

# Medical Engineering

## Engineering experts for Medical Device Design and Development

This international master's degree program equips students for engineering innovative, safe and effective medical devices. Students also gain information, how to approve and place them into markets. They deepen engineering and science fundamentals in essential areas of medical technologies, e.g. Electronics, Biomechanics, Medical Device Software, Materials Technology – applied to AI, Bioprinting, High-resolution Imaging and more. Application areas are medical imaging, assisted medical robotics, pacemakers, bionic prostheses and many more. These issues are enhanced by courses considering Medical Systems Engineering, Medicine, Clinical Trials and Regulatory Affairs.

Within the Project Work and doing the Master's Thesis, students apply their skills within companies, research institutes, or hospitals to develop, produce or integrate medical devices. As part of the final examination, students present their conclusions underpinned by theoretical knowledge and their own rationale.

### Career Profile

Graduates are qualified as engineers in Medical Engineering/Biomedical Engineering with the ability to develop medical devices and products within the regulatory framework of European markets and the ability to consider FDA regulations. Careers can start within R&D, engineering, application specialist, regulatory affairs, quality management, notified bodies, hospitals and many more. Graduates of this master's degree program are able and allowed to join a PhD program.

### Study Focus

- Mathematics, Statistics, Medicine
- Biomechanics, Artificial Intelligence, Electronics, Materials
- Medical Imaging and Diagnosis Systems, Clinical Treatment Systems, Bionic Implants
- Medical Systems Engineering
- Regulatory Affairs, Electives, Project Work, Master's-Thesis

### Degree

→ Dipl.-Ing.

The academic degree 'Dipl.-Ing.' corresponds to the international degree MSc.

### Duration

→ 4 Semesters (120 ECTS)

### Annual Intake

→ 23

### Admission Requirements

→ Graduates of Medical-/Biomedical Engineering Bachelor's degree programs in engineering with 180 ECTS points or more

### Application

→ Online – details & deadlines on [fh-ooe.at/application](https://fh-ooe.at/application)

### Admission Procedure

→ Interview

### Language of Instruction

→ English

### Tuition Fees

→ EU/EEA citizens: 363.36 EUR per semester (plus Austrian Student Union fee).

→ Citizens from non-EU/EEA countries: 726.72 EUR per semester (plus Austrian Student Union fee). Scholarships available.



# Curriculum

List of courses	ECTS / semester	1	2	3	4
<b>→ Basics</b>					
Applied Mathematics		4	2,5		
Applied Statistics			2,5		
Selected Topics in Medicine for Medical Engineers		1	1		
<b>→ Catalog of Electives (choose 15 ECTS per semester)</b>					
<b>Electronics</b>					
Electronic Circuit Design		2,5			
Power Supply Systems			2,5		
Embedded Systems		2,5	2,5		
<b>Biomechanics</b>					
Musculoskeletal Systems Modeling and Simulation		2,5			
3D Motion Capture and Analysis		2,5			
Biomechanical Laboratory			2,5		
Numerical Methods in Biomechanics			2,5		
<b>Medical Device Software</b>					
Applied Software Life Cycle Processes		2,5			
Applied Programming		2,5	2,5		
Artificial Intelligence			2,5		
<b>Materials Technology</b>					
Advanced Materials		5			
Surface Technology			2,5		
Molecular Test Systems			2,5		
<b>→ Medical Technology</b>					
Advanced Medical Imaging and Diagnosis Systems		5	2,5		
Clinical Treatment Systems			3,5		
Bionic Implants		2,5	1,5		
Technological Innovation in Medicine		2,5	1,5		
<b>→ Medical Systems Engineering and Project</b>					
Applied Systems Engineering				4	
Requirements and Usability Engineering				2,5	
International Product Management				2	
Regulatory Affairs				2,5	
Project Scientific or Professional				19	
<b>→ Master Thesis</b>					
Master Thesis					28
Master's Examination					2
<b>→ Optional Courses</b>					
German Language		3	3		
Introduction to Programming-Tools		2,5			
Cellular Biophysics		1			
<b>Total (excl. optional courses)</b>		<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>

## Good to Know

→ The University of Applied Sciences Upper Austria is one of the most research-intensive German-speaking universities of applied sciences. Applied R&D in medical technology benefits not only companies and healthcare institutions, but also our students. Up-to-date knowledge from research comes directly to them in the laboratories and lecture halls. Students can also participate in projects and master's thesis.

## Contact

### Head of Studies

→ Prof. Dr. Martin Zauner

### Program Administrator

→ Lisa Wohlauf

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