Durgapur Govt College

Department of Physics

Programme Specific Outcome (PSO)

We are offering six semester undergraduate courses (Honours, Generic and Program) in Physics under Kazi Nazrul University, Asansol, following the Choice Based Credit System (CBCS), prescribed by UGC, India. A student may either choose a Honours/Major course in Physics or may opt for Physics as a subsidiary subject.

Physics, being a natural science, investigates on the interactions among various particles and force-fields; those govern the rhythms of the dynamics of the ever-alive universe. There are different aspects of the phenomena, like mechanical, thermal, electrical, magnetic properties etc. Mankind has learned to see the world from the macroscopic to microscopic length and time scales. We have jumped from the quantum to nano-ages in science and technology. We realized that the physics changes when the speed of a matter becomes comparable with speed of light, which makes the scientists to reconsider the absoluteness of space-time and put forward the theory of relativity. The modification may not be earnestly needed in daily-world but surely relevant in astro and terrestrial physics.

The exploration of the different corners of physics through hard-core mathematical calculations and demonstrative verification of the theories through table-top experiments, our students learn and practice under the guidance of a group of qualified and trained mentors.

On the completion of under-graduate (B.Sc.) course in Physics,

1. Students learn the basic mathematical tools, needed to understand different branches of Physics. They are trained to apply these techniques through numerical exercises.

2. They are familiarized with hands-on training in the furnished and equipped laboratory for practical verification of the physical theories that they learn during class lectures.

3. They are trained with basic computer programming with motivation of Physics-applications. In these courses, they learn the language like FORTRAN, C, C++, and apply on problems through numerical analysis.

4. The Honours course in Physics makes the students eligible for the further post-graduate studies, in physics, electronics, instrumentation, computer applications etc. They can apply for different integrated-PhD courses in IITs and NITs. They may appear for competitive examinations like JAM, JEST etc.

5. The general courses (Program and Generic) trains the students as a complementary for their major courses, and they may also apply for various trainee jobs with substantial salary packages.

6. All students may choose physics from the panel of optional subjects in WBCS, IAS, and CDS etc.

Course Specific Outcome (CSO)

Three years undergraduate course in Physics Honours prepares the students for career as teachers or researchers in different branches in pure and applied physics.

1. In physics, we investigate for different properties of natural objects, like mechanical, thermal, electrical, magnetic properties etc.

2. In the entire course work, the curriculum is divided into several modules (core courses), where an instructor sincerely discusses on each of the manifestations in details.

3. The approach is both theoretical and experimental.

4. In accordance with the recent development in information technology, the students get familiarized with the computation facility with motivations for physics applications.

5. They learn the basic mathematical tools like vector analysis, differential equations, matrix and determinant, Fourier series, Complex analysis etc. and their applications in some prototype physics problems.

6. The mechanical and general properties of matter are discussed. Courses go beyond Newtonian formulation, and discuss on Lagrangian and Hamiltonian mechanics. Several particles in nature move with a velocity comparable to velocity of light. Students learn the Einstein's modification on the concept of space-time, through special theory of relativity.

7. The Physics of immobile charges and charges in motion (electro-statics and electro-dynamics), the students study in this course. The students learn different types of waves and oscillations, viz., acoustical as well as electro-magnetic. They are told that how the electric and magnetic waves, obeying Maxwell's fundamental equations, are realized as optical light waves. One explain the behavior of light through Ray-optics, wave-optics. The modern advances of applied optics in the line of LASER and Holography are discussed here.

8. The motion of the electrons inside doped semiconductors and different kinds of junctions, has an important applications in the cutting edge technology. The students learn about them, through their course on analog and digital electronics.

9. Kinetic Theory, Thermodynamics and Statistical mechanics are three approaches of thermal physics. Students learn their details and difference in approach. They are familiarized on the different statistics, the identical system of particles obey, like Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac.

10. The sub-atomic particles like electron, protons and neutrons obey some salient physics, those are discussed in the course of atomic, molecular and nuclear physics. Physics Honours students learn that, all these small quantum particles follow a different mechanics during its motion, known as Quantum Mechanics.

Our Generic and Program Students in Physics learn all of these in a more pedagogical and compact way. These course is framed in a simpler way than Honours Course to provide a general outreach of the subject.