PROGRAMME NAME	B.Sc. Physics (Hons. GE & Programme Course in CBCS) under the University of Kalyani
PROGRAMME SPECIFIC OUTCOME	This course is so designed that after completion, a student would acquire a fair amount of theoretical as well as practical knowledge in physics that will surely help him pursue higher studies. Also, the computational knowledge imparted as a part of different courses under this programme helps a student in the field of employment as well.

COURSE OUTCOME (Hons)			
SEMESTER	COUSE CODE	COURSE NAME	COURSE OUTCOME
I	PHY-H-CC-01 (CBCS)	Mathematical Physics I	This course helps a student to learn and recollect some of the basic mathematical knowledge's such as ordinary and vector calculus, matrices, orthonormal curvilinear coordinate systems, probabilities, essential for further studies in physics.
	PHY-H-CC-02 (CBCS)	Mechanics	Study of classical mechanics enables students to understand what observables are, how to construct equation for both linear and rotational motions. This course gives ideas about different general properties of matters. Finally, this course extends to relativistic mechanics where students learn about Galilean and Lorentz transformation and their consequences, four vector, length contraction, time dilation etc.
II	PHY-H-CC-03 (CBCS)	Electricity and Magnetism	The study of electricity and magnetism will make students become familiar with electric and magnetic fields and their origin. They learn techniques to find electric fields and potential and magnetic fields for various charge and current distributions.
	PHY-H-CC-04 (CBCS)	Waves and Optics	This course is intended to give a complete knowledge to the students about the wave phenomena with reference to sound and light. Optical phenomena of interference and diffraction have been included in this course. They will also learn Holography.
III	PHY-H-CC-05 (CBCS)	Mathematical Physics II	Here students learn about Fourier series, techniques to solve some very essential differential equations pertinent to physics problems, theory of errors and partial differential equations.
	PHY-H-CC-T-06 (CBCS)	Thermal Physics	This course imparts fundamental knowledges of temperature, energy, heat, free energy, entropy, etc. Finally, students learn about fundamental workings of heat engines and refrigerators.
	PHY-H-CC-T-07 (CBCS)	Digital Systems and Applications	After completing this course students clearly understand the difference between electrical and electronic systems as well as between analog and digital systems. This course enable students to understand the design mechanism of different electronic circuits to process signals in two discrete levels following Boolean algebra.
	PHY-H-SEC-T-01 (CBCS)	Electrical circuits & Network Skills	On completion of this course students gain fair amount of expertise to design and trouble shoot the electrical circuits, networks, and appliances.
IV	PHY-H-CC-T-08	Mathematical	This course comprises of three broad topics: complex analysis,

COURSE OUTCOME (Hons)			
SEMESTER	COUSE CODE	COURSE NAME	COURSE OUTCOME
	(CBCS)	Physics III	integral transforms, and Laplace transform that have wide applications in Physics. Students learn complex differentiation and integration including residue theorem and properties and applications of Fourier and Laplace transform.
	PHY-H-CC-T-09 (CBCS)	Elements of Modern Physics	On studying this course students learn a new and advanced kind of physics called as Quantum Mechanics and its application in the fields of Nuclear and LASER Physics.
	PHY-H-CC-T-10 (CBCS)	Analog Systems and Applications	After successful completion of this course a student will gain knowledge about the development of electronics starting from semiconductor diode to Junction transistor. Application of diodes in rectifier circuits, transistors in amplifiers and oscillators, and OPAMP are included here
	PHY-H-SEC-T-02 (CBCS)	Radiation Safety	This course helps a student to become aware and understand the radiation hazards and safety.
V	PHY-H-CC-T-11 (CBCS)	Quantum Mechanics and Applications	This course gives ideas about linear vector space, bra-ket algebra, and matrix representation of QM. These ideas are then implemented to study different QM systems such as infinite potential well, harmonic oscillator, central force system (characterized by bound states), and, potential well, finite potential barrier (characterized by scattering states) etc.
	PHY-H-CC-T-12 (CBCS)	Solid State Physics	In this course students are taught the structures of matter and its relation to the properties exhibited by them. Students can see how the knowledge of quantum mechanics is applied here to explain all these.
	PHY-H-DSE-T-01 (CBCS)	Applied Dynamics	This course introduces students to various dynamical systems and parameters that are required to understand such systems. The systems that students study here includes biological, chemical, and economic. Students also study here dynamics of chaotic systems and fluids.
	PHY-H-DSE-T-02 (CBCS)	Nuclear and Particle Physics	This course covers nuclear models (liquid drop model, Fermi gas model), radioactive decay (alpha-, beta- and gamma-decay), various types of nuclear reactions, detectors for nuclear radiations, particle detectors (Linear accelerator, Cyclotron, Synchrotron) and particle physics.
VI	PHY-H-CC-T-13 (CBCS)	Electromagnetic Theory	In this course a student learns the basics of Classical Electrodynamics, Wave Guides and Optical Fibers. One gets acquainted with the various aspects of Electromagnetic Waves, its propagation through various kinds of media and Polarization.
	PHY-H-CC-T-14 (CBCS)	Statistical Mechanics	Starting from the necessity of Statistical Mechanics, the course covers classical and quantum statistical mechanics including Bose-Einstein and Fermi-Dirac Statistics. Within such a huge range, the students learn to calculate the partition function, densityoperator (and its necessity), symmetrization (or anti-symmetrization) of particles, Bose-Einstein condensation, Fermi gas etc.
	PHY-H-DSE-T-03 (CBCS)	Nano Materials and Applications	This advanced course introduces students to the world of nanometre dimension. Here, they learn what nanoparticles are, how they differ from bulk materials in terms of properties, the different ways to synthesize, detect, and analyze them, and finally, their applications for the betterment of human life.
	PHY-H-DSE-T-04 (CBCS)	Biophysics	Biophysics is necessary because it applies the principles and techniques of physics to understand biological systems

COURSE OUTCOME (Hons)			
SEMESTER	COUSE CODE	COURSE NAME	COURSE OUTCOME
			at various levels, from molecules to organisms. It helps in elucidating complex biological processes, such as protein folding, cell signaling, and neural transmission, which are fundamental to understanding life and developing medical treatments. Additionally, biophysics contributes to advancements in fields like bioengineering, drug design, and medical diagnostics.

COURSE OUTCOME (GE)			
SEMESTER	COUSE CODE	COURSE NAME	COURSE OUTCOME
I	PHY-GE-CC-01 (CBCS)	Mechanics	Study of classical mechanics enables students to understand what observables are, how to construct equation for both linear and rotational motions. This course gives ideas about different general properties of matters. Finally, this course extends to relativistic mechanics where students learn about Galilean and Lorentz transformation and their consequences, four vector, length contraction, time dilation etc.
II	PHY-GE-CC-02 (CBCS)	Waves and Optics	This course is intended to give a complete knowledge to the students about the wave phenomena with reference to sound and light. Optical phenomena of interference and diffraction have been included in this course. They will also learn Holography.
III	PHY-GE-CC-01 (CBCS)	Mechanics	Study of classical mechanics enables students to understand what observables are, how to construct equation for both linear and rotational motions. This course gives ideas about different general properties of matters. Finally, this course extends to relativistic mechanics where students learn about Galilean and Lorentz transformation and their consequences, four vector, length contraction, time dilation etc.
IV	PHY-GE-CC-02 (CBCS)	Waves and Optics	This course is intended to give a complete knowledge to the students about the wave phenomena with reference to sound and light. Optical phenomena of interference and diffraction have been included in this course. They will also learn Holography.

COURSE OUTCOME (Prog)			
SEMESTER	COUSE CODE	COURSE NAME	COURSE OUTCOME
I	PHY-H-CC-01 (CBCS)	Mechanics	Study of classical mechanics enables students to understand what observables are, how to construct equation for both linear and rotational motions. This course gives ideas about different general properties of matters. Finally, this course extends to relativistic mechanics where students learn about Galilean and Lorentz transformation and their consequences, four vector, length contraction, time dilation etc.
II	PHY-G-CC-02 (CBCS)	Waves and Optics	This course is intended to give a complete knowledge to the students about the wave phenomena with reference to sound and light. Optical phenomena of interference and diffraction have been included in this course. They will also learn Holography.

COURSE OUTCOME (Prog)			
SEMESTER	COUSE CODE	COURSE NAME	COURSE OUTCOME
III	PHY-G-CC-03 (CBCS)	Analog Systems and Applications	After successful completion of this course a student will gain knowledge about the development of electronics starting from semiconductor diode to Junction transistor. Application of diodes in rectifier circuits, transistors in amplifiers and oscillators, and OPAMP are included here
IV	PHY-G-CC-04 (CBCS)	Electromagnetic Theory	In this course a student learns the basics of Classical Electrodynamics, Wave Guides and Optical Fibers. One gets acquainted with the various aspects of Electromagnetic Waves, its propagation through various kinds of media and Polarization.
V	PHY-G-DSE-01 (CBCS)	Electricity and Magnetism	The study of electricity and magnetism will make students become familiar with electric and magnetic fields and their origin. They learn techniques to find electric fields and potential and magnetic fields for various charge and current distributions.
VI	PHY-G-DSE-02 (CBCS)	Digital Systems and Applications	After completing this course students clearly understand the difference between electrical and electronic systems as well as between analog and digital systems. This course enable students to understand the design mechanism of different electronic circuits to process signals in two discrete levels following Boolean algebra.