

Government Degree College, Kanda, Bageshwar

Department of Physics

Programme Outcomes

The programme of B.Sc. (Physics) aims-

- To give in-depth knowledge of different concepts and fundamentals of Physics and to build the ability to apply this knowledge in various fields of academics, research and industry.
- To gain the hands-on experience to apply the theoretical knowledge to solve practical problems of basic physical phenomena.
- The student should be able to carry out experiments to understand the laws and concepts of Physics.
- To get an insight in understanding electrical circuits and in handling electrical instruments.
- To make the student learn different concepts in Thermodynamics, and Geometrical Optics.
- To gain the skills and knowledge of basic concepts of optical instruments with their applications in technology.

B.Sc. 1st year (Semester- 1st)

Paper-1 (Mechanics)

Course outcomes

- Understanding of Vector Algebra and Vector Calculus.
- Understand the physical interpretation of gradient, divergence and curl.
- Study of gravitational field and potential and understanding of Kepler's laws of Planetary motion.
- Understanding of different frames of references and conservation laws.
- Understand the dynamics of rigid body and concept of moment of inertia. Study of moment of inertia of different bodies and its applications.
- Study the properties of matter, response of the classical systems to external forces and their elastic deformation and its applications.
- Comprehend the dynamics of Fluid and concept of viscosity and surface tension along with its applications.

B.Sc. 1st year (Semester- 1st)

Paper-2 (Mechanical Properties of Matter (Practical))

Course outcomes

- After completing the first semester the student will be able to use the basic measuring instruments like vernier calliper, screw gauge, and spherometer.
- Understanding the basic concepts of mechanics like: gravity, harmonic motion and fluid dynamics with the help of practical.

B.Sc. 1st year (Semester- 2nd)

Paper-1 (Electricity and Magnetism)

Course outcomes

- To develop an understanding of Electric Field and Potential. Evaluation of Electric Field and Potential for different types of charge distributions.

- Study of Electric and Magnetic Fields in matter. Understand the concept of polarizability, Magnetization and Electric Displacement Vector.
- Understanding of different aspects of alternating currents and its applications.
- Understand the Magnetostatics, Lorentz Force and Energy stored in magnetic Field.
- Comprehend the different aspects of Electromagnetic induction and its applications.

B.Sc. 1st year (Semester- 2nd)

Paper-2 (Demonstrative Aspects of Electricity & Magnetism (Practical))

Course outcomes

- The student will get the practical knowledge about A.C. and D.C. current and different electric circuits.
- The student will learn the application of electric and magnetic fields.

B.Sc. 2nd year (Semester-3rd)

Paper-1 (Thermodynamics)

Course outcomes

- Recognize the difference between reversible and irreversible processes in nature.
- Understand First and Second Law of Thermodynamics and concept of Entropy.
- Understand the physical significance of thermodynamical potentials.
- Comprehend the kinetic model of gases w.r.t. various gas laws.
- Study the implementations and limitations of fundamental radiation laws.

B.Sc. 2nd year (Semester-3rd)

Paper-2 (Demonstrative Aspects of Thermal Physics (Practical))

Course outcomes

- To practically study the concept of temperature and phenomena of transfer of heat.
- Get the practical concept of thermal conductivity.

B.Sc. 2nd year (Semester-4th)

Paper-1 (Geometrical Optics)

Course outcomes

- Study of Fermat's Principle of Extremum Path and understand fundamental physics behind reflection and refraction of light.
- Understand the theory of image formation by an optical system.
- Study of different types of optical Aberrations and techniques for their reduction.
- Study of different types of optical instruments used in industry and research

B.Sc. 2nd year (Semester-4th)

Paper-2 (Demonstrative Aspects of Geometrical Optics (Practical))

Course outcomes

- Practical study of reflection and refraction with the help of prisms and glass slabs.
- Practical measurements related to microscope and telescope.

B.Sc. 3rd year (Semester-5th)

Paper-1 (Physical Optics)

Course outcomes

- Study of Interference of light. Interference by division of wavefront and division of amplitude.
- Understanding Diffraction of Light and concept of Zone Plate.
- Understand the polarization of light.
- Study of different types of associated optical instruments based on interference and diffraction of light which are widely used in industry and research.

B.Sc. 3rd year (Semester-5th)

Paper-2 (Demonstrative Aspects of Physical Optics (Practical))

Course outcomes

- Practical study of basic concept of spectrometer.
- Experimental study of the phenomena of interference with the help of various techniques and instruments.
- Experimental study of the phenomena of diffraction and polarization.

B.Sc. 3rd year (Semester-6th)

Paper-1 (Modern Physics)

Course outcomes

- Study of different atomic models.
- Study of optical spectra and X- rays.
- Understand the theory of LASERS which are widely used in industry and research.
- Understanding fundamentals of molecular spectroscopy.
- Study of structure of atomic nucleus and radioactive decay.
- Study of Elementary Particle Physics.

B.Sc. 3rd year (Semester-6th)

Paper-2 (Demonstrative Aspects of Modern Physics (Practical))

Course outcomes

- To get the practical knowledge of LASER and LEDs.
- Diffraction with single and multiple slits.
- Practical on some advanced phenomena of optics.

Hemlata

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