RATHINAM COLLEGE OF ARTS AND SCIENCE
DEPARTMENT OF PHYSICS

B.SC PHYSICS - COURSE OUTCOME

Properties of matter and sound	To understand the applications of the elastic properties of solids
	To remember the basic laws of Newton and kepler's laws.
	To implement the knowledge of properties for the thermal expansion of solids
	To determine the surface tension of various liquids.
	To classify the sound waves and its properties
Mechanics	To remember the principles of rigid body, statics, dynamics and sound
	To understand the mechanics behind rigid body, projectiles and dynamics
	To analyze motion of projectile and its attributes
	To understand the concept of friction
	To acquire knowledge about the hydrodynamics
Optics	To gain knowledge about fundamental properties light, electromagnetic spectrum and Splitting of spectral lines.
	To apply the energy transfer for absorption and emission spectra
	To determine the wavelength refractive index of the liquid
	To recall the basic concept of polarization
	To know the concept of LASER
Electricity & Magnetism	To acquire the knowledge on fundamental concepts of electric and magnetic field
	To understand the concept of electric field, potential and electromagnetic induction
	To implement the ideas for making the electrical devices such as capacitor, inductor, resistance, etc.,
	To evaluate the basic and advanced problems in the field of electromagnetic

	theory
	To gain the knowledge about derivation of Maxwell's equations
Classical Mechanics	To recollect the mechanics of a particle
	To define and demonstrate knowledge of the different formalisms in classical dynamics of a system
	To apply these formalisms to obtain equations of motion for simple systems
	To apply the Hamiltonian formulism for the simple problem
	To analyze how the Hamiltonian formulism works
Quantum Mechanics and Relativity	To acquire basic knowledge about wave properties of matter
	To get the idea about uncertainity principles and its applications
	To acquire knowledge about Schordinger equations and postulates of quantum mechanics
	To effectively apply Schordinger equations
	To acquire knowledge about Relativity
Heat and Thermodynamics	To recognize the difference between heat and temperature
	To understand the fundamental laws and principles of heat transfer and theory of gases
	To acquire working knowledge on low temperature physics and its domestic applications
	To analyse and evaluate various thermodynamic cycles used for energy productions
	To know the laws of thermodynamics and concepts of entropy
Nuclear physics	To highlight the properties of nucleus and its constituent particles
	To predict the particle by using the detector and accelerator
	To understand the concept of natural radioactivity and its constituent particles

	To examine the fission and fusion reaction of radiative materials
	To deduce the concept of cosmic rays and elementary particles
Electronics	To recall the basic concept of diodes and transistors
	To explain the application of transistor as an amplifier
	To utilize the working of diodes as a multivibrator
	To explain about working of diodes as a clipper and clamper.
	To discuss about SCR, UJT, Triac and diac
Digital Electronics	To understand the concepts and techniques in digital electronics
	To understand various number system and its importance in digital designing
	To acquire knowledge about internal circuitry and logic behind any digital system
	To analyze and construct various digital circuits
	To Design a combination and sequential circuits
Solid State Physics	To know the basic concept of the crystal and study its structure
	To know the characterization technique to study the structure of the material
	To acquire knowledge about the different types of bonding between the atoms and the molecules.
	To study the basic properties of the crystal by studying its properties by characterization techniques
	To know the basic types of magnetic materials and classification according to its properties
Mathematical Physics	To study and apply various mathematical concepts to solve physical problems
	To study and concepts of matrices
	To study and solved Laplace transform
	To learn about concept of group theory

	To study and calculate about numerical methods
Atomic physics and spectroscopy	To understand the concept of positive ray and its applications
	To predict the properties of atom through the existing theories
	To implement the theories to study about the atoms in magnetic field
	To apply the concept of light to study about the interaction between atom and light
	To understand the concept of spectroscopy by studying the IR and Raman spectra
Microprocessor and Microcontroller	To enable the students to acquire the knowledge of Microprocessor.
	To Study the Architecture of 8085 microprocessor
	To Learn the design aspects of I/O and Memory Interfacing circuits.
	To Study about the communication and bus interfacing
	To learnt about Study the Architecture of 8051 microcontroller
Basics of Electromagnetic theory	To recollect the basic ideas about electric, magnetic fields and fourth state of matter.
	To understand the applications of electromagnetic field.
	To analyze incompletion of Ampere's law and completion of Maxwell's equation.
	To evaluate the basic and advanced problems in the field of electromagnetic theory.
	To enhance skill in solving problems by applying electromagnetic field expressions.
Non linear optics	To understand the basic principle of LASER
	To categorize the LASER on its working and construction
	To implement the concept of LASER to a proper medium and increase its efficiency
	To study the concept of non linearity in light

	To experiment the concept of LASER in spectroscopy
Energy Physics	To know about the conventional energy uses and its advantages
	To learn about the renewable energy sources and its applications in home appliances
	To gain knowledge about biomass energy and its fundamentals
	To acquire knowledge about biomass and its utilization
	To know about all forms of energy and its waves and tides.
Materials Science	To learn about fundamental concepts of chemical bonds
	To classify the different types of semiconducting materials
	To compare the various non destructive methods of testing materials
	To identify the various modern engineering materials
	To identify the factors affecting mechanical properties of materials
Astrophysics	To learn about fundamental universe
	To acquire knowledge about solar system
	To acquire basic knowledge about age and evolution of earth
	To calculate the distance and magnitude of stars
	To have a basic knowledge about astronomical instruments
Elements of Modern physics	To associate the concept of light with energy
	To examine the interaction of light with matter
	To apply the Schrodinger equation to solve the unsolved problems
	To execute the concept of statistics in the particle level
	To deduce the overall concept of light in this modern world

Biochemistry	To provide the basics of Biochemistry and buffer systems.
	To describe the process of Bioenergetics.
	To understand the properties of vitamins and minerals
	To understand the types of Hormones and its functions.
	To present the basis behind the inborn errors of metabolism.
Introduction to Entrepreneurship	Able to become an ethical entrepreneur and to provide job for others.
	Analyze the business environment in order to identify business opportunities.
	Forecast the market opportunity through surveys.
	Interpret their own business plan and support the entrepreneurs by preparing project plan.
	Raise capital by submitting project plan to various financial institutes.
	Develop the knowledge about Professional ethics and management techniques
Programming in C	Understand the concept of functional hierarchical code organization.
	Define and manage data structures based on problem subject domain.
	Understand the concept of decision making amd branching statements.
	Apply defensive programming and concept of object thinking within the framework of functional model.
Office Automation	Recall the basics of computer language.
	Develop skills in windows using , wordpad, notepad etc.
	Examine the concept of Microsoft office 2000 and access the knowledge about working in wordpad
	Analyze the available tools to work with excel.
	Describe the usage of computers and the essential components in business and

	society.
Allied I-Mathematics - I	To recall the fundamental concepts of Theory of Equations.
	To build equations by using different types of roots.
	To make use of Eigen values and Eigen vectors to build the Inverse of the Matrix
	To compare the usage of Hyperbolic and Inverse Hyperbolic functions with respect to real life applications.
	To determine the possible ways to evaluate Laplace Transforms and Fourier series for improving results.
Allied II-Mathematics - II	To be able to understand application of integration for finding area of curves.
	To evaluate triple integrals and also to identify the relation between Beta and Gamma functions using multiple integrals.
	To gain knowledge about linear differential equations and its application.
	To acquire knowledge on partial differential equations and Lagrange's differential equation by the method of eliminating the arbitrary constants and functions
	To be able to understand application of integration for finding area of curves
Allied III- Chemistry-I	To understand the fundamental concepts of Chemical Bonding, fuels and Interhalogen compounds
	To understand the characteristics of Industrial Chemistry, fertilizers
	To apply the Concepts of Polymer chemistry, Stereoisomerism
	To analyze the concept of Terms and Dyes
	To build the solutions of liquid, Kinetics and Chromatography
Allied IV- Chemistry-II	To understand the fundamental concepts of Metals and Coordination Chemistry, Types of furnaces, Refining and Chelation Examples

	To understand the characteristics of Aromatic Compounds and Heterocyclics
	To apply the Concepts of Amino Acids and Carbohydaryes
	To analyze the concept of Energetics
	To build the solutions of Electrochemistry and Phase Equilibria
Nanoscience And Nanotechnology	To acquire knowledge about the solid material and analyze its strength.
	To know the types of synthesis and come to know how to prepare a sample.
	To study the various types of synthesis according to the applications.
	To characterize the sample in order to find its various behavior
	To gain knowledge about the properties of a solid material by analyzing it in different characterizations.
MATlab	To introduce the concepts in MATlab
	To understand the concept of functions in MATlab
	To apply the concept of plots in MATlab
	To create new programs using the basic knowledge in programming
	To get overall knowledge about the Matlab comments
Electrical circuits and network skills	To understand the principles of electricity
	To understand Electrical Circuits
	To apply the knowledge of electricity to draw circuit
	To know the application of resistor, AC and DC motors etc
	To basics of relay
Basic instrumentation skill	To understand the basics of measurement.
	To apply the basic concept to understand the electronic voltmeter

	To know the construction, principle, working and application of CRO
	To draw the block diagram of signal generator.
	To apply the concept of analog meters to know the working of digital instruments
Radiaology safety	To know how to protect human and biological object from radiation
	To compare the radiation protection levels
	To implement the safety in medical uses of radiation
	To determine the applications and safety in the industrial uses of radiation
	To link the principles of radiation detection and dosimeters
Computational physics skills	To understand the concept of algorithm and flowchart
	To apply in real time problems as example
	To understand the basic concepts of fortan language
	To analyze the problem with respect to the concept taught
	To analyze the Branching statements looping statements and jumping statements
Applied Electronics	To understand the concept of op – amp
	To know the application of waveform and analog computation
	To apply diode to construct the timer and trigger
	To implement the concept of semiconducting materials in memory devices
	To gain the basic knowledge about memory devices
Introduction to medical physics	To understand the basic concept of atomic and nuclear transformation
	To predict the interaction of radiation of matter
	To judge the effect of radiation on biological object
	To examine the radiation hazard evaluation and control.

	To illustrate the radiation monitoring instruments
Biophysics	To study the basic concepts of bio molecules and its various structures
	To know about the kinetics of molecules and its process
	To study the significance of molecules and its characteristics.
	To know the characterization techniques of biological samples.
	To study about the bioelectricity and radioactivity.
Principles of Communication systems	To gain basic knowledge about modulation and its different types.
	To know about the demodulation of signals and the receivers.
	To acquire the basic knowledge about television and its transmission
	To study about the different types of antenna and transmission lines
	To know about the digital codes and LEDs and its uses in communication.
Fibre Optic Communication Systems	To develop knowledge in the basics of fibre optics
	To understand the fabrication technique
	To acquire knowledge about losses and dispersion in optics
	To get idea about LED
	To acquire knowledge about the applications of fibre optics in satellite link.
Soil Physics	To gain knowledge about the soil
	To understand soil properties
	To acquire knowledge about water flow
	To idea about stress and strain in the soil surface
	To applying and understanding the concept of water content in soil
Characterization of Nanomaterials and its Applications	To understanding the different methods of biological sample preparation
	To examine structure of nanomaterials using most powerful techniques.

	To summarize the different types of Electron microscopy methods.
	To summarize the different types of Spectroscopy Techniques.
	To determine the properties of a materials by using various spectroscopic and microscopic techniques.
Atmospheric science	To recall the basic concept of atmospheric science
	To explain the structure and evolution of atmospheric thermodynamics.
	To apply mathematical tools to study radiative transfer.
	To explain the principles behind, and use of atmospheric dynamics
	To demonstrate critical and analytical skills to interpret and predict climate dynamics.
Geo physics	To know about Seismology and its various factors
	To learn about surface waves and Seismometry.
	To learn about the earthquakes and and gravity.
	To acquire knowledge about Geomagnetism and Internal structure of the Earth
	To study about the Geochronology and Geothermal Physics
Optoelectronics	To understand the basic concept of light
	To apply the concept of light to design a devices
	To demonstrate the optoelectronic devices
	To know the real time application of optics in electronics
	To structure the semiconductor with respect to light
Biomedical instrumentation	To know different types of electrodes used in biopotential recording
	To understand the characteristics of bioamplifiers and different types of recorders.

	To apply the known concept to construct the biomedical instruments
	To acquire knowledge about the biomedical instrument by using the physics principle
	To acquire knowledge about blood flowmeter