K.L.E.SOCIETY'S
RAJA LAKHAMAGOUDA SCIENCE INSTITUTE (AUTONOMOUS), BELAGAVI.
Department of PG - Physics
Course Outcome
MSc I and II Semester

Course	Topic	Outcome
MSc I Semester	1.1- Mathematical Physics and Computer programming	CO1: In this course Series solution method is used to study special functions like Legendre, Bessel, Laguarre functions, etc CO2: Matrix representation of linear operators and their eigen values and eigen vectors provide knowledge that is useful in applications of physical problems. CO3: Fourier, Laplace and inverse transformations are studied in order to solve major problems in physics. CO4: Study of types of tensors. CO5: Knowledge of C-programming to design software, simulators, network devices, compilers, etc
	1.2- Classical Mechanics	CO1: Indepth understanding of Newton's laws. CO2: To solve the Newton Equations for simple configurations using various methods. CO3: The foundations of chaotic motion.
	1.3- Electronics	CO1: Students will understand the current and voltage characteristics of semiconductor devices. CO2: They will be able to analyze the circuits and relate ac models of semiconductor devices with their physical operation. CO3: Will be able to design and analyze electronic circuits. CO4: To evaluate frequency response to understand the behavior of electronic circuits. CO5: To study digital system of design, circuit theory and networks.
	1.4- Solid state physics (General)	CO1: To analyze the crystal structure. CO2: To study the structural property relations. CO3: To understand thermal properties of the materials. CO4: To study the elemental and compound semiconductor. CO5: To study the defects in crystal structures.
MSc II Semester	2.1- Quantum mechanics I	CO1: Quantum mechanics is important because it plays a fundamental role in explaining how the world works. It governs the behavior of microscopic systems. CO2: It governs the behavior of all physical systems regardless of their size. CO3: quantum mechanics is tool used to design optical and electronic components.

	2.2- Atomic, molecular and optical physics(General)	CO1: To Overview the Salient features of atomic spectra and coupling schemes. CO2: To study lasers, their kinetics and applications. CO3: To acquire knowledge of Raman, Microwave, infrared and electronic spectroscopy for future studies in atomic and molecular physics.
	2.3- Nuclear Physics (General)	CO1: To study the basic properties of nucleus and experimental determination of certain properties. CO2: Various decays/ transitions in the nuclei and the liquid drop model are studied. CO3: Study of elementary particles in the nuclei provides deeper knowledge about their structure. CO4: Interaction of radiations with the matter and their detection.
	2.4- Probability theory	CO1: Study of basic statistics. CO2: Mathematical analysis of theory of probability. CO3: Various sampling techniques and hypothesis formulations are studied for the use in research areas.

Course	Topic	Outcome
MSc III Semester	3.1- Statistical Mechanics	CO1: Introduction to statistical methods, formulation and interactions of macroscopic systems. CO2: Basic methods, results and simple applications of statistical mechanics. CO3: Acquire knowledge of distribution functions like Maxwell-Boltzmann, Bose – Einstein and Fermi Dirac and corresponding consequences. CO4: Statistical thermodynamics provides platform for the study of Brownian motion, Lengevin equation, Fourier analysis, Fluctuations and Onsager relations.
	3.2- Mathematical methods of physics II	CO1: They study the applications of linear integral/differential equations & their relation with Volterra's equation. Hence they offer a powerful technique for solving practical problems. CO2: Inhomogeneous differential equations can be solved using Green's function to describe variety of phenomena ranging from motion of complex mechanical oscillators to the emission of sound waves from loudspeakers. CO3: Numerical methods such as iteration, bisection, Newton-Raphson method provide solution of algebraic and transcendental equations CO4: Study of group theory provides ability to generate a representation, to reduce it to its irreducible components & to use symmetry arguments to understand geometry of molecules.
	3.3- Solid state physics I (special subject)	CO1: Band energy calculations by APW method and k-p method. CO2: Hall effect study for nature of charge carriers and carrier concentration. CO3: Study of magneto resistance phenomena. CO4: Study of Integer Quantum Hall Effect (IQHE) and fractional Hall effect. CO5: Boltzmann Transport Equations to study electrical/ thermal conduction.
	3.4- Physics of nanomaterials	CO1: Study the basics of Nanoscience including historical background, types of nano materials and quantum confinement. CO2: Basics of quantum mechanics such as Wave-particle duality, Heisenberg uncertainty principle, Schrodinger wave equations etc., CO3: Physical and chemical methods of synthesizing nano materials enables students to synthesize a compound for its further studies. CO4: Learning the characterization techniques enables them to implement those practically during their project work. CO5: Mechanical, Electrical, Optical and magnetic properties

		of nano materials are studied, gaining the efficiency to differentiate various nano compounds.
MSc IV Semester	4.1- Classical electrodynamics	CO1: To acquire basic knowledge of electrostatics and magnetostatics. CO2: Various laws, equations and transformations of electrodynamics are studied. CO3: Electromagnetic waves and radiations along with their interactions and importance in other branches of physics are studied. CO4: To study the behavior of plasma in magnetic field.
	4.2- Quantum mechanics II	CO1: Linear vector algebra forms base to machine learning in the field of engineering. CO2: Study of approximation methods has applications in molecular physics. CO3: Relativistic quantum mechanics provides information about the interconnection of quantum mechanics with other branches of physics.
	4.3- Solid state physics II (special subject)	CO1: Study of dielectric ferroelectric and piezoelectric materials. CO2: Study of spin-spin, spin-lattice relaxation using magnetic resonance. CO3:Optical properties of semiconductors. CO3: Solar cells and their efficiencies.
	4.4- Solid state physics III (special subject)	CO1: Applications of low dimentional semiconductor structures. CO2: Methods of thin film deposition. CO3: Study of high Temperature superconductors. CO4: Properties of nano-structured materials. CO5: Spintronic materials