(055-CMT-02-03) BIOMEDICAL ENGINEERING

Significance of the Program

The number of people who are being attacked by the deadly diseases are increasing day by day. Added to this, the new variety of diseases and complications associated with the chronic diseases, not only make the life of common man difficult, but they are also throwing challenges to the health care professionals. The increasing demand for the medical services and facilities had resulted in the increasing medical expenses. In order to bring them down and to reduce the burden on health care professionals, the Programme of Biomedical Engineering is introduced at Postgraduate level. The course is designed for students from Electronics and Communication engineering background and is intended to create a greater number of trained health care professionals in addition to advancement of medical technology to the next level. As the course is a multidisciplinary one, the students will be provided with the basics covering the spectrum of subjects including maths, biology, chemistry and engineering in the initial stages. Later, the modern tools and technologies available for bio-medical applications will be introduced and demonstrated through the laboratory exercises. In the end, the knowledge gained during the course will be utilised and research projects will be handled to solve the real-world Biomedical issues. The curriculum is carefully designed to enhance the critical thinking, creativity and problem-solving abilities of the students.

Career Options

Pursuing a Professional Course in Biomedical Engineering, students can have the following opportunities:

- They can opt for health care Professions like the one in hospitals, Diagnostic centres and Biomedical device manufacturing companies.
- Students can initiate startup companies by getting financial assistance from government organisations like AIIMS, DRDO, National institute of Immunology (NIL) and National Institute of Health and Family Welfare (NIHFW) by sending society beneficial proposals.
- They can pursue their higher studies like Ph.D in many sub areas which are emerging from Biomedical engineering like Biomedical Imaging, Biomedical instrumentation, Medical robotics and many more.
- Students can work as a medical device sales engineer by combining the technical knowledge with the sales skills.

- Responsible jobs like the post of Regulatory affairs specialist (who ensures that all the biomedical products manufactured comply with regulatory standards and guidelines) are always in the offering for the post graduates with Biomedical Degree.
- Students can occupy the Academic professions to enhance their research productivity through guidance.

Program Objectives

The main objectives of the program are

1. To Bring out the students' qualitative and quantitative abilities to solve engineering problems related to societal health care.
2. To inculcate capabilities to conduct research independently as well as collaboratively without compromise in the ethical values.
3. To develop entrepreneurial skills and to sustain in the conditions of ever-changing health care demands.

Outcomes of the Program

- Enables them to design and develop components and systems for health care applications by applying the advanced concepts learned in the course.
- Enables them to use state-of-art tools, both physical and software based, for the purpose of designing low-cost medical systems to benefit mankind.
- Enables them to Develop ideas to Start their own companies for the mutual benefit of themselves as well as the society.
- Enables them to combine and utilise their technical skills and managerial skills merged with ethical values for a disease free and a happy society.
- Enable them to integrate the Engineering and Biology knowledge to minimise the physical suffering of mankind caused by diseases.

Major Course Outline

1. Sensors and Transducers in Healthcare.
2. Biomedical Devices
3. Clinical Health care
4. Quantitative Physiology.
5. Biomechanics.
6. Biomaterials Engineering.

7. Molecular Imaging.
8. Biomedical Signal Processing.