



Bern University
of Applied Sciences



Master of Science in Biomedical Engineering

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^b UNIVERSITÄT
BERN

MSc in Biomedical Engineering: research-oriented, practice-based, international

Are you interested in biomedical engineering and keen to specialise in one of the most promising research areas of the 21st century? Are you looking for an international master's degree programme? The Master of Science in Biomedical Engineering offers you the chance to study at the interface between science, industry and clinical practice, as well as the option to pursue a doctorate.

Main areas of study

This unique and cutting-edge master's programme was launched in 2006 in response to the high demand for well-trained biomedical engineering professionals in Switzerland. The programme is affiliated with the Medical Faculty of the University of Bern and is run in close collaboration with Bern University of Applied Sciences. The programme has a strong focus on clinical application thanks to its ties to the Inselspital Bern and close relationships with a range of companies.

Graduates of this programme are often employed in medical technology research and development departments and are well equipped for future leadership positions. About a quarter of graduates go on to complete a doctorate.

Programme content

The basic modules provide you with the necessary knowledge to understand the highly complex subject matter in the specialisation modules. Students with an engineering background must complete all courses in the basic modules 'Basics in Human Medicine', 'Applied Mathematics' and 'Biomedical Engineering'. Towards the end of the first semester, you choose your specialisation: Biomechanics, Electronic Implants, or Image-Guided Therapy. With the 'Complementary Skills' modules, you have the opportunity to supplement your technical knowledge with topics such as project planning, quality assurance and product safety, legal regulations and intellectual property rights, and marketing aspects. At the end of your studies, you will complete your master's thesis on an area of interest to you.

Career prospects

With a Master of Science in Biomedical Engineering, you will be able to actively contribute and innovate within the medical technology industry.

Professional profile and career prospects

Career prospects, for example, in industrial and academic environments, are excellent. Successful students acquire a full-fledged university master's degree which allows them to continue their education towards a PhD degree.

Why you should choose this degree programme

- International education in English
- Option to pursue a doctorate
- Clinically oriented programme embedded in a leading medical faculty
- Degree programme at the interface of science, industry and clinical practice that promotes ingenuity and innovation in medical engineering



Students working on a BME project

Specialisations

While studying for the Master of Science in Biomedical Engineering, you benefit from a wide selection of advanced modules and can experience a tailor-made degree program by choosing one of three fields of specialisations (major modules).

Biomechanics

The functions of our cardiovascular, musculoskeletal, and respiratory systems rely critically on biomechanical principles. Diseases affecting these systems such as atherosclerosis, osteoporosis or lung cancer, represent major burdens not only for individual but also for public health. In this module, students will acquire the knowledge to understand the structure-mechanical function relationships of cells, tissues, biomaterials, organs, systems and medical devices as well as the multidisciplinary engineering skills to help resolving unmet clinical needs.

Electronic Implants

Electronic implants are devices like cardiac pacemakers and cochlear implants. Due to miniaturisation and other developments, many new applications are now feasible and this exciting area is growing rapidly. In this module, students will learn about the basics of electronic implants. This includes signal processing and analysis, low-power microelectronics, wireless communications and MEMS technology. Application-oriented elective courses are also taught, e. g., neuro-technology, biomedical acoustics, and biomedical sensors.

Image-Guided Therapy

Image-guided therapy refers to the concept of guiding medical procedures and interventions through analysing medical image data, possibly extended by using stereotactic tracking systems. Guidance is realised by various means including the determination of spatial instrument-to-patient relationship and suitable visualisations. Students of the IGT module will be introduced to the fundamentals of clinical and technical aspects of image-guided therapy. They will receive an overview of current clinical standards as well as an overview of latest advancements in research.

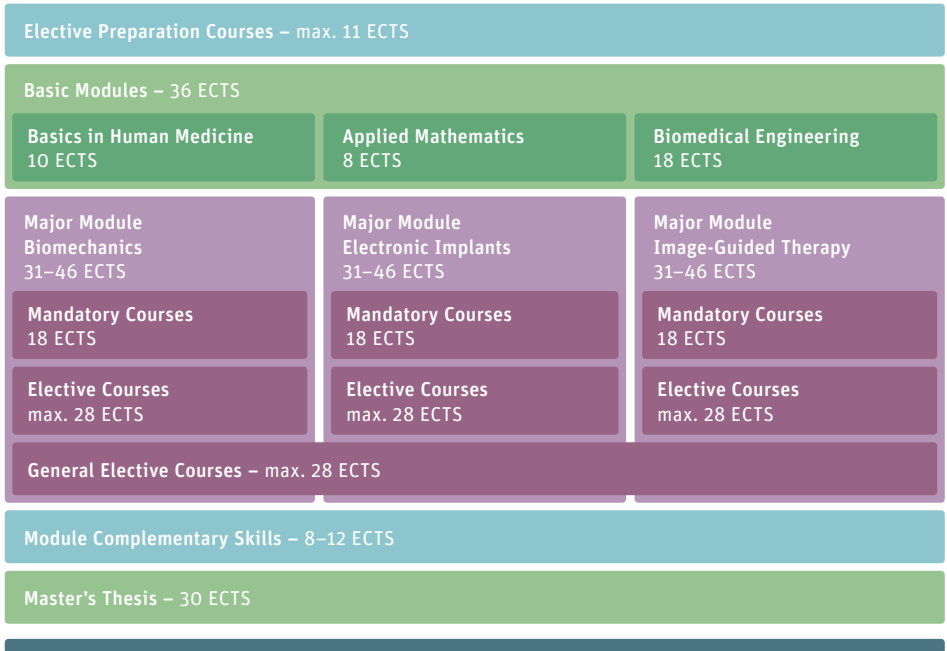
The degree programme at a glance

Focus	Applied Mathematics, Biomedical Engineering, Human Medicine, Biomechanics, Electronic Implants, Image-Guided Therapy, Ethics in Biomedical Engineering, Fundamentals of Quality Management and Regulatory Affairs
Profile	The degree programme offers: <ul style="list-style-type: none">– Comprehensive specialist and practical knowledge– Specialisations based on interests and skills (see «Specialisations») following completion of basic modules
Specialisations	<ul style="list-style-type: none">– Biomechanics– Electronic Implants– Image-Guided Therapy
Development pathways / professional profiles	Career prospects, for example, in industrial and academic environments, are excellent. Successful students acquire a full-fledged university master's degree which allows them to continue their education towards a PhD degree.
Mode of study	Full-time, 4 semesters Extensions and part-time study possible
Study language	English
Mobility	Semester abroad possible
Study location	Bern (primary location), Biel
Professional qualification	Yes
Costs	Approximately CHF 800.– / semester One-time fees: enrolment fee (CHF 100.–), exam fees (CHF 300.–)
Start date	Week 38
Admission	Bachelor's degree in a related field of study
Registration	April 30 or August 31 for late registrations
Title / degree	Master of Science in Biomedical Engineering



Annual report:
[bme.master.unibe.ch/about_us/
annual_report](https://bme.master.unibe.ch/about_us/annual_report)

Structure of the program and admission



Structure of the program

Admission

The Master of Science in Biomedical Engineering program is offered by the University of Bern in close cooperation with Bern University of Applied Sciences. This cooperation allows engineering graduates from the Swiss universities of applied sciences to enter a university-level master's program without further preconditions.

In particular, students with a recently obtained Swiss bachelor's degree in microtechnology, systems engineering, electrical engineering, mechanical engineering, automotive engineering, physics and computer science are admitted without preconditions.

Students with other or non-Swiss degrees may also apply for admission. All students have to apply for admission at the University of Bern: bme.master.unibe.ch



Project work in
the “HuCE-BME Lab”

Information events

Bern University of Applied Sciences provides further information on the Master of Science in Biomedical Engineering at special information events taking place in spring: bfh.ch/en/studies/master/biomedical-engineering

In addition, every spring, the University of Bern offers the Master's Open Days. An information event, a guided lab tour and participation in selected courses provide the opportunity to meet fellow students and lecturers: bme.master.unibe.ch/events/information_events

Biomedical Engineering Day

The Biomedical Engineering Day, a career day, takes place at Inselspital Bern in May. It provides an excellent opportunity for future students to get comprehensive insight into the biomedical engineering environment in Bern in general and the master's program in particular.

The event consists of an impressive research and industrial exhibit and a diverse program. Besides several industrial and scientific talks, the program includes a live surgery: bme.master.unibe.ch/bmeday



Register for an
information event
now

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