B Sc. Physics Course Outcomes

On successful completion of this course, students will be able to:

Class	Sem	Course	Outcomes
F Y B Sc	Sem I	Classical Physics, Thermodynamics and Optics	1. Understand kinematical equations 2. Understand the concepts of friction and the concepts of elasticity, fluid mechanics and be able to perform calculations using them. 3. Understand the concepts of lens system, diffraction and interference. 4. Apply the laws of thermodynamics to formulate the relations necessary to analyse a thermodynamic process. 5. Demonstrate quantitative problem solving skills in all the topics covered.
		Digital Electronics, Electromagnetism and Modern Physics	1. Understand nuclear properties and nuclear behaviour. 2. Understand the type isotopes and their applications. 3. Understand in detail basics of electronics and digital electronics 4. Demonstrate and understand the quantum mechanical concepts. 5. Demonstrate quantitative problem solving skills in all the topics covered.
F Y B Sc	Sem II	Mathematical Physics	1. Understand the basic mathematical concepts and applications of them in physical situations 2. Demonstrate quantitative problem solving skills in all the topics covered
		Electricity, Electronics and Modern Physics	1. Understand the alternating current theory, Ac bridges & circuit theorem 2. Understand Digital electronics, DC power supply 3. Demonstrate and understand the quantum mechanical concepts
S Y B Sc	Sem III	Mechanics and Thermodynamics	1. Understand the concepts of mechanics & properties of matter & to apply them to problems. 2. Comprehend the basic concepts of

			thermodynamics & its applications in physical situation. 3. Learn about situations in low temperature. 4. Demonstrate tentative problem solving skills in all above areas
		Vector calculus, Analog Electronics	1. Understand the basic concepts of mathematical physics and their applications in physical situations. 2. Understand the basic laws of electrodynamics and be able to perform calculations using them. 3. Understand the basics of transistor biasing, operational amplifiers, their applications. 4. Understand the basic concepts of oscillators and be able to perform calculations using them. 5. Demonstrate quantitative problem solving skill in all the topics covered.
		Quantum Mechanics and Particle dynamics	1. Understand the postulates of quantum mechanics and to understand its importance in explaining significant phenomena in Physics. 2. Understand the basics of charged particle dynamics. 3. Demonstrate quantitative problem solvingskills in all the topics covered.
S Y B Sc	Sem IV	Optics and Thermodynamics	1. Understand the diffraction and polarization processes and applications of them in physical situations. 2. Understand the concepts on E 3. Demonstrate quantitative problem solving skills in all the topics covered.
		Digital electronics and Communication technology	1. Understand the digital electronics, Flip flops, registrars and counters and their application. 2. Understanding basics of communication, amplitude and frequency modulation.
		Quantum Physics	1. Understand the postulates of quantum mechanics and to understand its importance in explaining significant phenomena in Physics. Also understand applications of Schrodinger's equation. 2. Demonstrate quantitative problem solvingskills in all the topics covered.
F Y B Sc		Practical Course	1. To understand and practice the skills while

& S Y B Sc	Sem I,II,III, IV		doing physics practical 2. To understand the use of apparatus and their use without fear 3. To correlate their physics theory concepts through practical 4. Understand the concepts of errors and their estimation
T Y B Sc	Sem V	Mathematical, Thermal and Statistical Physics	1. Learn some mathematical techniques required to understand the physical phenomena at the undergraduate level 2. Get exposure to important ideas of statistical mechanics 3. Solve simple problems in probability, understand the concept of independent events and work with standard continuous distributions. 4. Get idea of the functions of complex variables; solve non homogeneous differential equations and partial differential equations using simple methods.
		Solid State Physics	1. Understand the basics of crystallography, Electrical properties of metals, Band Theory of solids, demarcation among the types of materials, Semiconductor Physics and Superconductivity. 2. Understand the basic concepts of Fermi probability, distribution function, Density of states, conduction in semiconductors and BCS theory of superconductivity. 3. Demonstrate quantitative problem solving skills in all the topics covered.
		Atomic and Molecular Physics	1. The application of quantum mechanics in atomic physics 2. The importance of electron spin, symmetric and antisymmetric wave functions and vector atom model 3. Effect of magnetic field on atoms and its application **4.** Learn Molecular physics and its application**s.**
		Electrodynamics	1. Understand the laws of electrodynamics and be able to perform calculations using them. 2. Understand Maxwell's electrodynamics and its relation to relativity. 3. Understand how optical laws can be derived from electromagnetic principles. 4. Develop quantitative problem solving skills.

T Y B Sc	Sem VI	Classical Mechanics	1. Understand the kinds of motions that can occur under a central potential and their applications to planetary orbits. 2. Learn the concepts needed for the important formalism of Lagrange's equations and derive the equations using D'Alembert's principle. 3. Appreciate the drastic effect of adding nonlinear corrections to usual problems of mechanics and nonlinear mechanics can help understand the irregularity we observe around us in nature.
		Electronics	1. Understand the basics of semiconductor devices and their applications. 2. Understand the basic concepts operational amplifier: its prototype and applications as instrumentation amplifier, active filters, comparators and waveform generation. 3. Understand the basic concepts of timing pulse generation and regulated power supplies 4. Understand the basic electronic circuits for universal logic building blocks and basic concepts of digital communication. 5. Develop quantitative problem solving skills in all the topics covered.
		Nuclear Physics	1. Understand the fundamental principles and concepts governing classical nuclear and particle physics 2. Have knowledge of their applications interactions of ionizing radiation with matter the key techniques for particle accelerators the physical processes involved in nuclear power generation.

			3. Understand the fundamental constituents of matter and lay foundation for the understanding of unsolved questions about dark matter, antimatter and other research oriented topics.
		Special Theory of Relativity	1. Understand the significance of Michelson Morley experiment and failure of the existing theories to explain the null result 2. Understand the importance of postulates of special relativity, Lorentz transformation equations and how it changed the way we look at space and time, Absolutism and relativity, Common sense versus Einstein concept of Space and time. **3.** Solve problems based on length contraction, time dilation, velocity addition, Doppler effect, mass energy relation and resolve paradoxes in relativity like twin paradox etc**.**
T Y B Sc	Sem V & VI	Practical Course Core & Applied Component	1. Understanding relevant concepts. 2. Planning of the experiments 3. Layout and adjustments of the equipments 4. Understanding designing of the experiments 5. Attempts to make the experiments open ended 6. Recording of observations and plotting of graphs 7. Calculation of results and estimation of possible errors in the observation of results