V. S. M. COLLEGE (A): RAMACHANDRAPURAM

COURSE OUTCOMES

M.Sc. PHYSICS

CLASSICAL MECHANICS

CO1: To use conceptual understanding to formulate expectations and then approach the problem mathematically.

CO2: To create forming between conceptual understanding and mathematical development.

CO3: To understand problem solving methods that thought will include Numerical computations as well as mathematical solutions.

CO4: To analyse from macroscopic elements to motion, from projectiles to parts of machinery, and astronomical objects.

INTRODUCTORY QUANTUM MECHANICS

CO1: The quantum mechanics motivates how to create replacing classical mechanics with a wave equation.

CO2: To applying the relation between the description of nature and its mathematical problems.

CO3: To understand the behavior of the physical universe changed becomes from the Fundamental point of view.

CO4: To analyze personal research questions that extend their physics knowledge.

MATHEMATICAL METHODS OF PHYSICS

CO1: To create sets of simultaneous linear equations arising from physical problems.

CO2: To apply the required mathematical skills to solve problems in quantum mechanics,electrodynamics and other fields.

CO3: To understand the mathematical expressions which are useful for the development of equipment, structure, and techniques for mankind.

CO4: The student will be able to analyse advanced techniques of mathematical methods.

ELECTRONIC DEVICES AND CIRCUITS

CO1: The student will be able to create the different oscillator circuits for different frequencies.

CO2: To apply concepts of electric devices and circuits to solve circuit problems including the use of computer simulation.

CO3: To understanding the behaviour of electronic circuits with the evaluation of frequency response.

CO4: To analyse the mathematical principles used to develop problem solving skills that will benefit in the future.

ELECTRONICS LAB – I

CO1: Demonstrate the ability to design practical circuits that perform the desired operations.

CO2: Applying the knowledge of circuit connections to solve practical engineering problems also.

CO3: To understand the current voltage characteristics of semi conductor devices.

CO4: To analyse the basic electrical circuits using graph theory.

MODERN PHYSICS LAB – I

CO1: To create the statistical treatment of data that are essential for interpretation of modern physics experiments.

CO2: To apply principles of theory of errors to analyze experimental uncertainties.

CO3: To understand the relationship between observation and theory and their use in building the basic concepts of modern physics.

CO4: To analysing and solving problems and reasoning skills based on the concepts of modern physics.

STATISTICALMECHANICS

CO1: Explain fundamental concepts to understand Statistical physics and thermodynamics as logical consequences of the postulates of statistical mechanics.

CO2: Apply the principles of statistical mechanics to selected problems.

CO3: Apply scientific methods and processes by formulating designing, investigation in statistical mechanics.

CO4: Student can able to learn and apply contemporary research methods, skills and techniques in a chosen scientific domain.

ELECTRODYNAMICS

CO1: Student is expected to gain a clear understanding of Maxwell's equations and electromagnetic boundary conditions.

CO2: Extend their understanding of special theory of relativity by including the relativistic electrodynamics.

CO3: Student also be able design dielectric coatings which act like antireflection coatings. They will be able to distinguish between a good metal and a good dielectric.

CO4: Set alight to the interest for research in students.

NUMERICAL METHODS AND PROGRAMMING WITH 'C' ELECTRODYNAMICS

CO1: It can able to understand Numerical analysis which has enormous application in the field of Science. and able to familiar with finite precision computation.

CO2: Students will be able to analyze C language with the help of numerical analysis.

CO3: With the help of C Students will be able to familiar with simultaneous equations numerical integration and differentiation, and ordinary differential equations.

CO4: Students will be able to do calculation and interpretation of errors in numerical Method.

ATOMIC AND MOLECULAR PHYSICS

CO1: Student can able to understand about different atomic systems, Couplings and their interaction with electric and magnetic fields.

CO2: Student would learn about the behaviour of atoms in external electric and magnetic fields and the effect of external fields on the spectral terms of atoms.

CO3: Students would learn about to apply quantum mechanics study the Atomic and Molecular spectrum and consequences of Frank-Condon principle.

CO4: Student become familiar with different resonance spectroscopic and its applications.

ELECTRONICS LAB-II

CO1: They can able to understand the apparatus setup of Filters, Amplifiers, Oscillator and Multivibrator circuits by demonstration.

CO2: They can observe the results after connecting the required components without errors.

CO3: They may be used in industrial purpose like design of electronic equipment.

CO4: To Endow the students with creative and systematic skills; this will equip them to become entrepreneurs.

MODERN PHYSICS LAB – I

CO1: They can able to understand the apparatus setup like Energy band gap(Four probe method), thermo emf, Lasers ect..

CO2: Student able to observe the practical to get approximate results, that should be analyzed by them.

CO3: And the student further evaluates calculations and results.

CO4: To steep the students with creative and logical skills, this will equip them to become enterpriser. The student is expected to have a basic knowledge of nuclear size ,shape , bindingenergy.etc and also the

NUCLEAR AND PARTICLE PHYSICS

CO1: characteristics of nuclear force in detail.

CO2: The student can able to gain knowledge about various nuclear models and potentials associated.

CO3: The student can able to gain acquire knowledge about nuclear decay processes and their outcomes. Have a wide understanding regarding beta and gamma decay.

CO4: The student can able to Grasp knowledge about Nuclear reactions, Fission and Fusion and their characteristics.

SOLID STATE PHYSICS

CO1: The student is expected to have a basic knowledge of crystal systems and spatial symmetries , and able to account for how crystalline materials are studied using diffraction, including concepts like reciprocal lattice and Brillion zones.

CO2: The student can able to Know what phonons are, and be able to perform estimates of their dispersive and thermal properties , be able to calculate thermal and electrical properties in the free-electron model.

CO3: The student can able to Know Bloch's theorem and what energy bands are and know the fundamental principles of semiconductors.

CO4: The student is expected to Know the fundamentals of dielectric and ferroelectric properties of materials and basic models of Dia, Para and ferromagnetism, and able to explain superconductivity using BCS theory.

LASERS & NON-LINEAR OPTICS

CO1: The student can able to Describe the different types of lasers, its principle, properties of laser beam. Student should have an ability to derive NLS equations.

CO2: The student is expected toApply skill to find the wavelength of spectral lines using Plane diffraction grating Distinguish the methods of polarisation by reflection, refraction and scattering.

CO3: Classify the different types of Fibre, Student understand the basic concepts involved in the interaction of light with matter.

CO4: Student should be able to explain the mathematical theories in nonlinear optics and about holography.

DIGITAL ELECTRONICS & MICROPROCESSOR

CO1: The student will learn about Field Effect Transistors, their principles and applications, Photonic devices like LED, Laser diode, photo detectors, solar cells etc and their working in detail.

CO2: Basic operational amplifier characteristics, OPAMP parameters , applications as inverter, integrator, differentiator etc,. In Digital electronics logic gates and working of major digital devices like flip flops, CMOS ,CCD etc.

CO3: Study the Organization and internal architecture of the Intel: 8085, and learn assembly language programming and arithmetic Aware of Memory interfacing, and different Data transfer schemes.

CO4: Learn interfacing with peripheral I/O devices Learn common applications of microprocessors like Analog to Digital convert,7 segment LED displays,; Temperature measurement and control using a microprocessor etc.

ADVANCED QUANTUM MECHANICS

CO1: The student to have basic knowledge about Approximation methods for time-independent problems like the WKB approximation. The various equations and its application to ground state of the hydrogen and Helium atom.

CO2: The Perturbation theory and Interaction of an atom with the electromagnetic field.

CO3: The Student should be able to Relativistic Quantum Mechanics using Dirac equation, Dirac matrices,. The Klein Gordon Equation etc.,

CO4: The Student should be able to Second quantization of the Schrödinger wave field for bosons and Fermions.

PROPERTIE & CHARACTERIZATION OF MATERIALS

CO1: It gives the student An idea about all types of crystal defects and dislocations, information about Phase diagrams and general diffusion theory in detail.

CO2: A fair idea of plastic deformation and fracture of material from Masters Degree point of view.

CO3: Students will be able to describe the basic structure of materials at the molecular, microscopic, and macroscopic scales, and will be able to describe modern methods.

CO4: Students will understand diffusion and electrochemical processes in materials.

COMMUNICATION ELECTRONICS

CO1: Students will understand the basic concepts of AM radio transmission and reception.

CO2: Students will understand the basic concepts of FM transmission and reception.

CO3: Students will learn about and utilize filter circuits. Students will study various type of oscillators.

CO4: Students will utilize specialty integrated circuits such as PLL's, multipliers, timers.

ANTENNA THEORY& RADIO WAVE PROPAGATION

CO1: Student can able to understand the Define various antenna parameters, Analyze radiation patterns of antennas.

CO2: To understand the Evaluate antennas for given specifications Illustrate techniques for antenna parameter measurements.

CO3: To understand the various applications of antennas Discuss radio wave propagation.filed patterns fundamental parameters of antennas and arrays operating at various frequencies from LF to Microwave applications Introduction.

CO4: Use of mobile phones, wifi, internet, TV broadcasting fm -radio broadcasting all are in the wireless.To understand different ways of propagation of radio waves. Evaluate basic propagation models in mobile radio systems.

MICROPROCESSOR LAB

CO1: Students learn the instruction set of 8085 microprocessor

CO2: Students learn the instruction set of 8086 microprocessor

CO3: Students learn the instruction set of 8051 microcontroller. Students can do programming in the8086

CO4: Students can do programming in the 8051Can understand the interfacing modules

COMMUNICATION ELECTONICS LAB

CO1: Students will understand the basic concepts of AM radio transmission and reception.

CO2: Students will understand the basic concepts of FM transmission and reception

CO3: Students will understand the basics of television broadcast and reception.

CO4: Students will come to a knowledge