etc. and its applications.
CO9   : understand the transient current response of LR, CR and LCR circuits and alternating current reaponse of LCR series, and parallel circuits, which are essential in designing as well as understand the working of electronic circuits.
CO10   : Learn Maxwell's equation and their physical meanings, transversal nature of electromagnetic wave, flow of electromagnetic power and the pointing theorem.

Course Outcome
B.Sc. Physics
Semester – IV
Subject Code   : Phy – 104
Subject Name : Atom and Nuclear physics.
        At the end of the course the student will be able to
CO1   : Learn the principle and working of Aston's mass spectrograph, continuous and characteristic x-ray and absorption spectra, Blagg's law in X-ray diffraction.

CO2 : Learn Bohr's Theorem of hydrogen spectrum sommenfield's modification of Bohr's theory, vector model of atom, pauli's exclusion principle, fine structure of hydrogen, LS coupling and jj coupling schemes and Zeeman effect.

CO3 : Learn radioactive decay law, theory of radioactive transformations, carbon dating, radio isotopes and their uses and theory of alpha, betta and gamma decay.

CO4 : Learn the principle working and uses of linear accelerator, Cyclotron, and cychrotron.

CO5 : Learn the principle working and uses of linear accelerator GM counter cloud chamber, scientilation counter etc.

CO6 : Learn Rutherford's theory of alpha particle scatterings, spring and parity of nuclei, nuclear binding energy and electric dipole and quadripole moment.

CO7 : Understand the model of nucleus such as liquid drop model, shell structure model and the concepts of magic number.

CO8 : Learn Q value of a nuclear reaction, elementary idea of nuclear fission and nuclear fusion, fusion reaction in the sun, types of nuclear reactor and four factor formula.

Couse Outcome
B.Sc. Physics
Semester-V
Subject Code Phy - 505
At the end of the course the student will be able to

CO 1 : Understand the electrical network theorems such as Kirchhoff's law, Thevenin's theorem, superposition principle and Norron's theorem and their uses in solving network problems.

CO 2 : Understands the application of pn junction diode for different types of diode and voltage regulators and clippers and limiters.

CO 3 : Learn NPN and PNP transistors and their characteristics and h parameters, derivation of current gain, voltage gain and input resistance of the CB, CE for transistor amplifier for small signals.

CO 4 : Learn various types of FETS and their construction and characteristics, idea of MOSFET.

CO 5 : Learn types of amplifier such class A, B, AB and C amplifier

CO 6 : Understand the construction working of different types of amplifiers such as feedback amplifier, transformer coupled amplifier and operational amplifier with their uses.

CO 7 : Understand the principle of oscillator and barkhausen criterion condition, RC oscillator Wien bridge oscillator and phase shift oscillators.

CO 8 : Learn the logic gates such as OR, AND NAND, NOT and NOR gate with their logic symbols, truth tables and Boolean equations, making of half adder and full adder.

COURSE OUTCOME
B. Sc Physics
SEMESTER – V
Subject Code : Phy – 506

Subject name: At the end of the course the student will be able to

CO 1 : Learn the graphical module and argument of a complex number

CO 2 : Learn the analysis function and its related theorem such as Taylor's series, Laurnent series, residue and residue theorem

CO 3 : Learn the gamma and betta functions and their relations

CO 4 : Understand the differential equation of Legendre, Hermite, deguerre and Bessel and their solutions, generating functions recurrence relations and orthogonal relations.

CO 5 : Derive and solve vibration of rectangular and circular membrence and free conduction under various initial conductions by applying differential equation technique and to solve vibration of stretch string and Laplace equation

CO 6 : Learn orthogonality of sign and cosine function, fourier series of a function and parsevel's theorem

COURSE OUTCOME
B Sc Physics SEMESTER – VI

Subject code : Phy – 608
Subject name : Quantum Machanics

At the end of the course the student will be able to

CO 1 : Understand the origin of Quantum theory such as back body radiation, photoelectric effect Compton effect, Bohr's postulates of angular momentum quantization and de Broglei waves

CO 2 : Learn the development of quantum mechanics sush as wave behavior of matter, probability amplitude wave packet, Haesenberg uncertainly principle and Bohr's correspondence principle.

CO 3 : Learn the basic postulates and formalism of quantum mechanics such as schrodinger wave equation, normalization of wave function

CO 4 : Understand the eigon values and eigenfunctions of a dynamical variable, Hermiticity and its properties, expectation value of a dynamical variable and Ehrenfest's theorem

CO 5 : Learn and calculate eigen values and eigen functions of Linear harmonic oscillator and hydrogen atom

CO 6 : Learn and calculate eigen values and eigen functions of one dimensional potential barrier and particle in one dimensional box

COURSE OUTCOME
B.Sc Physics SEMESTER – VI
Subject code: Phy – 609
Subject name: Physics of materials

At the end of the course the student will be able to

CO 1 : Learn crystalline and Ammorphouse solid lattice translational vectors, reciprocal lallic, Brillouin zones of sc bcc and fee lattice and bragg's law in X-ray diffraction

CO 2 : Learn Sommerfield theory of free electron in a metal. Bloch theorem kroning penny model and effective mass

CO 3 : understand the energy band theory of solids and classical Hall Effect

CO 4 : Understand types of magnetic materials, classical theory of diamagnetic and paramagnetic materials, quantum theory of the paramagnetism and soft and hard magnetic materials

CO 5 : Learn monoatomic and diatomic lattice vibration and Einstein's and Debye's theory of specific heat

CO 6 :Learn the properties of superconductor, London's theory of superconductor, type I and II super conductor and high temperature superconductor.

CO 7 : Understand the various types of nanomaterials, blue shifting quantum wealths, nanowires and applications of nanomaterials.