

**SYNOD COLLEGE
PHYSICS DEPARTMENT**

COURSE PROGRAMME:

The B.Sc three year undergraduate programme for Honours in Physics consist of a comprehensive and wide range of topics which students are exposed to some of which bears a continuity from the knowledge gathered in the Class XII and some of which are introduced to students for the first time .

The programme consists of both the theoretical aspect of the subject as well as the practical aspect of it. In the first, second, third and fourth semesters the students learn about mechanics, optics and wave theory, basic electronics, sound waves and acoustics, electromagnetism, mathematical physics, thermal physics, special theory of relativity, atomic and nuclear physics, introductory course to quantum mechanics, structure of crystalline solids and their important properties as well as basic ideas of superconductivity. In the 5th and 6th semesters more advanced and in-depth study on areas of Classical Mechanics, Quantum Mechanics, Solid State Physics, Electronics, Electromagnetism, Mathematical Physics, Atomic, Molecular, and Nuclear Physics as well as Astrophysics. In the 6th semester there is also a theory course on computational physics using FORTRAN.

The theoretical aspect of learning is accompanied by the practical work in the laboratory. Students get a hands - on experience by working on different apparatus and performing different experiments which covers different branches of physics. The experiments cover a range of apparatus from digital electronics, optics, thermal physics, sound, modern physics, electricity and magnetism and general mechanics. The practical also includes Fortran programming as one of its components for the Honours students.

The Course is therefore well structured and the theory and practical complement each other and provide for a better understanding of the subject.

COURSE OUTCOMES:

After completion of the 3-year undergraduate physics honours programme the following learning outcomes are expected from the students.

1. Students will have acquired strong foundation in concept understanding of basic physics in areas such as mechanics, optics, electricity and magnetism, electronics, atomic and nuclear physics, molecular physics, solid state physics, classical mechanics and quantum mechanics, thermal physics and electromagnetism.
2. They would have acquired the skills in problem solving by using appropriate mathematical methods to obtain solutions to problems in different areas of physics.
3. They would have acquired the skill and knowledge to carry out computations by using FORTRAN programming.
4. They would have acquired valuable experience and insight from the experimental work done in the laboratory and have the ability to make measurements using different and appropriate techniques, analyse the observational data and drawing inference from them.
5. Students would be able to relate the theoretical knowledge they have learned with the practical applications of it.
6. Students would have acquired the necessary knowledge and skill to undertake higher studies in Physics or other allied subjects.