

## Program Objectives and Outcome

The subject of Biophysics is one of the important interdisciplinary areas in teaching, training and learning which is considered to be important in terms of human resource development and National development. Biophysics is the physics of life phenomenon studied at all level, from molecules and cell to the biosphere as whole. It may be defined as “*the branch of knowledge that applies the principles of physics and chemistry and the methods of mathematical analysis and computer modelling to understand how biological systems work*”. The main emphasis of biophysics is on the quantitative analysis of the physical and chemical aspects of the functions of biological molecules, organisms and entities. The techniques and methodologies that biophysics relies on are closer to Physics and Chemistry, but areas of application are in the biological, medical and related sciences. Biophysicists use a variety of techniques such as UV visible spectroscopy, Gel electrophoresis, X-ray crystallography, microcalorimetry, Atomic Force Microscope, FTIR, Raman, SPR, NMR, fluorescence spectroscopy, Fluorescence Microscopy, Viscometry, G M Counter etc. are used to study problem in exciting areas in biophysics ranging from structure aided drug design to cell signalling and transcriptional silencing etc. Biophysicist works in Universities, R & D industry, Medical Centres/Colleges, Research Institutes, Government Organisation etc.

The two year programme of M.Sc. (Biophysics) is prescribed according to the credit system. The course has been divided in to four semesters. The program has total 16 theory papers, and four in each semester. A set of practical has been designed for each semester liked with the taught theory courses. The programme is designed to provide students a broad based training in Biophysics with strong background of basic concepts as well as exposing them to the advanced fields. In addition to theoretical knowledge, significant emphasis has been given to provide hands on experience to the students in the frontier areas of Biophysics. A multidisciplinary approach has been employed to provide best leverage to students to enable them move into advanced and frontier areas of biological research in the future.

Therefore the programme is meant:

- to prepare master's degree students able to conduct independent research, scientific and industrial activity in research institutions, as well as teaching in specialised secondary and higher educational institutions;
- to prepare personnel in such priority areas as health-related biotechnologies, nonlinear sciences, molecular biology, genomics and proteomics, cellular biotechnologies,

regulatory processes, immunology, bioinformatics and mathematical modelling of biological processes.

### **Job prospect**

Biophysics is a wellspring of innovation for high-tech economy and students are finding an increasing number of employment opportunities. Typically most biophysics careers are in a laboratory conducting original research, either in academia, government agency or private industry. Students from this programme will find that they have received excellent preparation for a PhD programme in biophysics or interdisciplinary fields. Additionally, the numerical and problem-solving skills learned on this programme, as well the ability to manage research and communicate effectively, are also important transferable skills that are highly desired by employers in a variety of industries. Therefore, the successful students will be suitable for placements in teaching, Medical institutes, interdisciplinary research centre and institutes, National laboratories in India as well as in Research and Development laboratories in pharmaceutical companies.