GOVERNMENT DEGREE COLLEGE, MANDAPETA

DEPARTMENT OF PHYSICS - COURSE OUTCOMES (2020 – 2021)

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

NAME OF THE COURSE: PHYSICS

S. No.	Name of the Course	Course Outcomes
1	MECHANICS	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.
		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.
2	WAVES AND OSCILLATIONS	Solve the wave equation for vibrating strings and study various parameters like modes, overtones, energy transport, transverse impedance etc.
		Figure out the formation of harmonics and overtones in a stretched string
		Formulation of the problem on Fourier Analysis of Waves
		learnt about basics of ultrasonics, production detection of ultrasonics, measurement of frequency sand velocity of ultrasonics
3	WAVE 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
4	**HEAT AND THERMODYNAMICS, RADIATION PHYSICS**	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.
5	**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.
6	**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.
7	**ANALOG & DIGITAL ELECTRONICS**	student can explain the principles for simple analog and digital circuits and explain how analog and digital circuits work together.
		Understand the utilization of components & know the characteristics of various components.
		Analyze small signal amplifier circuits.
		Postulates of Boolean algebra and to minimize combinational functions Known about the logic families and realization of logic gates
		Design and analyze combinational and sequential circuits