Biomedical Engineering

Introduction

Biomedical engineering, or bioengineering, is the application of engineering principles to the fields of biology and health care. Bioengineers work with doctors, therapists and researchersto develop systems, equipment and devices in order to solve clinical problems.

Biomedical Engineering alias BME is an emerging and exciting discipline of engineering that has gottremendous potential for research, development and employment.

A Biomedical engineer has to be an expert in engineering sciences, biological sciences and medicalsciences. They must be capable of defining a medical problem in engineering terms and find a solution that satisfies both engineering and clinical requirements. They usually design and develop devices and systems ranging from cardiac monitors to clinical computers, artificial hearts to contact lenses, wheel chairs to artificial tendons. They are also integral in the management of technology in hospitals and health care delivery

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Skill Set

- Keen interest in Biology & Mathematics
- Hardworking
- Good communication skills
- Research And analytical skills
- Computational skills

- Aptitude for life Sciences
- Critical Thinking & Record keeping

Eligibility

10+2 with Science Stream (Physics, maths and chemistry as mandatory).

Course Area

The course is of 4 years duration

The candidates have to appear for the entrance examination conducted by the respective institution.

After +2, one can directly do B.E. in Biomedical Engineering, Or

B.E in other branches of engineering then become a Bio medical professional by completing a postgraduate course in Biomedical engineering.

Or, one can do B.E in any branch of Engineering and go for a postgraduate course in Medical

Technology, which is considered equivalent to a postgraduate course in Biomedical Engineering.

One could also take up this career after completing an MBBS degree and then opt for a postgraduate degree in Biomedical Engineering/ Medical Engineering/ Medical Technology.

Top Colleges

SRM University : Department of Biomedical Engineering, Ghaziabad

Course:B.Tech Biomedical Engineering

Duration: 4 years

Eligibility: 10+2 with 50% in PCM/PCB

Selection: SRMJEE

VIT University, Vellore

Course:B.Tech Biomedical Engineering

Duration: 4 years

Eligibility: 10+2 with 60% in PCM/PCB

Selection: VITEEE

National Institute Of Technology - [NIT], Rourkela

Course:B.Tech Biomedical Engineering

Duration: 4 years

Eligibility: 10+2 with 50% marks in PCM/PCMB

Selection: JEE Mains

National Institute Of Technology - [NIT], Raipur

Course:B.Tech Biomedical Engineering

Duration: 4 years

Eligibility: 10+2 with PCM

Selection: AIEEE

Manipal Institute Of Technology - [MIT], Manipal

Course:B.Tech Biomedical Engineering

Duration: 4 years

Eligibility: 10+2 with 50% marks in PCM/PCMB

Selection: MET

Test Syllabus: Physics, Chemistry, Mathematics and General English include questions based on the 10+2 syllabus followed by major 10+2 Boards.

Test Pattern:

Group 2:(Applicable to BTech/ BPharm/ PharmD courses). Duration-2.30 hours, Questions-200 (MCQ).The approximate distribution of questions is as follows:

Physics -50, Chemistry-50, Mathematics-70, English & General Aptitude-30

DeenbandhuChhotu Ram University Of Science And Technology ,Sonepat

Course:B.Tech Biomedical Engineering

Duration: 4 years

Eligibility: 10+2 with PCM/PCMB

Selection: JEE Mains

Bundelkhand University, Jhansi

Course:B.Tech Biomedical Engineering

Duration: 4 years

Eligibility: 10+2 with 50% in PCM

Selection: AKTU Or ET exam

Career Fields

Pharmaceuticals	Medicine	Medical institutions	Modern Health Care
Hospitals	Universities/Colleges	Medical Research	Government Regulatory Agencies
R and D	Medical Equipment manufacturing company	Industrial Firms	Oppurtunities abroad

Employed by companies like -

- BPL
- Larsen & Toubro
- Wipro
- Medical and Siemens.

Area Of specialization in Biomedical Engineering:

Bioinstrumentation - It specializes in the application of electronics and measurement techniquesto develop devices for diagnosis and treatment of diseases.

Biomechanics - Biomechanics is the application of mechanical principles on living organism and also the analysis of mechanics of organisms.

Biomaterials - This area of science is about the natural or manmade material used for the medical application.

Molecular, cellular and Tissue Engineering - It deals with the development of artificial materials and tissue that used for artificial blood vessels and organs, replacement of skin and bone.

Clinical Engineering - It deals with the develop and maintain computer database ofmedical instruments and equipment record in hospitals.

Orthopedic Bioengineering - This science helps to understand the function of the bones, muscles and the joints. It also helps to design and develop artificial joint replacement.

Navigation Systems - It is a specialized branch, that use software tools and specializedimaging equipment to create a digital picture of the insides of a human patient's body.

Rehabilitation Engineering - It is used to design, develop, adapt, test, evaluate, apply and distribute technological solutions to problems faced by individuals with disabilities like communications, hearing, vision. The Rehabilitation engineers improve the capabilities and develop the quality of life for such individuals.

Systems physiology - It is the study of living systems including molecular processes, isolated tissues, organ systems and the whole organism. This study also includes the analysis of how various organs interacts and function.