

DEPARTMENT OF PHYSICS

COURSE OUTCOMES

SEMESTER - I

MECHANICS WAVES AND OSCILLATION

CO#	Course Outcome
C01	Understand Newton's laws of motion and motion of variable mass system and its application to rocket motion and the concepts of impact parameter, scattering cross section. (K2)
C02	Apply the rotational kinematic relations, the principle and working of gyroscope and its applications and the precessional motion of a freely rotating symmetric top. (K2)
C03	Comprehend the general characteristics of central forces and the application of Kepler's laws to describe the motion of planets and satellite in circular orbit through the study of law of Gravitation. (K3)
C04	Understand postulates of Special theory of relativity and its consequences such as length contraction, time dilation, relativistic mass and mass-energy equivalence. (K3)
C05	Examine phenomena of simple harmonic motion and the distinction between undamped, damped and forced oscillations and the concepts of resonance and quality factor with reference to damped harmonic oscillator. (K4)
C06	Appreciate the formulation of the problem of coupled oscillations and solve them to obtain normal modes of oscillation and their frequencies in simple mechanical systems. (K4)

SEMESTER - II

WAVE OPTICS

CO#	Course Outcome
C01	Understand the phenomenon of interference of light and its formation in (i) Lloyd's single mirror due to division of wave front and (ii) Thin films, Newton's rings and Michelson interferometer due to division of amplitude. (K5)
C02	Distinguish between Fresnel's diffraction and Fraunhofer diffraction and observe the diffraction patterns in the case of single slit and the diffraction grating. (K4)
C03	Describe the construction and working of zone plate and make the comparison of zone plate with convex lens. (K5)
C04	Explain the various methods of production of plane, circularly and polarized light

	and their detection and the concept of optical activity. (K4)
C05	Comprehend the basic principle of laser, the working of He-Ne laser and Ruby lasers and their applications in different fields.
C06	Explain about the different aberrations in lenses and discuss the methods of minimizing them.

SEMESTER - III

HEAT AND THERMODYNAMICS

CO#	Course Outcome
C01	Understand the basic aspects of kinetic theory of gases, Maxwell-Boltzmann distribution law, equipartition of energies, mean free path of molecular collisions and the transport phenomenon in ideal gases. (K2)
C02	Gain knowledge on the basic concepts of thermodynamics, the first and the second law of thermodynamics, the basic principles of refrigeration, the concept of entropy, the thermodynamic potentials and their physical interpretations. (K4)
C03	Understand the working of Carnot's ideal heat engine, Carnot cycle and its efficiency. (K3)
C04	Develop critical understanding of concept of Thermodynamic potentials, the formulation of Maxwell's equations and its applications. (K3)
C05	Differentiate between principles and methods to produce low temperature and liquefy air and also understand the practical applications of substances at low temperatures.
C06	Examine the nature of black body radiations and the basic theories.

SEMESTER - IV

ELECTRICITY, MAGNETISM AND ELECTRONICS

CO#	Course Outcome
C01	Understand the Gauss law and its application to obtain electric field in different cases and formulate the relationship between electric displacement vector, electric polarization, Susceptibility, Permittivity and Dielectric constant. (K3)
C02	Distinguish between the magnetic effect of electric current and electromagnetic

	induction and apply the related laws in appropriate circumstances. (K3)
C03	Understand Biot and Savart's law and Ampere's circuital law to describe and explain the generation of magnetic fields by electrical currents. (K3)
C04	Develop an understanding on the unification of electric and magnetic fields and Maxwell's equations governing electromagnetic waves. (K3)
C05	Phenomenon of resonance in LCR AC-circuits, sharpness of resonance-factor, Power factor and the comparative study of series and parallel resonant circuits.
C06	Describe the operation of p-n junction diodes, Zener diodes, light emitting diodes and transistors.

MODERN PHYSICS

CO#	Course Outcome
C01	Develop an understanding on the concepts of Atomic and Modern Physics, basic elementary quantum mechanics and nuclear physics. (K3)
C02	Develop critical understanding of concept of Matter waves and Uncertainty principle. (K3)
C03	Get familiarized with the principles of quantum mechanics and the formulation of Schrodinger wave equation and its applications. (K3)
C04	Examine the basic properties of nuclei, characteristics of Nuclear forces, salient features of nuclear models and different nuclear radiation detectors. (K3)
C05	Classify Elementary particles based on their mass, charge, spin, half life and interaction.
C06	Get familiarized with the nano materials, their unique properties and applications.

SEMESTER - V

ELECTRICITY, MAGNETISM & ELECTRONICS

CO#	Course Outcome
C01	Understand the Gauss law and its application to obtain electric field in different cases and formulate the relationship between electric displacement vector, electric polarization, Susceptibility, Permittivity and Dielectric constant. (K4)
C02	Distinguish between the magnetic effect of electric current and electromagnetic induction and apply the related laws in appropriate circumstances. (K4)
C03	Understand Biot and Savart's law and Ampere's circuital law to describe and explain the generation of magnetic fields by electrical currents. (K1)(K4)
C04	Develop an understanding on the unification of electric and magnetic fields and Maxwell's equations governing electromagnetic waves. (K2)
C05	Phenomenon of resonance in LCR AC-circuits, sharpness of resonance- factor, Power factor and the comparative study of series and parallel resonant circuits.
C06	Describe the operation of p-n junction diodes, Zener diodes, light emitting diodes and transistors.

SEMESTER -V

MODERN PHYSICS

CO#	Course Outcome
C01	Develop an understanding on the concepts of Atomic and Modern Physics, basic elementary quantum mechanics and nuclear physics. (K2)
C02	Develop critical understanding of concept of Matter waves and Uncertainty principle. (K2)
C03	Get familiarized with the principles of quantum mechanics and the formulation of Schrodinger wave equation and its applications. (K3)
C04	Examine the basic properties of nuclei, characteristics of Nuclear forces, salient features of nuclear models and different nuclear radiation detectors. (K2)
C05	Classify Elementary particles based on their mass, charge, spin, half life and interaction. (K3)
C06	Get familiarized with the nano materials, their unique properties and applications.

SEMESTER -VI

RENEWABLE ENERGY

CO#	Course Outcome
CO1	Basic knowledge of different forms of energy resources and its role in economic Development. (K3)
CO2	Study of the effects of environmental degradation, global warming, nuclear power generation. (K2)
CO3	Knowledge on Solar, Wind, Ocean, Hydrogen energy conversions. (K4)
CO4	Analysis of conversion of bio mass into fuels, biomass plants types and design.(K4)

SOLAR THERMAL AND PHOTOVOLTAIC ASPECTS

CO#	Course Outcome
CO1	Study the basics of solar radiations and solar intensity measurements. (K2)
CO2	Understanding the classification, design and performance parameters of concentrating collectors.(K4)(K6)
CO3	Analyze the fabrication of different types of solar cells. (K5)

WIND, HYDRO & OCEAN ENERGIES

CO#	Course Outcome
CO1	Introductory knowledge of wind generation, meteorology of wind. Types and classification of wind energy convertors. (K2)(K4)
CO2	Understand the construction and working of wind turbine and its characteristics. (K3)
CO3	Understand the technology process of Ocean, thermal and tidal energy conversion. (K4)

ENERGY STORAGE DEVICES

CO#	Course Outcome
C01	A thorough understanding of different modes of energy storage. (K4)
C02	Analyze different types of electro chemical energy storage systems. (K4)
C03	Understanding of difference between and fuel cell components, principle and it's working. (K3)
C04	Knowledge of different types of fuel cells and the problems with fuel cells and their Applications. (K4)