Hukum Singh Bora Gov. Post Graduate College,

Someshwar (Almora)

B.Sc. Physics

Programme Outcome

Knowledge Outcomes

After completing B.Sc. (Physics) Programme students will be able to:

1. Apply the basic principles of Physics to the events occurring around us and also in the world.
2. Try to find out or analyze scientific reasoning for various things.

Skill Outcomes

After completing B.Sc. (Physics) Programme students will be able to:

1. Apply the knowledge to develop the sustainable and eco-friendly technology for pollution free environment
2. Collaborate effectively on team-oriented projects in the field of Physics
3. Communicate scientific information in a clear and concise manner both orally and in writing or through audio video presentations.

Generic Outcomes

Students will

1. Develop ability to work in group.
2. Develop capacity of critical reasoning, judgment and communication skills.
3. Develop abilities for logical thinking.

Programme Specific Outcomes

PSO-1: Students get familiar with techniques which are useful in industry.

PSO-2: Students get conceptual knowledge of entrepreneurships through the co-curricular activities.

PSO-3: Students will be able to verify theoretical concept through laboratory experiments.

PSO-4: Students will be well skilled with use of computers

PSO-5: Students will be able to understand and apply the concept of electronics in the designing of different analog and digital circuits.

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Someshwar (Almora)

Course Outcomes

B.Sc. Semester I
Paper I: Mechanics

At the end of course student will be able to -

CO 1- understands the fundamental of vectors and its practical application.

CO 2- understands the effect of gravitational field and potential of various shapes and sizes of massive bodies.

CO 3- explains and applies the conservation laws for dynamical system.

CO 4- idea of conservation of linear and angular momentum and its applications.

Paper II: Electricity

At the end of course student will be able to -

CO 1: Students will be able to understand the concept of the electric force, electric field and electric potential for stationary charges. They are able to calculate electric potential and electric field by using Gauss's law.

CO 2: understands the basic concept of electric field and potential and improves problem solving skill.

CO 2: Student will understand the dielectric phenomenon and effect of electric field on dielectric.

CO 3: Study the application of steady and varying electric current.

Paper III: Theory of Oscillations

At the end of course student will be able to -

CO 1- acquires knowledge of harmonic oscillation and enhances conceptual understanding.

CO 2- applies the concept and laws of harmonic oscillation in different physical and electronic devices.

CO 3: Learn how a body oscillates without damping amplitude and what the necessary conditions are for it.

CO 4: Learn how we can set any object in the forced oscillations that is in continuous motion.

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Course Outcomes

B.Sc. Semester II
Paper I: General Properties of Matter

At the end of course student will be able to -

CO 1- understands and applies the concept of moment of inertia

CO 2- able to calculate the moment of inertia of various bodies

CO 3- Learning the basics concepts of elasticity, surface tension and viscosity

Paper II: Magnetism

At the end of course student will be able to -

CO 1- Study the concept of magnetic field, magnetic field for steady currents using Biot-Savart's and Ampere's Circuital laws.

CO 2- Student will learn magnetic materials and its properties.

CO 3- understands the concept of electromagnetic induction and its practical application.

CO 4- Apply theorems to construct and solve electrical circuits.

Paper III: Waves and Acoustics

At the end of course student will be able to -

CO 1- Understand and analyze the basics concepts of wave motion

CO 2- Understand the concept of Ultrasonic and its applications.

CO 3- Basics idea of acoustics and its applications.

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Course Outcomes

B.Sc. Semester III
Paper I: Thermodynamics

At the end of course student will be able to -

CO 1- To understand various thermodynamic processes like isothermal, isobaric, isochoric processes and laws of thermodynamics.

CO 2- To understand the concept of entropy.

CO 3- To understand Carnot's cycle, Heat engines and Refrigerators.

CO 4- Understand the key ideas of thermodynamic relations.

Paper II: Geometrical Optics

At the end of course student will be able to -

CO 1- understands and familiarizes the mathematical background of Fermat's principal.

CO 2- acquires knowledge about image formation by different optical system and its application in formation of optical instruments

CO 3- Different types of monochromatic and chromatic aberrations and Achromatics in lenses.

CO 4- Construction and working of Simple Microscope, Compound Microscope, Ramsden's Eyepiece and Huygen's Eyepiece

Paper III: Elementary solid-state physics

At the end of course student will be able to -

CO 1- Students will able to study difference between crystalline and amorphous material, crystal structures, miller indices, interplaner distances, interatomic forces and bonds.
From this study students get to learn the basics of solid state physics.

CO 2: Students will understand Bragg's diffraction, Bragg's law. X-ray diffraction and characterization techniques. With the help of this knowledge students know the principles of structures determination by X-ray diffraction method. This would be helpful in performing experiments in nanotechnology.

CO 3- explains and understands the band theory of semiconductor.

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Course Outcomes

B.Sc. Semester IV
Paper I: Heat transfer Mechanism

At the end of course student will be able to -

CO 1- understands various modes of heat transfer.

CO 2- understands fundamental aspects of kinematic theory of gases.

CO 3- understands classical and quantum theory of radiations.

CO 4- understands low temperature physics.

Paper II: Physical Optics

At the end of course student will be able to -

CO 1- understands and familiarizes the concept of wave nature of light.

CO 2- explains different phenomena (interference, diffraction and polarization) practically and mathematically.

CO 3- understands mathematical and theoretical background of different optical instruments.

Paper III: Statistical Physics

At the end of course student will be able to -

CO 1- understands basics concept of statistical physics.

CO 2- To study about types of ensembles viz. Microcanonical, canonical and grand canonical.

CO 3- To get the knowledge about Maxwell Boltzmann statistics, Bose Einstein statistics and Fermi Dirac Statistics.

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Course Outcomes

B.Sc. Semester V
Paper I: Quantum Mechanics

At the end of course student will be able to -

CO 1- explains the origin of quantum theory.

CO 2- understands and familiarizes the wave particle duality in which the basic quantum mechanics are formed.

CO 3- understands the fundamental laws of quantum mechanics and improves problem solving skills.

CO 4- understands the idea of tunneling

Paper II: Atomic and Molecular physics

At the end of course student will be able to -

CO 1- analyzes different atomic models and able to understand optical spectra.

CO 2- Students learn how to find out interaction energy from different coupling schemes.

CO 3- acquires knowledge on the theory of Lasers with its applications.

CO 4- explains mathematical and theoretical background of Molecular spectroscopy.

Paper III: Basic Electronics

At the end of course student will be able to -

CO 1- understands and applies network theorem and improves problem solving skill.

CO 2- Concepts of regulated power supply, rectifiers, filters and regulators.

CO 3- explains basic theory of solid state device and their characteristics.

CO 4- acquires knowledge on the different types of amplifiers and develop independent problem solving ability.

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Course Outcomes

B.Sc. Semester VI
Paper I: Relativistic Mechanics

At the end of course student will be able to -

CO 1- understands the foundation of special theory of relativity

CO 2- Students learn the consequences of Lorentz transformation.

CO 3- Students will able to derive the Maxwell equation for electromagnetic waves in various medium.

CO 4- understands the elementary idea of relativity of electromagnetism.

Paper II: Subatomic Physics

At the end of course student will be able to -

CO 1- explains basic properties of nuclei and able to understand concept of nuclear devices.

CO 2- Understand the fundamentals of radioactivity.

CO 3- Understand the principle and working of particle detectors.

CO 4- Understand the basic principles of elementary particle physics

Paper III: Analog and Digital Electronics

At the end of course student will be able to -

CO 1- explains basic concept of logic gate and its contribution in the field of technology.

CO 2- understands and applies the concept of Number system.

CO 3- acquires knowledge on Oscillators and feedback amplifiers and appreciates the basic physics behind the advance device