



KHALISANI MAHAVIDYALAYA

AISHE CODE – C44706

Khalisani, Chandannagar, Hooghly, Pin-712138

Ph. No. (033)-2682-5530/9517/8856

Email- khalisanimahavidyalaya@gmail.com

Website: www.khalisanicollege.ac.in

Enlightenment through Education

PROGRAMME OUTCOMES (PO) of the department of Physics

- Foundational Understanding: Students will gain a thorough understanding of fundamental physics principles and theories, including mechanics, electromagnetism, optics, thermodynamics, and modern physics.
- Advanced Conceptual Knowledge: Learners will delve into advanced topics such as quantum mechanics, statistical mechanics, and solid-state physics, equipping them with a deeper understanding of complex physical phenomena.
- Mathematical Application: The course will enable students to apply mathematical methods, such as calculus, linear algebra, and differential equations, to solve theoretical and practical physics problems.
- Experimental Skills: Students will develop proficiency in designing and conducting experiments, utilizing contemporary laboratory techniques and instruments to gather and analyze data.
- Data Analysis: Learners will be trained to use statistical tools and computational techniques for analyzing experimental data, ensuring accurate interpretation and presentation of results.
- Research Competence: The course will prepare students to undertake independent research projects, including formulating hypotheses, conducting experiments, and presenting findings in a coherent manner.
- Problem-Solving Abilities: Students will enhance their ability to approach and solve complex physics problems using both theoretical insights and practical skills.
- Technical Proficiency: Graduates will be adept at using modern physics software and tools, enhancing their computational and simulation skills essential for contemporary scientific research.
- Communication Skills: The course will focus on developing student's ability to communicate scientific concepts effectively through written reports, presentations, and discussions.
- Ethical and Professional Standards: Students will learn to adhere to ethical guidelines in
- scientific research and practice, understanding the societal impact of their work and the importance of professional integrity.

PROGRAM SPECIFIC OUTCOME (PSO) of the department of Physics

- Comprehensive Physics Knowledge: Gain deep understanding of core physics concepts including mechanics, electromagnetism, thermodynamics, and quantum mechanics.
- Core Competence: Acquire in-depth knowledge in areas such as digital electronics, solid-state physics, atomic, and nuclear physics.
- Communication Skills: Develop effective written and oral communication abilities for conveying complex physics topics.
- Experimental Proficiency: Learn to design, conduct, and analyze experiments using advanced laboratory techniques.
- Technical Skills: Develop proficiency in using laboratory instruments and essential computer skills for data analysis and scientific computation.
- Career Readiness: Enhance employability in teaching, research, and industry; prepare for higher education and competitive exams.



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COURSE OUTCOMES (CO) of the department of Physics

Semester	Program	Course Code	Course Title	Credit	Course Outcome
I	Honours	CC-I	Mathematical Physics-I	6	This course introduces advanced mathematical techniques and computer programming essential for understanding and solving physical problems in classical mechanics, electromagnetism, and quantum mechanics
I	Honours	CC-II	Mechanics	6	This paper will provides a comprehensive understanding of classical mechanics, covering topics such as kinematics, dynamics, and conservation laws, with an emphasis on analytical and problem-solving skills
I	General	CC-1A	Mechanics	6	The Mechanics course offers a foundational understanding of classical mechanics, focusing on principles of motion, forces, and energy, with applications to real-world problems
II	Honours	CC-III	Electricity and Magnetism	6	This paper integrates theoretical principles with hands-on experiments, fostering a deep understanding of electromagnetism and advanced problem-solving skills in the domain of electricity and magnetism
II	Honours	CC-IV	Waves and Optics	6	This course combines theoretical understanding with practical experiments, developing expertise in wave phenomena and optics for advanced applications in physics
II	General	CC-1B	Electricity and Magnetism	6	The primary focus of this paper is to integrate theoretical principles with hands-on experiments, fostering a deep understanding of electromagnetism and advanced problem-solving skills in the domain of electricity and magnetism
III	Honours	CC-V	Mathematical Physics-II	6	This core course integrates advanced theoretical concepts with computer-based experiments, enabling students to deepen their understanding and apply advanced mathematical methods to solve complex problems in physics
III	Honours	CC-VI	Thermal Physics	6	Thermal Physics provides a theoretical foundation and practical experience, enabling students to analyze and apply principles of heat and thermodynamics in diverse physical systems
III	Honours	CC-VII	Digital System and Applications	6	This paper explores theoretical principles and hands-on experiments, developing expertise in digital electronics, logic design, and practical applications for advanced problem-solving in the field
III	Honours	SEC-1	Renewable Energy	2	This skill enhancement course provides a contemporary knowledge of renewable energy sources and its application for a better and carbon free life.



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III	General	CC-1C	Thermal Physics and Statistical Mechanics	6	It integrates theoretical principles with experimental applications, equipping students to analyze and model complex systems, and understand the statistical behavior of particles in diverse physical scenarios
III	General	SEC-1	Renewable Energy	2	This skill enhancement course provides to physics general students a contemporary knowledge of renewable energy sources and its application for a better and carbon free life.
IV	Honours	CC-VIII	Mathematical Physics-III	6	This core course integrates advanced theoretical concepts with computer-based experiments, enabling students to deepen their understanding and apply advanced mathematical methods to solve complex problems in physics
IV	Honours	CC-IX	Elements of Modern Physics	6	Elements of Modern Physics course integrates theoretical principles with experimental applications, fostering a comprehensive understanding of key concepts in contemporary physics, including quantum mechanics, radioactivity and laser
IV	Honours	CC-X	Analog Systems and Applications	6	Analog Systems and Application paper provides theoretical insights and practical experience, enabling students to design, analyze, and implement analog electronic systems for various applications
IV	Honours	SEC-2	Computational Physics Skill	2	This course enrich students to improve their programming skill to solve complicated physics problem with the help of computer
IV	General	CC-1D	Waves and Optics	6	This course combines theoretical understanding with practical experiments, developing expertise in wave phenomena and optics for advanced applications in physics
IV	General	SEC-2	Weather Forecasting	2	This paper provides contemporary information about the modern weather forecasting techniques and various weather forecasting model and their accuracy
V	Honours	CC-XI	Quantum Mechanics and Applications	6	This course integrates theoretical foundations with computer-based experiments, empowering students to comprehend and apply quantum principles for diverse applications in physics and technology
V	Honours	CC-XII	Solid State Physics	6	The Solid State Physics paper integrates theoretical principles with experimental techniques, fostering a deep understanding of the properties and behaviors of condensed matter, and providing skills for advanced material analysis and design
V	Honours	DSE-1	Advanced Mathematical Physics	6	This special paper integrates advanced theoretical concepts with computer-based experiments, empowering students to explore and apply sophisticated mathematical techniques to solve complex problems in physics



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V	Honours	DSE-2	Classical Dynamics	6	This special paper imparts advanced theoretical knowledge, equipping students to analyze and model the motion of particles and systems, and apply classical mechanics principles to complex physical scenarios
V	General	SEC-3	Computational Physics	2	This course helps physics general students to improve their programming skill to solve complicated physics problem with the help of computer
V	General	DSE-1A	Elements of Modern Physics	6	Elements of Modern Physics course integrates theoretical principles with experimental applications, fostering a comprehensive understanding of key concepts in contemporary physics, including quantum mechanics, radioactivity and laser
VI	Honours	CC-XIII	Electromagnetic Theory	6	The Electromagnetic Theory paper cultivates advanced understanding and practical skills in the principles of electromagnetic fields, waves, and their applications through theoretical insights and hands-on experimentation
VI	Honours	CC-XIV	Statistical Mechanics	6	The Statistical Mechanics course combines theoretical foundations with computer-based experiments, enabling students to analyze and model complex systems, gaining insights into the statistical behavior of particles and physical phenomena
VI	Honours	DSE-3	Nuclear and Particle Physics	6	This special topic imparts advanced knowledge of nuclear structures, interactions, and elementary particles, cultivating skills for theoretical analysis in the realm of subatomic physics
VI	Honours	DSE-4	Astronomy and Astrophysics	6	This topic provides a deep understanding of celestial phenomena, galactic structures, and cosmological principles, fostering advanced analytical skills in astrophysical research
VI	General	SEC-4	Electrical Circuits and Network Skills	2	In this paper students will develop advanced proficiency in analyzing, designing, and optimizing electrical circuits and networks for diverse engineering applications
VI	General	DSE-1B	Quantum Mechanics	6	This course integrates theoretical principles with experimental techniques, equipping students with advanced knowledge to understand and apply quantum phenomena in diverse scientific contexts.