

GOVERNMENT DEGREE COLLEGE::TIRUVURU

Department of Physics

Course Outcomes : 2022-2023

Sl.No.	Semester	Course Code	Course Title		Course Outcomes(COs)
1	I	PHY001	Mechanics& Waves and Oscillations	CO1	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. Apply the rotational kinematic relations, the principle and working of gyroscope and its applications and the precessional motion of a freely rotating symmetric top.
				CO2	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.
				CO3	Understand postulates of Special theory of relativity and its consequences such as length contraction, time dilation, relativistic mass and mass-energy equivalence.
				CO4	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. 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.
				CO5	Figure out the formation of harmonics and overtones in a stretched string and acquire the knowledge on Ultrasonic waves, their production and detection and their applications in different fields.
2	II	PHY002	Wave Optics	CO1	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.
				CO2	Distinguish between Fresnel's diffraction and Fraunhofer diffraction and observe the diffraction patterns in the case of single slit and the diffraction grating. Describe the construction and working of zone plate and make the comparison of zone plate with convex lens.
				CO3	Explain the various methods of production of plane, circularly and polarized light and their detection and the concept of optical activity.
				CO4	Explain about the different aberrations in lenses and discuss the methods of minimizing them. Understand the basic principles of fibre optic communication.
				CO5	Comprehend the basic principle of laser, the working of He-Ne laser and Ruby lasers and their applications in different fields. Explore the field of Holography and Nonlinear optics and their applications.

4	III	PHY003	Heat and Thermodynamics	CO1	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
				CO2	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, thermodynamic potentials and their physical interpretations. Understand the working of Carnot's ideal heat engine, Carnot cycle and its efficiency.
				CO3	Develop critical understanding of concept of Thermodynamic potentials, the formulation of Maxwell's equations and its applications.
				CO4	Differentiate between principles and methods to produce low temperature and liquefy air and also understand the practical applications of substances at low temperatures.
				CO5	Examine the nature of black body radiations and the basic theories.
5	IV.	PHY004	Electricity, Magnetism and Electronics	CO1	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.
				CO2	Distinguish between the magnetic effect of electric current and electromagnetic induction and apply the related laws in appropriate circumstances. Understand Biot and Savart's law and Ampere's circuital law to describe and explain the generation of magnetic fields by electrical currents.
				CO3	Phenomenon of resonance in LCR AC-circuits, sharpness of resonance, Q-factor, Power factor and the comparative study of series and parallel resonant circuits. Develop an understanding on the unification of electric and magnetic fields and Maxwell's equations governing electromagnetic waves.
				CO4	Describe the operation of p-n junction diodes, zener diodes, light emitting diodes and transistors
				CO5	Understand the operation of basic logic gates and universal gates and their truth tables.
6	IV	PHY005	Modern Physics	CO1	Develop an understanding on the concepts of Atomic and Modern Physics, basic elementary quantum mechanics and nuclear physics.
				CO2	Develop critical understanding of concept of Matter waves and Uncertainty principle.
				CO3	Get familiarized with the principles of quantum mechanics and the formulation of Schrodinger wave equation and its applications.
				CO4	Examine the basic properties of nuclei, characteristics of Nuclear forces, salient features of nuclear models and different nuclear radiation detectors. Classify Elementary particles based on their mass, charge, spin, half life and interaction.
				CO5	Get familiarized with the nano materials, their unique properties and applications. Increase the awareness and appreciation of superconductors and their practical applications.

7	VI	PHY006	Applications of Electricity & Electronics	CO1	Identify various components present in Electricity & Electronics Laboratory (like resistors, capacitors, inductors, power sources etc.) and its utility.
				CO2	Acquire a critical knowledge of Power sources (AC and DC), different types of batteries & configurations and their applications.
				CO3	Demonstrate skills of constructing simple electronic circuits consisting of basic circuit elements.
				CO4	Understand the need & Functionality of various DC & AC Power sources.
				CO5	Comprehend the design, applications and practices of various electrical & Electronic devices and also their trouble shooting.
8	VI	PHY007	Electronic Instrumentation	CO1	Identify various facilities required to set up a basic Instrumentation Laboratory.
				CO2	Acquire a critical knowledge of various Electrical Instruments used in the Laboratory.
				CO3	Demonstrate skills of using instruments like CRO, Function Generator, Multimeter etc. through hands on experience.
				CO4	Understand the Principle and operation of different display devices used in the display systems and different transducers
				CO5	Comprehend the applications of various biomedical instruments in daily life like B.P. meter, ECG, Pulse oxymeter etc. and know the handling procedures with safety and security.