B.Sc. Physics

The B.Sc Physics program has 13 courses offered in Physics during 6 semesters. A Course in Physics is offered in each of the first four semesters. The fourth semester has 4 courses in Physics and the sixth has 5 courses. The course outcomes of the different courses are stated here.

PROGRAMME OUTCOMES (PO) OF BSc PHYSICS

PO No.	Upon completion of undergraduate programme, the students will be able to:
PO-1	Apply and innovate
PO-2	Achieve a desire for higher learning
PO-3	Work as a team with enhanced communication and coordination skills
PO-4	Attain skills for employment and entrepreneurship
PO-5	Acquire awareness on socio-cultural and environmental issues
PO-6	Develop a sense of ethics, self-discipline and sustainability

PROGRAM SPECIFIC OUTCOMES (PSO) OF BSc PHYSICS

PSO No.	Upon completion of B.Sc Physics program, the students will be able to:
PSO-1	Learn physics through lectures, laboratory sessions, Tutorials and interaction with eminent academicians.
PSO-2	Kindle the urge for higher studies, entrepreneurship and lifelong learning.
PSO-3	Enhance communication, coordination and leadership skills.
PSO-4	Achieve holistic development by nurturing employability, sense of ethics, job dignity, discipline, time management, emotional intelligence and self-awareness
PSO-5	Enhance national and international competency.
PSO-6	Develop social and environmental responsibleness.
PSO-7	Demonstrate writing, speaking, reading and listening competence in two languages
PO-8	Acquire fundamental concepts of Mathematics and Chemistry as a tool for learning Physics.

Course Outcomes (CO)

Course Outcome No.	Outcome
Semester.1 :PH1CRT01 - Methodology and Perspectives of Physics	
CO 1	To equip students to the pursuit of Physics, its history and methodology
CO 2	To emphasize the importance of measurement which is central to physics
CO 3	To inculcate passion for the subject in its learners and to help them revisit basic concepts.
CO 4	By the end of this course, students should be well versed in vector analysis; concept of different number systems and their use; and calculation of errors in measurement.
Semester.2: PH2CRT02 – Mechanics and Properties of Matter	
CO 5	To empower the student to acquire engineering skills and practical knowledge, which help the student in their everyday life
CO 6	This course will provide a theoretical basis for doing experiments in related areas.
CO 7	**Practical's Paper1** The practical paper offered in the first two semesters is Mechanics and Properties of Matter. The students are trained to develop skills in setting up of the experiment, acquisition of data, systematic analysis of the data and to estimate errors in measurement.
Semester.3 : PH3CRT03- Optics, Laser and Fiber Optics	
CO 8	to provide necessary foundation in optics and photonics which prepare the students for an intensive study of advanced topics at a later stage
CO 9	This course provides students with a working knowledge of optical physics, including diffraction, polarization, interference, laser physics and fibre optics
Semester.4 : PH4CRT04 - Semiconductor Physics	
CO 10	To learn the physical principles and applications of Electronics
CO 11	The basic concepts of semiconductor devices, Transistors and their applications are being imparted in the course
CO 12	On successful completion, a student is expected to design and analyze of electronic circuits.
CO 13	**Practical's Paper 2** The practical paper offered in third and fourth semester mainly contains experiments in optics, electricity, magnetism and Electronics. Students get practical knowledge of theory they studies in both semesters. Optical experiments include different interference and diffraction phenomena based experiments. Students are expected to gain expertise in assembling electrical and electronic circuits and familiarize themselves with the use of Cathode Ray Oscilloscope.
Semester 5: PH5CRT05 – Electricity and Electrodynamics	
CO 14	This course is expected to provide a sound foundation in electricity and electrodynamics to the students.

CO 15	The relationship between electric and magnetic fields, and identify and apply appropriate theoretical techniques to solve a range of different problems in electromagnetism.
Semester 5: PH5CRT06 – Classical and Quantum Mechanics	
CO 16	Students are expected to gain understanding about classical mechanics and get introduced to quantum concepts.
CO 17	The relationship between electric and magnetic fields, and identify and apply appropriate theoretical techniques to solve a range of different problems in electromagnetism.
CO 18	After the successful completion of this course, a student should be able to pinpoint the historical aspects of development of quantum mechanics
CO 19	Solve Schrodinger equation for simple potentials, identify and relate the eigenvalue problems for energy, momentum, angular momentum.
Semester 5: PH5CRT07 –Digital Electronics and Programming	
CO 20	This course is expected to provide necessary back ground for applications of electronics in mathematical computation.
CO 21	It will introduce number representation and conversion between different representations.
CO 22	Logic circuits will be introduced and students are trained to analyze logic processes and implement logical operations using combinational and sequential logic circuits.
Semester 5: PH5CRT08 – Environmental Physics and Human Rights	
CO 23	The course creates concern among the students on energy conservation and environmental protection.
CO 24	On completion of the course, student should be able to identify key challenges and technologies in energy use, utilization of energy resources, energy conversion and environmental consequences.
CO 25	Impact of environmental pollution on ecology will also be discussed.
Semester 5: PH5OPT02 - Physics in Daily Life (Open Course)	
CO 26	This course intended to teach basic knowledge of physics in our daily life.
CO 27	Students will learn about basic properties of light and different phenomena they observed in our nature.
CO 28	Impact of environmental pollution on ecology will also be discussed.
CO 29	The laws of motion, practical awareness of speed, acceleration etc is discussed with specific examples.
CO 30	Vision optics, vision aberration and corrections are discussed.
CO 31	The student will learn about the electricity consumption and calculation of their electricity bill.
Semester 6: PH6CRT09- Thermal and Statistical Physics	
CO 32	This course is to develop working knowledge of statistical mechanics and to use this knowledge to explore various applications related to topics in material science and the physics of condensed matter.
CO 33	Identifying and describing the statistical nature of concepts and laws in thermodynamics, in particular: entropy, temperature, chemical potential, Free energies, partition functions are essential to this course.

CO 34	It also aims at applying the concepts and laws of thermodynamics to solve problems in thermodynamic systems such as gases, heat engines and refrigerators etc.
Semester 6: PH6CRT10 - -- Relativity and Spectroscopy	
CO 35	This course is intended to introduce principles of spectroscopy and special theory of relativity.
CO 36	I Concepts of special theory of relativity is discussed with special emphasis to develop problem solving skills.
CO 37	Atomic as well as molecular spectroscopy is discussed and the student will acquire basic knowledge of the interaction of radiation with matter and will be able to use the principles to understand molecular spectra.
CO 38	The student will recognize the relationship between molecular/atomic spectra and their properties.
Semester 6: PH6CRT11 – – Nuclear, Particle and Astrophysics	
CO 39	This course intended to explore the interior of nucleus and interaction between nucleons.
CO 40	The course gives an overview of modern nuclear and particle physics, stressing fundamental concepts and processes.
CO 41	Atomic as well as molecular spectroscopy is discussed and the student will acquire basic knowledge of the interaction of radiation with matter and will be able to use the principles to understand molecular spectra.
CO 42	The student will recognize the relationship between molecular/atomic spectra and their properties.
CO 43	When the course is completed the student should be able to explain the different properties of nuclei, models of nuclear structure, forms of radioactivity and account for their occurrence, account for the fission and fusion processes and classify elementary particles according to their quantum numbers.
Semester 6: PH6CRT12- Solid State Physics	
CO 44	This course is intended to provide an introduction to the physics of Condensed Matter.
CO 45	Students are introduced to Crystal structure, free electron theory, Dielectric and magnetic properties of solids, superconductivity and material science.
CO 46	It provides an understanding of the crystal lattice and how the main lattice types are described, and help students to appreciate electronic band structure of metals and be able to discuss theory of conduction.
CO 47	It also enables them classify materials and introduces to areas such as nanotechnology.
Semester 6: PH6CBT03- Computational Physics (Choice Based Course)	
CO 48	This course is intended to give an insight to computer hardware and computer applications.
CO 49	Training is given in programming language C++ and are wards are made capable to do programming.
CO 50	Numerical methods are also discussed in this course.