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	1. Understand Newton's laws and apply them in calculations of the motion of simple systems 2. Use the free body diagrams to analyze the forces on the object. 3. Understand the concepts of friction and the concepts of elasticity, fluid mechanics and be able to perform calculations using them 4. Understand the concepts of lens system and interference 5. Apply the laws of thermodynamics to formulate the relations necessary to analyze a thermodynamic process 6. Demonstrate quantitative problem solving skills in all the topics covered
		Modern Physics	1. Understand nuclear properties and nuclear behavior 2. Understand the type isotopes and their applications 3. Demonstrate and understand the quantum mechanical concepts 4. 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 and Electronics	1. Understand the alternating current theory, Ac bridges & circuit theorem 2. Understand Digital electronics, DC power supply 3. Understand static electric and magnetic fields
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.
		Applied Physics - I	1. Appreciate the role of Physics in 'interdisciplinary areas related to materials, Bio Physics, Acoustics etc. 2. Understand the scope of the subject in Industry & Research.
S Y B Sc	Sem IV	Optics and Digital Electronics	1. Understand the diffraction and polarization processes and applications of them in physical situations. 2. Understand the working of digital circuits 3. Use IC 555 time for various timing applications. 4. Demonstrate quantitative problem solving skills in all the topics covered.
		Quantum Physics	1. Understand the postulates of quantum mechanics and to understand its importance in explaining significant phenomena in Physics. 2. Demonstrate quantitative problem solving skills in all the topics covered.
		Applied Physics - II	1. Understand the concepts of geophysics. 2. Understand 8085 microprocessor, basic assembly language programming, instruction set of 8085 microprocessor 3. Write programs for 8085 microprocessor 4. Understand the concept of radiation, its types and the concept of radio communication.
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 V	Elective I Applied Component Electronic Instrumentation	1. Understand the difference between a transducer and a sensor. 2. Understand the construction, working and uses of different types of transducers. 3. Understand the concept of signal conditioning, devices used and their operations. 4. Get acquainted with the measuring instruments used in laboratory. 5. Get the insight of the modern medical instruments in principle, which are used in day to day life.
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**.**
		Elective II Applied Component Electronic Instrumentation	1. Analyze/design and implement combinational logic circuits. 2. Develop assembly language programming skills and real time applications of microprocessor. 3. Illustrate how to interface the I/O peripheral (PPI) with 8085 microprocessor 4. Understand architecture, silent features, instruction set, programming and interfacing of 8051 microcontroller. 5. Develop the programming skills in programming Language C++. 6. Train their practical knowledge through lab experiments.
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