

B.Sc. Physics – Course Outcome

PY1141: BASIC MECHANICS & PROPERTIES OF MATTER

Course Outcomes:

CO. No.	Upon completion of this course, students will be able to
CO - 1	Correlate the knowledge gathered to the immediate experimental curriculum
CO - 2	Distinguish the dynamics of rigid bodies of different shapes
CO - 3	Explain the implications of conservation laws
CO - 4	Interpret the flavor of classical fields from oscillations and waves
CO - 5	Handle the known problems in elasticity, surface tension and viscosity in a more mathematically rigorous way

PY 1241: HEAT AND THERMODYNAMICS

Course Outcomes:

CO. No	Upon completion of this course, students will be able to
CO -1	Compare thermal conductivity of various types of conductors and explain the radiation of heat.
CO -2	Differentiate between various thermodynamic processes.
CO -3	Judge the efficiency of engines by comparing the performance of various vehicles
CO -4	Distinguish entropy and available energy in various thermodynamic processes
CO -5	Differentiate between various phase transitions

PY 1341 ELECTRODYNAMICS

(54 HOURS-3 CREDITS)

CO No.	Course Outcomes
CO1	Identify the principles of electrostatics and apply it to the solutions of problems relating to electric field and electric potential, boundary conditions and electric energy density
CO2	Identify the principles of magnetostatics and apply it to the solutions of problems relating to magnetic field and magnetic potential, boundary conditions and magnetic energy density
CO3	Recognize the concepts related to Faraday's law, induced emf and Maxwell's equations.
CO4	Compare the properties of electromagnetic waves in vacuum, and matter



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CO5	Analyse the growth and decay of transient currents in different electrical circuits
CO6	Compare the properties of different ac circuits

PY1441 CLASSICAL AND RELATIVISTIC MECHANICS

Course Outcomes:

CO. No.	Upon completion of this course, students will be able to
CO – 1	Recognize the mechanics of a single and a system of particles under different force fields
CO – 2	Solve different mechanical problems in classical mechanics using Lagrangian formalism
CO – 3	Generalize Hamiltonian mechanics to solve various problems in classical mechanics
CO – 4	Able to define phase space, microstate, macrostate and ensemble
CO – 5	Learn to distinguish different statistical distributions and judge which distribution applies to a given system
CO – 6	Distinguish inertial and non- inertial frames of references
CO – 7	Understand the concept of Galilean and Lorentz Transformations and their applications

PY1541-Quantum Mechanics

Course Outcomes:

CO.No.	Upon completion of this course, students will be able to
CO – 1	Recognize the limitations of Classical Physics to explain certain physical phenomena
CO – 2	Identify the quantum mechanical concepts applicable to Physical systems
CO – 3	Apply the concepts of Quantum Mechanics to solve problems
CO – 4	Derive Equations of motion of Physical systems using quantum concepts

PY1542: STATISTICALMECHANICS, RESEARCH METHODOLOGY AND DISASTER MANAGEMENT

CO. No	Upon completion of this course, students will be able to
CO-1	To understand the properties of macroscopic systems using the knowledge of the properties of individual particles.



PY1542: STATISTICAL MECHANICS, RESEARCH METHODOLOGY AND DISASTER MANAGEMENT

CO. No	Upon completion of this course, students will be able to
CO-1	To understand the properties of macroscopic systems using the knowledge of the properties of individual particles.
CO-2	Understand the different types ensembles in statistical mechanics
CO-3	Understand the statistical behavior of ideal Bose and Fermi systems.
CO-4	Understand the objectives, motivation of research
CO-5	Identify the steps in research process
CO-6	Understand what is research problem and how to select a research problem
CO-7	Identify plagiarism in research report and can avoid it
CO-8	Understand the components of thesis and able to write a thesis
CO-9	Explain disaster management theory (cycle, phases, risk, crisis, emergency, disasters, resilience)
CO-10	Compare hazards, disasters and associated natural phenomena and their interrelationships, causes and their effects - developing humanitarian Assistance before and after disaster

PY1543-ELECTRONICS

Course Outcome:

CO. No	Upon completion of this course, students will be able to
CO - 1	Recognize the network theorems
CO - 2	Describe diode characteristics
CO - 3	Design power supply circuits by applying



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	junction diodes
CO - 4	Design single stage transistor amplifiers, oscillators and operational amplifiers.
CO - 5	Understand the concept of modulation
CO - 6	Explain the working of special devices, FET, MOSFET, UJT

PY1544:ATOMIC & MOLECULAR PHYSICS

Course Outcome:

CO. No	Upon completion of this course, students will be able to
CO - 1	Recognize different atomic models, their significances, properties, merits and demerits
CO - 2	Distinguish between atomic and molecular spectra and their relevant uses
CO - 3	Understand the features of X- ray spectra
CO - 4	Recognize different spectroscopic techniques

PY 1551.2 ASTRONOMY AND ASTROPHYSICS

Course Outcomes:

CO No.	Upon completion of this course, students will be able to
CO - 1	Differentiate between astronomy and astrophysics and understand the different branches, scientific methods and scope of astronomy
CO - 2	Understand earlier astronomical works and the different laws involved in astronomy
CO - 3	planets and solar system objects and apply the laws of physics to describe their structure and characteristics.
CO - 4	Understand the evolution and properties of stars and galaxies and apply the different laws of physics to describe the structure and evolution of stars, galaxies and the universe

PY 1641 SOLID STATE PHYSICS

Course Outcomes:

CO No.	Upon completion of this course, students will be able to
CO-1	Able to distinguish types of crystals according to their structure



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CO-2	Able to illustrate the concepts of unit cell and lattice of crystals
CO-3	Able to discuss diffraction of X rays by crystals and to demonstrate its experimental techniques
CO-4	Able to describe and evaluate mechanical, electrical and magnetic properties of metals
CO-5	Learn to discuss and evaluate dielectric properties of materials
CO-6	Able to discuss types of magnetic properties of materials
CO-7	Learn to explain different physical characteristics of superconductors
CO-8	Able to illustrate theoretical formulation of superconductors

PY 1642: NUCLEAR AND PARTICLE PHYSICS

Course Outcomes:

CO. No.	Upon completion of this course, students will be able to
CO - 1	Identify nuclear constituents and general properties of nuclei
CO - 2	Describe nuclear forces, phenomena of radioactivity & radiation Hazards
CO - 3	Distinguish different nuclear models
CO - 4	Understand different types of nuclear reactions, fission & fusion energies and applications
CO - 5	Recognize different particle detectors and accelerators
CO - 6	Classify elementary particles and relate their properties

PY1643- CLASSICAL AND MODERN OPTICS

CO No.	Upon completion of this course students will be able to
CO - 1	Explain the different basic phenomena of light such as Interference, Diffraction, Dispersion and Polarization
CO -2	Differentiate between the two types of diffraction, viz., Fresnel and Fraunhofer diffraction
CO -3	Apply diffraction theory in Rayleigh's criterion for resolution and in finding resolving power of



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	diffraction grating
CO -4	Distinguish between normal and anomalous types of dispersion and to derive region-specific dispersion formulae from the general dispersion relation
CO -5	Understand the different methods for the production of plane polarized light and also the different rules governing polarization.
CO -6	Have a good knowledge about the different types of polarizations, its theory and the production/analysis methods
CO -7	Apply the concept of polarization in studying Nicol prism, quarter wave and half wave plates
CO-8	Explain the basic constituents of a laser, different types and working
CO -9	Obtain an idea about non-linear optical processes especially the different harmonic generations
C-10	Gain knowledge about the principle and different types of optical fibers
C-11	Understand the applications of optical fibers in different fields of science
C-12	Have knowledge on the principles of holography, its production and different types

PY1644: DIGITAL ELECTRONICS AND COMPUTER SCIENCE
Course Outcomes:

CO. No.	Upon completion of this course, students will be able to
CO - 1	Explain different number systems and their mathematical operations.
CO - 2	Differentiate different logic gates.
CO - 3	Summarize digital circuits and their functions.
CO - 4	Develop and compile programs in Python.
CO - 5	Apply numerical methods to solve physical problems.

PY1661.1-ELECTRONIC INSTRUMENTATION

CO. No	Upon completion of this course, students will be able to
CO-1	Understand the basic concepts of measurements
CO-2	familiarize working basic measurement instruments like galvanometer, voltmeter, ammeter, multimeter etc.
CO-3	Describe the working of oscilloscopes
CO-4	Distinguish between passive and active transducers



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CO -5	Distinguish between the passive and active electrical components
CO -6	Identify electronic components
CO -7	Recognize electrical and electronic circuits
CO -8	Design and construct simple electrical and electronic circuits




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