M.Sc. Bioelectronics and Instrumentation

MSc Bioelectronics and Instrumentation (MBI) is a UGC sponsored course sanctioned to the Department of Biochemistry under Innovative Plan. The course is aimed at integrating the domain knowledge of engineering and life sciences to address and understand the various aspects of instruments used for biological applications. The program has a multidisciplinary approach, covering electronics, instrumentation, life science, material science and MEMS. It is intended to provide trained manpower to the industry and research organizations, and impart the ability to use information technology and management skills for monitoring the performance of equipments and related issues.

The course is intended to develop skilled manpower for the industry and research organizations for basic research, quality control, product development, regulatory affairs and application of technology. The course curriculum is comprehensively reviewed by committee of leading academicians, scientists and industry experts to meet the current and emerging needs of industry as well as research institutes. Hands-on training is provided to the students. The program offers a unique blend of classroom inputs, interaction of students with industry personnel, academicians and scientists as well as real time exposure to working environment of premier research laboratories.

MBI uniquely combines the knowledge of electronics and instrumentation with the knowledge of biology. Medical Instrumentation, Biomaterials, Bio-signal Processing, Medical Imaging, Biomechanics and Rehabilitation Engineering are the primary areas covered in this course. Apart from this, the applications of Bioelectronics and Instrumentation also extend to sophisticated therapeutic and surgical devices, Pacemakers, and Artificial Organs, and this cutting-edge job oriented discipline is equally attractive to the students seeking to enter in research. The students admitted to this course are provided opportunities to work in national laboratories to make them aware of the latest technological advances in field.

Employment opportunities in this area are immense, considering the fact that the aging of the population and focus on health issues will increase the demand for better medical devices and equipment designed by professionals. Carrier options for students of this course include: Designing, developing and manufacturing prosthetics, synthetic blood vessels, automated patient-monitoring systems, blood chemistry sensors, ultrasound and other medical devices. Other areas include: artificial intelligence for clinical decisions, providing non-clinical services in hospital, academic career, research, as technical advisor for marketing departments, employment with companies that manufacture equipment used in hospitals and diagnostic centers or centers for research and development, manufacturing, quality control and testing as also installation, maintenance or sales and marketing departments. Other developments, like computer-assisted surgery and research in molecular and cellular biology and tissue engineering are also related to this field.

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