Course outcome: *Student will be able to*

(i) Students are able to learn the concepts of Lagrangian and Hamiltonian mechanics and use them to solve problems in mechanics. Able to learn concepts of generating functions, Poisson brackets Hamilton Jacobi equations and action angle variables.

(ii) To equip the students to deal with central force problem and analyzing Kepler's laws.

(iii) To inculcate the students the concepts of special and general theory of relativity and related problems.

(iv) To acquaint the students about the theory of small oscillations and Euler's equations of motions of rigid bodies.

(v) To analyze nonlinear dynamical systems and to explain the concepts of classical chaos.

PH 212: Mathematical Physics

Course outcome: *Student will be able to*

(i) To apply and analyze the various vector and matrix operations and to perform complex analysis for solving physical problems.
(ii) To demonstrate and utilize the concepts of Fourier series and its transforms.
(iii) To explain and differentiate different probabilistic distributions.
(iv) To apply partial differential equations and special functions for solving mathematical problems.
(vi) To illustrate and apply concepts of group theoretical operations and tensors.

PH 221: MODERN OPTICS AND ELECTROMAGNETIC THEORY

Course outcome: *Student will be able to*

(i) To demonstrate the linear and nonlinear optical phenomena.
(ii) To explain and discuss propagation of electromagnetic waves through different media.
(iii) To restate formulations and relativistic effects in electrodynamics.
(iv) To analyse the propagation of electromagnetic waves through waveguides.
(v) To use radiation theory in developing different antennas.

PH 222: THERMODYNAMICS, STATISTICAL PHYSICS AND BASIC QUANTUM

Course outcome: *Student will be able to*

(i) To explain the basic thermodynamic relations, Maxwell's equations and its consequences.
(ii) To equip the students to demonstrate and apply classical and quantum statistics in different physical phenomena.

(iii) To distinguish the different phase transitions using Ising model.
(iv) Outline and apply foundations of quantum mechanics.

PH 233 E: ADVANCED ELECTRONICS -I

Course outcome: *Student will be able to*

(i) To summarize various techniques of digital and analog communication systems.
(ii) Generalize the idea of information theory
(iii) Illustrate various techniques for digital signal processing based Fourier and Z transform.

PH 241: CONDENSED MATTER PHYSICS

Course outcome: *Student will be able to*

(i) Discuss crystal physics, lattice vibrations, models of thermal properties and band theory of solids.
(ii) Explain the theoretical concepts of semiconductors, dielectric, magnetic and superconducting materials.
(iii) To describe the synthesis and characterization techniques of nanomaterials.

PH 213: BASIC ELECTRONICS (6L,1T)

Course Outcome

(i) To equip the students design and analyze different analogue and digital circuits.

(ii) To summarize the knowledge of basic arithmetic and data processing circuits and

memory devices.

(iii) To equip the students to explain various components in optical communications

systems and microwave devices.

(iv) To measure and analyze the different electronic signals.

PH 223: COMPUTER SCIENCE AND NUMERICAL TECHNIQUES

Course Outcome
(i) To summarize computer hardware and its operating systems
(ii) Explain internal architecture of microprocessors 8085 and create assembly language programing.
(iii) To develop and compile programs in python and C++.
(iv) Apply numerical methods to solve physical problems.

PH 232: ATOMIC AND MOLECULAR SPECTROSCOPY (6L, 1T)

Course Outcome

(i) Explain different symmetry operations and deduction of molecular structure.

(ii) Distinguish and classify the different spectra shown by atoms and molecules

(iii) Illustrate the various spectroscopic experimental techniques.

PH 242: NUCLEAR AND PARTICLE PHYSICS

Course Outcome

(i) To describe and analyze nuclear structure, models and reactions.

(ii) To illustrate the mechanisms of nuclear fission and fusion reactions.

(iii)Discuss various nuclear detectors and particle accelerators.

(iv) To classify elementary particles and discuss their interactions.

243 E: ADVANCED ELECTRONICS-II

Course Outcome

(i) Demonstrate microprocessor architecture, programing and interfacing devices.

(ii) Outline the basic concepts of embedded systems, artificial intelligence and neural

networks.

(iii) Illustrate fundamental data communications codes, radar and satellite communication

systems.

PO3: Be initiated into the basics of research

PO4: Imbibe sound moral and ethic values

PO5: Become conscious of environmental and social responsibilities

PO6: Attain skills for communication

PO7: Learn to tackle diverse ideas and different points of view

PO8: Become empowered to face the challenges of the changing universe

Programme Education Objectives: B.Sc. Physics

PEO-1: To produce graduate who excel in the competencies and values required for leadership to serve a rapidly evolving global community

PEO-2: To motivate students to pursue PG in reputed institutions

PEO-3: To kindle interest for research in students

PEO-4: To acquire placements in educational institutions, engineering and industrial firms

PEO-5: To endow students with creative and analytical skills, which may equip them to become entrepreneurs.

Programme Specific Objectives (PSO) : B.Sc. Physics

PSO1: Understand the basic concepts of methodology of science and the fundamentals of mechanics, properties of matter and electrodynamics

PSO2: Understand the theoretical basis of Quantum mechanics, Relativistic physics, Nuclear physics, Optics, Solid State physics., Astro physics, Statistical Physics, Photonics and thermodynamics

PSO3: Understand and apply the concepts of electronics in the designing of different analogue and digital circuits.

PSO4: Understand the basic concepts of computer programming and numerical analysis

PSO5: Apply and verify the theoretical concepts through laboratory experiments

M.Sc Physics CO

PH 211: CLASSICAL MECHANICS

Course outcome: *Student will be able to*

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(ii)   To equip the students to deal with central force problem and analyzing Kepler's laws.

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Course Outcome