

Programme Outcome, Department of Physics

On successful completion of the programme, students will be able to understand,

- The calculus of vectors, concept of curved, Dirac delta, dynamics of particles, energy, oscillation and basic properties of matter in various problems of physics, technology and engineering.
- Methods of solving various differential equations appearing in physics, matrix algebra, electric field and magnetic fields in matter, dielectric properties of matter, magnetic properties of matter, application of Kirchhoff's law in different circuits, and application of network theorem in different circuits.
- Simple Harmonic Oscillation and superposition principle, classical wave equation in transvers and longitudinal waves, concept of normal modes in transvers and longitudinal waves superposition of waves, basic principle of Young's double slit experiment, Fresnel's Biprism, Newton's Rings, Michelson interferometer, basic concept of diffraction, Fresnel and Fraunhofer diffraction from a slit, polarisation of light, the production and detection of polarized light, working principle of prism, biprism, spectrometer, Newton's ring apparatus, grating, CRO, sodium and mercury light sources etc.
- The laws of classical dynamics to physical problems of motion of particles, systems of particles and fluids in various fields of physics and natural science as a whole.
- Physical and mathematical fundamentals of Quantum physics, the physics of semiconductor p-n junction and devices such as rectifier diodes, Zener diode, photodiode, bipolar junction transistors, transistor biasing, and stabilization circuits, feedback in amplifiers, oscillator circuits, operational amplifiers and their applications.
- Techniques related to solving partial differential equations using separation of variables method, application of Fourier series analysis, solving complex integrations, dealing with tensors and probability distributions.
- The atomic spectra of one and two valence electron atoms and will also understand the change in behaviour of atoms and corresponding modification of their spectra in external applied electric and magnetic field, basic principle of pure rotational, vibrational, Rotation-Vibration and Raman spectra of molecules and their few applications.
- The basic knowledge of crystal structure, bonding in solids and elementary idea lattice dynamics of materials, dielectric, ferroelectric and magnetic properties of solids, the physics of 35 electrons in solids, basic idea about nanomaterials, thin film and soft matter and understand the basic concept in superconductivity.
- The thermal properties of gas molecules and their collisions, concepts of Maxwell's equations, propagation of electromagnetic (EM) waves in different homogeneous-isotropic as well as anisotropic unbounded and bounded media, production and detection of different types of polarized EM waves, general information of waveguides and fibre optics.
- The structure and properties of a nucleus, nuclei bound, radioactive decays and various laws of radioactive disintegration.
- The construction and working principles of particle accelerators and detectors, concept of particle physics – types and interactions.
- Knowledge to develop, implement and analyze digital logic circuits and apply them to solve real-life problems and classify different semiconductor memories
- The fundamental concepts in astronomy, skills for (i) observational astronomy (ii) virtual observatory tools and (iii) physical concepts of recent frontiers in astrophysics.
- The microscopic origin of thermodynamic processes, classical and quantum pictures of physical and chemical events.

Course Outcome 2023-2024

Four-year undergraduate Programme

Department of Physics

Behali Degree College, Borgang-784167

Semester	Course Name	Course Outcome
1	Mathematical Physics and Mechanics (PHY101)	This course provides the concept of vectors in various fields, coordinate system and Dirac delta function. Also, the learner will be able to understand reference frame, dynamics of particles, energy, oscillation and basic properties of matter.
2	Mathematical Physics and Electricity and Magnetism (PHY151)	The student will learn the applications of differential equations and concept of matrices. The course will offer a vast knowledge of electric and magnetic fields in matter as well as their different properties and applications, basic concept of dielectric properties of matter, magnetic properties of matter, electric circuits and applications of network theorem in circuits.