WELCOME TO
BIOMEDICAL ENGINEERING

www.utwente.nl/go/bme
IN THIS PRESENTATION

1. Biomedical Engineering
2. Specializations
3. Career
4. Admission / Pre-master
5. Questions?
1. BIOMEDICAL ENGINEERING

GENERAL OVERVIEW:
- WHAT IS IT?
- STRUCTURE OF THE MASTER
WHAT IS BIOMEDICAL ENGINEERING?

- Interdisciplinary field, combining engineering and natural and life sciences
- Research, design, and develop medical innovations
- This two year, English taught programme is tailor-made and has four specializations
STRUCTURE OF THE MASTER
BIOMEDICAL ENGINEERING

Year 1
- Obligatory courses

Year 2
- Internship

Courses (60EC)

Masters assignment (60EC)
2. SPECIALIZATIONS
IMAGING & DIAGNOSTICS
BIONANOTECHNOLOGY & ADVANCED BIOMANUFACTURING
NEURAL & MOTOR SYSTEMS
BIOROBOTICS
Techniques for visualizing and interpreting the processes in cells and bodies (based on optics, lab-on-a-chip and other in vitro diagnostics, photoacoustics, ultrasound, radiation and magnetism)
STRUCTURE OF THE TRACK

Compulsory courses (20 EC)
- Biostatistics
- Advanced Medical Imaging & Therapy Systems
- In Vitro Diagnostics
- Biophysical Techniques & Molecular Imaging

Examples of elective courses
- Biomedical Optics
- Biophysics
- Medical Acoustics
- Magnetic Methods for (Neuro)Imaging
RESEARCH EXAMPLE: NONINVASIVE BLOOD ANALYSIS IN NEWBORNS BY SPECTROSCOPIC OCT (BMPI)
BME & ME

- Practicals to get more insight in the used techniques
- Ranging from nanoscale *in vivo* measurements to the human body
- Getting more involved in the latest research
The development of technologies that restore function to diseased and damaged organs and tissues.

BIONANOTECHNOLOGY & ADVANCED BIOMANUFACTURING
STRUCTURE OF THE TRACK

Compulsory courses (20 EC):
- Biostatistics
- Applied Cell Biology
- Biomedical Materials Engineering
- Tissue Engineering

Elective course examples:
- Bionanotechnology
- Controlled Drug and Gene Delivery
- Lab-on-a-chip
- Biomedical Membranes & Bioartificial Organs
RESEARCH EXAMPLE: CERVICAL CANCER SCREENING SYSTEM

Menstrual blood

- Plasma
  - Proteins
  - miRNA
  - Other
- Buffy coat
- Erythrocytes

Sample separation

Sample

- 0.20
- 0.10
- 0.06
- 0.30

Plasma

Residue

[2]

OrganiCup

Large tampon

Piezoelectric sheets

- Folded vibrator
- Diaphragm

Inlet blood

Outlet blood

Binding adds mass

Target

Probe

PZT

miR-16-2

miR-195

miR-205

miR-497

control
BME & ME

• Combination of cell biology and technologies
• Designing our own experiments
• Fascinating research to explore!
This specialization focuses on the actual restoration or support of nervous and motor system function.
STRUCTURE OF THE TRACK

Compulsory courses (20 EC)
• Biostatistics
• Technology for Health
• Integrative Design of Biomedical Products
• Clinical Research Methods

Examples of elective courses
• Human Movement Control
• Biomechatronics
• Robotics for Medical Applications
• Topics in Human Anatomy & Sport Physiology
RESEARCH EXAMPLE: MINIMALLY INVASIVE ROBOTICS IN AN MR ENVIRONMENT (SURGICAL ROBOTICS LAB)
BME & ME

- Programming is your best/worst friend!
- Robotics to almost a sci-fi degree
- Opportunity to personalise your master
3. CAREER

JOB PROSPECTS FOR BME GRADUATES
CAREER PROSPECTS

- hospitals
- engineer
- system engineer
- PhD student
- business and industry
- consultant
- small business
- university
- product developer
- clinical physicist
- science
- researcher
- project manager
- multinational
- product specialist
- research & development
ORGANIZATIONS WHERE OUR BME GRADUATES WORK
4. ADMISSION

+ PRE-MASTER
ADMISSION

DIRECT ADMISSION

Students with a University Bachelor’s degree in:
- Applied Physics
- Biomedical Technology
- Chemical Engineering
- Electrical Engineering
- Mechanical Engineering
- Technical Medicine

WHAT IF YOU HAVE DIFFERENT BACHELOR’S DEGREE?

- Students with a Bachelor’s degree in a relevant field of study who possess similar competencies may be considered for admission after first completing a tailor-made pre-master programme
- www.doorstroommatrix.nl
WHY BME @UTWENTE.

- Focus on health and technology
- High-tech Human Touch
- Combining research, design, and development
- High student satisfaction
If you have any questions about the MSc BME programme, feel free to contact our study advisor

Email: studyadviser-bmt@utwente.nl

Information is also available on our website: utwente.nl/go/bme
5. QUESTIONS?

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