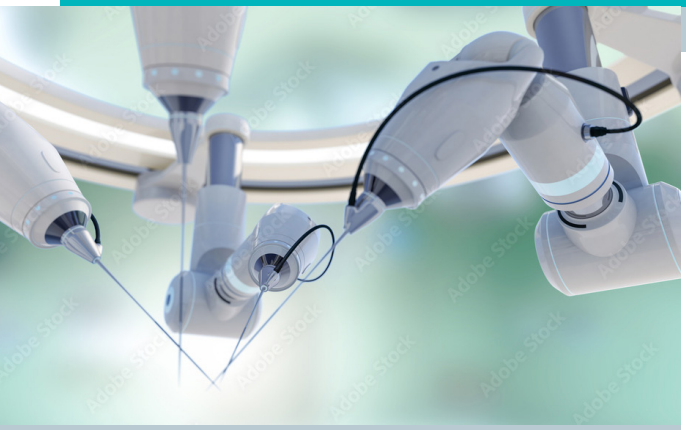
POZNAN UNIVERSITY OF TECHNOLOGY

B.Sc. Eng. Programmes

Biomedical Engineering



Programme description

Biomedical engineering studies allow their graduates to look at the human body and all phenomena related to it from an engineering point of view. Saving and improving the quality of people's lives is possible due to the use of advanced devices that are a daily occurrence in hospitals, clinics, or rehabilitation centers. However, their design and manufacturing require specialized knowledge. Therefore, biomedical engineering is one of the leading scientific research fields in European countries and the United States. This is an elite engineering study enriched with knowledge of medical apparatus, rehabilitation and orthopedic equipment.

The students learn to design and manufacture modern medical apparatus and rehabilitation equipment and apply modern technologies in medicine, biomedical engineering, and related fields. Biomedical engineering studies prepare students to communicate efficiently with doctors, rehabilitation specialists, and other medical professionals to apply advanced technical solutions in the medical environment and design prostheses, implants, and medical devices.

The biomedical engineering programme is an interdisciplinary course that provides students with knowledge of the fundamentals of mechanics, materials engineering, manufacturing techniques, elements of human anatomy and physiology, engineering biomechanics, fundamentals of programming, medical electronics, mechatronics, basic imaging techniques, equipment and modern technologies (including 3D printing, virtual reality, and artificial intelligence) used in medicine and rehabilitation.

Course summary:

Semester 1
- Physical education
- Mathematics
- Physics
- Chemistry
- Information technologies and computer science
- Fundamentals of materials science
- Engineering graphics
- Bioethics
- Basics of biomedical engineering

Semester 2
- Physical education
- Mathematics
- Anatomy and propedeutics of medical sciences
- Mechanics
- Programming languages
- CAD systems
- Electrotechnics
- Basics of heat treatment

Semester 3
- Foreign language
- Electronics and basics of automation
- Biomaterials and protection against corrosion
- Foundry and metal forming
- Basics of medical engineering
- Strength of materials
- Basics of artificial intelligence methods
- Processing of polymer materials
- Metallurgy

Semester 4
- Strength of materials
- Biophysics
- Additive manufacturing and virtual reality in medicine
- FEM analysis in biomedical problems
- Basics of metrology
- Biomechanical engineering
- Physiology with kinesiology
- Machining
- X-ray structural analysis
- Computer graphics
- Ergonomics in medicine
- Elective course 1

Semester 5
- Basics of machines design
- Orthopaedic biomechanics and rehabilitation equipment
- Medical apparatus
- Microcontrollers
- Surgical instruments and operational applications
- Implants and artificial organs
- Digital signal processing
- Drives for medical and rehabilitation devices
- Elective courses 2-3

Semester 6
- Practice
- Passing project
- Electronic measuring and actuating systems
- Sensors and non-electrical values measurement
- Medical imaging techniques
- Elective courses 4-9
- Trends in biomedical engineering
- Pre-graduate seminar

Semester 7
- Protection of intellectual ownership
- Diploma seminar
- Preparation of diploma thesis
- Robotics
- Computer analysis of medical data
- Elective courses 10-13

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Biomedical Engineering

University	Poznan University of Technology Poznan, POLAND
Degree to be obtained	Bachelor of Science, Eng.
Programme website	https://www.put.poznan.pl/en
Contact	International Relations Office Piotrowo 5, room 101 61-138 Poznań, Poland
Phone	+48 61 665 3544
Fax	+48 61 665 3956
E-mail	study@put.poznan.pl
Language of instruction	English
ETCS points	210
Duration	3.5 years (7 semesters)
Programme begins	end of September
Programme ends	end of February
Deadline for applications	middle of July
Education requirements	English language – level B2 (Common European Framework), Secondary school certificate which entitles its holder to apply to higher education institutions. Full list of the required documents is available at: https://www.put.poznan.pl/en
Mode of instruction	Lectures, classes, laboratory classes, projects