

Department of Physics (POs, PSOs and COs)

Programme outcomes (POs):

Students having Degree in B.Sc. (with Physics) should have knowledge of different concepts and fundamentals of Physics and ability to apply this knowledge in various fields of academics and industry. They may pursue their future career in the field of academics, research and industry.

PO 1 : Competence in the methods and techniques of calculations using Mechanics.

Students are expected to have hands-on experience to apply the theoretical knowledge to solve practical problems.

PO 2 : Students are expected to have deep understanding of electricity and magnetism.

Student should be able to make basic electrical circuits and handle electrical instruments.

PO 3 : Competence in the concepts of Thermodynamics. Students are expected to have hands on experience in Thermal Physics Experiments.

PO 4: Knowledge of different concepts in Geometrical Optics. Students are expected to have hands on experience of Experiments of Geometrical Optics

PO 5 : Knowledge of basic concepts of optical instruments with their applications in technology. Students are expected to have an insight in handling electronic instruments.

PO 6 : Comprehensive knowledge of Analog & Digital Principles and Applications.

Learn the integrated approach to analog electronic circuitry and digital electronics for R&D.

Programme specific outcomes (PSOs): Certificate course in Basic Physics

- After completing this certificate course, the student should have
- Acquired the basic knowledge of Mechanics, Electricity and Magnetism.
- Hands-on experience to apply the theoretical knowledge to solve practical problems of basic physical phenomena. He should be able to carry out experiments to understand the laws and concepts of Physics.
- An insight in understanding electrical circuits and in handling electrical instruments.

Programme specific outcomes (PSOs): Diploma in Applied Physics

- After completing this diploma course, the student should have

- Knowledge of different concepts in Thermodynamics, and Geometrical Optics.
- Knowledge of different aspects of Thermal Physics which serves as a basis for many physical systems used in industrial applications and deals with the physics and technology of Engines and Refrigerators.
- A deeper insight in Ray Optics to understand the Physics of many optical instruments which are widely used in research and Industry, Optoelectronics, IT and communication devices, and in industrial instrumentation.
- Knowledge of basic concepts of optical instruments with their applications in technology.

Programme specific outcomes (PSOs): Bachelor of Science

- After completing this diploma course, the student should have
- Knowledge of Mechanics and basic properties of matter. The course will empower him to apply his theoretical knowledge in various physical phenomena that occur in day to day life and he can use this scientific knowledge for the betterment of the society.
- Understanding of basic concepts related to Electricity and Magnetism. He should be proficient in designing and handling different electrical circuits
- Expertise in different aspects of Thermal Physics which serves as a basis for many physical systems used in industrial applications and deals with the physics and technology of Engines and Refrigerators.
- Proficiency in the field of Optics which will increase his demand in research and industrial establishments engaged in activities involving optical instruments.
- Basic knowledge in the field of Modern physics, which have utmost importance at both undergraduate and graduate level.
- Comprehensive knowledge of Analog & Digital Principles and Applications.
- Learn the integrated approach to analog electronic circuitry and digital electronics for R&D.

Course Outcomes

B.Sc. Ist Semester

Course Title: 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.

Course Title: Mechanical Properties of Matter (Practical)

Course Outcomes:

- Experimental physics has the most striking impact on the industry wherever the instruments are used to study and determine the mechanical properties.
- Measurement precision and perfection is achieved through Lab Experiments.

B.Sc. IInd Semester

Course Title: Electricity and Magnetism

Course Outcomes:

- 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.
- Study of Steady and Varying electric currents.
- 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.

Course Title: Demonstrative Aspects of Electricity & Magnetism (Practical)

Course Outcomes:

- Experimental physics has the most striking impact on the industry wherever the instruments are used to study and determine the electric and magnetic properties.
- Measurement precision and perfection is achieved through Lab Experiments.

B.Sc. IIIrd Semester

Course Title: Thermodynamics

Course Outcomes:

- Recognize the difference between reversible and irreversible processes.
- 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.

Course Title: Demonstrative Aspects of Thermal Physics (Practical)

Course Outcomes:

- Experimental physics has the most striking impact on the industry wherever the instruments are used to study and determine the thermal properties.
- Measurement precision and perfection is achieved through Lab Experiments.

B.Sc. IVth Semester

Course Title: 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

Course Title: Demonstrative Aspects of Geometrical Optics (Practical)

Course Outcomes:

- Experimental physics has the most striking impact on the industry wherever the instruments are used to study and determine the optical properties.
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B.Sc. Vth Semester

Course Title: Physical Optics (Paper 1)

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.

Course Title: Demonstrative Aspects of Physical Optics (Practical)

Course Outcomes:

- Experimental physics has the most striking impact on the industry wherever the instruments are used to study and determine the optical properties.
- Measurement precision and perfection is achieved through Lab Experiments.

Course Title: Basic Electronics (Paper 2)

Course Outcomes:

- Study of different Network Theorems for simplifying complicated electronics circuits.
- Study of Regulated Power Supply. Understand different types of Rectifiers, Filters and Voltage Regulator.
- Study of different types of special diodes and their applications
- Study of Transistors and their applications in different types of Amplifiers.

Course Title: Demonstrative Aspects of Basic Electronics (Practical)

Course Outcomes:

- Experimental physics has the most striking impact on the industry wherever the instruments are used to study the Electronics and its application in industry and research.
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B.Sc. VIth Semester

Course Title: Modern Physics (Paper 1)

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.

Course Title: Demonstrative Aspects of Modern Physics (Practical)

Course Outcomes:

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Course Title: Analog and Digital Electronics (Paper 2)

Course Outcomes:

- Study of feedback in amplifiers along with their advantages and disadvantages.
- Study of different types of oscillators.
- Understand the concepts of Boolean Algebra and various number systems
- Study of logic gates and their applications.

Course Title: Demonstrative Aspects of Analog and Digital Electronics (Practical)

Course Outcomes:

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