PROGRAMME OUTCOME (PO):

PO-1: Discipline Knowledge: Knowledge of science and ability to apply to relevant areas

PO-2: Problem solving: Execute a solution process using first principles of science to solve problems related to respective discipline

PO-3: Modern tool usage: Use a modern scientific, engineering and IT tool or technique for solving problems in the areas of their discipline.

PO-4: Ethics: Apply the professional ethics and norms in respective discipline.

PO-5: Individual and teamwork: Work effectively as an individual multidisciplinary team.

PO-6: Communication: Communicate effectively with the stake holders, and give and receive clear instructions.

COURSE OUTCOME

I SEMESTER

Subject	**Subject code**	**Course outcome**
Mechanics and properties of matter	BSCPHCN101	CO-1: Will learn fixing units, tabulation of observations, analysis of data (graphical/analytical) CO-2: Will learn about accuracy of measurement and sources of errors, importance of significant figures. CO-3: Will know how g can be determined experimentally and derive satisfaction. CO-4: Will see the difference between simple and torsional pendulum and their use in the determination of various physical parameters. CO-5: Will come to know how various elastic moduli can be determined. CO-6: Will measure surface tension and viscosity and appreciate the methods adopted. CO-7: Will get hands on experience of different equipment

II SEMESTER

Subject	Subject code	Course outcome
Electricity and Magnetism	BSCPHCN201	CO 1. Will demonstrate Gauss law, Coulomb's law for the electric field, and apply it to systems of point charges as well as line, surface, and volume distributions of charges. CO 2. Will explain and differentiate the vector (electric fields, Coulomb's law) and scalar (electric potential, electric potential energy) formalisms of electrostatics. CO 3. Will be able to apply Gauss's law of electrostatics to solve a variety of problems. CO 4. Will describe the magnetic field produced by magnetic dipoles and electric currents. CO 5. Will be able to explain Faraday-Lenz and Maxwell laws to articulate the relationship between electric and magnetic fields. CO 6. Will be in position to describe how magnetism is produced and list examples where its effects are observed. CO7. Will be able to apply Kirchhoff's rules to analyze AC circuits consisting of parallel and/or series combinations of voltage sources and resistors and to describe the graphical relationship of resistance, capacitor and inductor. CO 8. Will understand and able to apply various network theorems such as Superposition, Thevenin, Norton, Reciprocity, Maximum Power Transfer, etc. and their applications in electronics, electrical circuit analysis, and electrical machines.

III SEMESTER

Subject	Subject code	Course outcome
Wave motion and optics	BSCPHCN301	CO 1. Identify different types of waves by looking into their characteristics. CO 2. Formulate a wave equation and obtain the expression for different parameters associated with waves. CO 3. Explain and give a mathematical treatment of the superposition of waves under different conditions, such as, when they overlap linearly and perpendicularly with equal or different frequencies and equal or different phases. CO 4. Describe the formation of standing waves and how the energy is transferred along the standing wave in different applications, and mathematically model in the case of stretched string and vibration of a rod. CO 5. Give an analytical treatment of resonance in the case of open and closed pipes in general and Helmholtz resonators in particular. CO 6. Describe the different parameters that affect the acoustics in a building, measure it and control it. CO 7. Give the different models of light propagation and phenomenon associated and measure the parameters like the wavelength of light using experiments like Michelson interferometer, interference and thin films. CO 8. Explain diffraction due to different objects like singles slit, two slits, diffraction of grating, oblique incidence, circular aperture and give the theory and experimental setup for the same. CO 9. Explain the polarization of light and obtain how the polarization occurs due to quarter wave plates, half wave plates, and through the optical activity of a medium.

IV SEMESTER

Subject	Subject code	Course outcome
Thermal physics and electronics	BSCPHCN401	CO 1. Apply the laws of thermodynamics and analyze the thermal system. CO 2. Apply the laws of kinetic theory and radiation laws to the ideal and practical thermodynamics systems through derived thermodynamic relations. CO 3. Use the concepts of semiconductors to describe different Semiconductor devices such as diode transistors, BJT, FET etc. and explain their functioning. CO 4. Explain the functioning of OP-AMPS and use them as the building blocks of logic gates. CO 5. Give the use of logic gates using different theorems of Boolean Algebra followed by logic circuits.

V SEMESTER

Paper V

Subject	Subject code	Course outcome
Classical Mechanics and Quantum mechanics -I	BSCPHCN501	CO 1. Identify the failure of classical physics at the microscopic level. CO 2. Find the relationship between the normalization of a wave function and the ability to correctly calculate expectation values or probability densities. CO 3. Explain the minimum uncertainty of measuring both observables on any quantum state. CO 4. Describe the time-dependent and time-independent Schrödinger equation for simple potentials like for instance one-dimensional potential well and Harmonic oscillator.

		CO 5. Apply Hermitian operators, their eigenvalues and eigenvectors to find various commutation and uncertainty relations.

Paper- VI

Subject	**Subject code**	**Course outcome**
Elements of atomic, molecular and laser Physics	BSCPHCN502	CO 1. Describe atomic properties using basic atomic models. CO 2. Interpret atomic spectra of elements using vector atom model. CO 3. Interpret molecular spectra of compounds using basics of molecular physics. CO 4. Explain laser systems and their applications in various fields.

VI SEMESTER

Paper VII

Subject	**Subject code**	**Course outcome**
Elements of Condensed Matter and Nuclear Physics	BSCPHCN601	CO 1. Explain the basic properties of nucleus and get the idea of its inner information. CO 2. Understand the concepts of binding energy and binding energy per nucleon v/s mass number graph CO 3. Describe the processes of alpha, beta and gamma decays based on well-established theories CO 4. Explain the basic aspects of interaction of gamma radiation with matter by photoelectric effect, Compton scattering and pair production CO 5. Explain the different nuclear radiation detectors such as ionization chamber, Geiger-Mueller counter CO 6. Explain the basic concept of scintillation detectors, photo-multiplier tube and semiconductor detectors

Paper- VIII

Subject	Subject code	Course outcome
Electronic instrumentation and Sensors	BSCPHCN602	CO 1. Identify different types of tests and measuring instruments used in practice and understand their basic working principles. CO 2. Get hands on training in wiring a circuit, soldering, making a measurement using an electronic circuit used in instrumentation. CO 3. Have an understanding of the basic electronic components viz, resistors, capacitors, inductors, discrete and integrated circuits, color codes, values and pin diagram, their practical use CO 4. Understanding of the measurement of voltage, current, resistance value, Identification of the terminals of a transistor and ICs CO 5. Identify and understand the different types of transducers and sensors used in robust and hand-held instruments CO 6. Understand and give a mathematical treatment of the working of rectifiers, filter, data converters and different types of transducers. CO 7. Connect the concepts learnt in the course to their practical use in daily life. CO 8. Develop basic hands-on skills in the usage of oscilloscopes, multimeters, rectifiers, amplifiers, oscillators and high voltage probes, generators and digital meters CO 9. Servicing of simple faults of domestic appliances: Iron box, immersion heater, fan, hot plate, battery charger, emergency lamp and the like.