GOVERNMENT DEGREE COLLEGE, MANDAPETA

DEPARTMENT OF PHYSICS - COURSE OUTCOMES (2022 - 23)

NAME OF THE PROGRAM: B. Sc. (MPC & MPCs)

NAME OF THE COURSE: PHYSICS

S. No.	Name of the Course	Course Outcomes
1	MECHANICS, WAVES AND OSCILLATIONS	Learn about motion of variable mass system, Collisions in two and three dimensions, Rutherford scattering problem, rotational kinematics of rigid body, Moment of inertia tensor, Euler equations, Precision of top, equinoxes and Gyroscope
		Learnt about conservative forces, relation between conservative force and potential, equation of motion under central forces, Keppler's laws and Coriolis force.
		Learnt about Gallian-Lorentz frames of references, Lorentz transformations, Michelson-Morley experiment, Postulates of special theory of relativity, length contraction, time dilation, addition of masses, mass energy relation.
		Solve the wave equation for vibrating strings and study various parameters like modes, overtones, energy transport, transverse impedance etc.
2	OPTICS	Learnt principle of superposition, coherence, Interference by division of wavefront and amplitude, Fresnel's bi-prism, Lloyd's mirror, thin film interference, wedge shaped film interference, Newton's rings, Michelson's interferometer.
		Learnt about Fresnel and Fraunhoffer diffraction, Fraunhoffer diffraction due to circular aperture, single slit, and double slit, N-slit, grating.
		Learn about methods of polarization, Brewster's law, Malus law, Nicol prism, Quarter wave plate, half wave plate, babinet's compensator and optical activity analysis by Laurent's half shade polarimeter
		Learnt the principles of LASER, He-Ne laser, Ruby laser, applications of laser, Principles of optical fibre communication, classification of optical Fibers, applications of optical fibres, principles of holography, limitations of Gabor's hologram and applications of holography
3	**HEAT AND THERMODYNAMICS**	Learnt Maxwell's law of distribution of molecular velocities and its experimental verification, Mean free path, Transport phenomenon viscosity, Thermal conductivity and diffusion of gases
		Learnt about Various thermodynamic processes, entropy changes in various processes and heat engines.
		Analyse various thermodynamic potentials and joule kelvin cooling concepts using thermodynamic potentials.
		Studied about Blackbody and its spectral energy distribution of black body radiation, Various theories of Black body radiation, usage of various radiation measuring instruments.

4	**ELECTRICITY, MAGNETISM AND ELECTRONICS**	Analyse the concepts of electric field and electric potential due to point charge, solid sphere, cylinder, concept of dielectrics and its applications.
		Learnt the concepts of Biot-Savart's law, Faraday's law and its applications, Faradays laws and their applications in daily life like solenoid
		Analyse different combinations of Inductor, capacitance and resistor and also their performance characteristics and mathematical description of Electromagnetic Waves i.e., Maxwell's equations
		Studied about number system ,Boolean algebra, basic logic gates which are more useful in digital world
5	**MODERN PHYSICS**	Learnt the concepts of atomic models and their drawbacks and about Stern & Gerlach experiment, Vector atom model, this model gives the existence of spin of an electron. Study of fine spectra and Zeeman effect on various elements
		Importance of Quantum mechanics lead to study about basic concepts involved in the origin of quantum mechanics like uncertainty principle, De-Broglie matter waves, and experiments that confirm wave nature of matter and particle nature of radiation.
		Importance of Heisenberg's uncertainty principle for position and momentum would learn about Schrodinger time independent and time dependent wave equations. Wave function properties Significance, basic postulates of quantum mechanics. from these we can predict the position of a particle at future specific time
		Learnt the basic properties of nucleus, dipole & quadrupole moments, binding energy, nuclear forces and nuclear models. Elementary particles and counters Students would learn about basics of nano materials, classification, properties and learnt about Superconductivity and its types and super conductor's applications.
6	**LOW TEMPERATURE PHYSICS & REFRIGERATION**	Identify various methods and techniques used to produce low temperatures in the Laboratory
		Demonstrate skills of Refrigerators through hands on experience and learns about refrigeration components and their accessories
		Understand the classification, properties of refrigerants and their effects on environment
		Comprehend the applications of Low Temperature Physics and refrigeration
7	SOLAR ENERGY & APPLICATIONS	Understand Sun structure, forms of energy coming from the Sun and its measurement.
		Acquire a critical knowledge on the working of thermal and photovoltaic collectors
		Demonstrate skills related to callus culture through hands on experience
		Understand testing procedures and fault analysis of thermal collectors and PV modules Comprehend applications of thermal collectors and PV modules.