MASTER OF SCIENCE IN BIOMEDICAL ENGINEERING

PROGRAMME JOINTLY OFFERED BY GHENT UNIVERSITY, VRIJE UNIVERSITEIT BRUSSEL

120 ECTS CREDITS - LANGUAGE: ENGLISH

The Faculty of Engineering and Architecture (FEA) offers most of its Engineering programmes at Master's level in English. This underlines the international ambition of the faculty, as well as the importance of an international education and multiple language skills for students.

WHAT

In the Master of Science in Biomedical Engineering, students acquire a solid technical know-how in biomedical engineering (integrating mathematics, physics, chemistry and life sciences with engineering techniques). Students get introduced into the specificities of working for and with the patient and with living matter, and get to know the perspective of the clinician and all stakeholders in the biomedical and health care industry.
Over the 2 year master track, students develop the necessary research and engineering skills to analyse and solve complex problems independently in a multidisciplinary context. Graduates are capable of developing new knowledge, materials, devices, tools, systems and methods for the (early) diagnosis, prevention and treatment of disease. They become scientifically trained technical-medical key actors in the health care ecosystem and improve and guarantee today's and future society's health care and quality of life. Students learn about the ethical, socio-economic and sustainability aspects of the biomedical engineering profession and get to know medical device regulations and the organisation of our health care system. In the fast-evolving field of biomedical engineering, the Master's programme also stimulates an attitude of live-long learning.
Students participate to extra-muros activities as the Biomedical Industry Day, the MEDICA fair in Düsseldorf, and company and field trips.
This programme, organised jointly by Ghent University and Vrije Universiteit Brussel, delivers academically formed engineers of an outstanding international level. Students get naturally trained to function in a multidisciplinary and international team through the multidisciplinary programme (with lecturers from diverse faculties and research areas) and the multidisciplinary projects for which they work together with international students. Students acquire excellent communication skills in oral and written reporting.

STRUCTURE

The study programme consists of 120 ECTS-credits spread over four twelve-week terms:

- 49 ECTS-credits worth of mandatory course units on established and newly emerging biomedical engineering disciplines.
- 39 ECTS-credits worth of project work staggered over the two years, including a computational course (students choose one course out of 4 different application domains) and the master thesis (24 ECTS-credits).
- 32 ECTS-credits worth of elective course units to shape your individual curriculum with options to specialize in Mechanics and Materials, Neuro-engineering, Artificial Intelligence and Digital Health, Radiation Physics or Sensors and Devices. Students include minimally one elective that relates to WHO's sustainable development goals. The Radiation Physics specialization track is recognized by FANC and may result in the recognition of 'Expert in Medical Radiation Physics' pending completion of additional compulsory internships in a hospital (beyond the MSc in Biomedical Engineering.

Students are encouraged to use some of the elective space for internships in industry and/or research institutions. Students are equally stimulated to an international study experience and spend one term of the 1st or 2nd master, or the full 2nd master, abroad.

Master's Dissertation

The programme culminates with the Master's Dissertation. It consists of substantial, original and high-level academic research that is to be elaborated individually by the student and thus with a high degree of independence. All the while, however, the student is surrounded and supported by a research team. This independently conducted research, together with the written report and oral presentation is the ultimate demonstration of the students' ability to familiarize themselves with a new relevant biomedical engineering problem, study the problem on a high scientific level, and to report on the subject in various ways (Master's dissertation, poster, oral public presentation).

Programme mobility

The basic biomedical engineering course units are, in principle, offered in parallel at both universities, while the more specialist course units are either taught at Ghent University, Vrije Universiteit Brussel or together. We take into consideration optimal student and teaching staff mobility. For the elective

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course units and the Master's dissertation, students are free to choose between Ghent University, Vrije Universiteit Brussel or one of the (international) partner institutions with which either university has a bilateral agreement. Erasmus+ gives students the opportunity to study abroad as well, using the mobility window that is part of the second year. Students can choose to spend either one term of the 1st or 2nd master, or to spend the full 2nd master abroad.
The interuniversity programme board overlooks each student's individual curriculum and might impose (a limited number) of course units, depending on their previously acquired credits and competences. As each student's trajectory is assessed on an individual basis, it is important to apply in a timely fashion. This ensures a careful study of individual track records and an optimal selection of course units.

LABOUR MARKET

Biomedical engineers find employment in industry (medical devices and technology, consultancy, software development, production and distribution industry, pharmaceutical industry, ...), in hospitals (university hospital labs, as well as in university and/or general hospital management), in universities and research institutes, notified bodies and regulatory affairs, and in government (government and advisory bodies). It goes without saying that biomedical engineers are wanted for all generic academic engineering jobs.

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TOELATINGSVOORWAARDEN VOOR HOUDERS VAN EEN VLAAMS DIPLOMA

1 **Rechtstreeks:**
- Bachelor in de ingenieurswetenschappen, afstudeerrichting: biomedische ingenieurstechnieken

2 **Na het met succes voltooien van een voorbereidingsprogramma:**

45 SP
- Een diploma van een opleiding 'Bachelor of Science in de ingenieurswetenschappen' (met uitzondering van 'architectuur')

MAX 45 SP
- Een diploma van een opleiding 'Master of Science in de ingenieurswetenschappen' leidend tot de titel van 'burgerlijk ingenieur' (met uitzondering van architectuur)
- Een diploma van een opleiding 'Master of Science in Engineering' leidend tot de titel van 'burgerlijk ingenieur' (met uitzondering van Architecture)
- Master in de ingenieurswetenschappen (KMS)

46 SP
- Een diploma van 'Master in Engineering Technology'
- Een diploma van een opleiding 'Master of Science in de industriële wetenschappen'

55 SP
- Bachelor in de fysica
- Bachelor in de fysica en de sterrenkunde
- Master in de fysica en Master in de fysica en de sterrenkunde
- Master of Physics and Astronomy

61 SP
- Master in de industriële wetenschappen: biochemie

85 SP
- Een diploma van een bacheloropleiding in het academisch onderwijs binnen één van de volgende studiegebieden (of een combinatie ervan):
  - Bewegings- en Revalidatiewetenschappen
  - Biomedische Wetenschappen
  - Farmaceutische Wetenschappen
  - Geneeskunde
  - Tandheelkunde
- Een diploma van een masteropleiding aansluitend op een bacheloropleiding binnen één van de volgende studiegebieden (of een combinatie ervan):
  - Bewegings- en Revalidatiewetenschappen
  - Biomedische Wetenschappen
  - Farmaceutische Wetenschappen
  - Geneeskunde
  - Tandheelkunde
- Een diploma van een masteropleiding aansluitend op een bacheloropleiding binnen één van de volgende studiegebieden (of een combinatie ervan):
  - Bewegings- en Revalidatiewetenschappen
  - Biomedische Wetenschappen
  - Farmaceutische Wetenschappen
  - Geneeskunde
  - Tandheelkunde

90 SP
- Een diploma van een opleiding 'Bachelor of Science in de bio-ingenieurswetenschappen'
- Een diploma van een opleiding 'Master of Bioscience Engineering' leidend tot de titel van 'bio-ingenieur'
- Een diploma van een opleiding 'Master of Science in de bio-ingenieurswetenschappen' leidend tot de titel van 'bio-ingenieur'

ADMISSION REQUIREMENTS FOR INTERNATIONAL DEGREE STUDENTS

BSc in Biomedical Engineering: admission after assessment of individual application where the equivalence with BSc in Biomedical engineering programs at UGent or VUB is checked
BSc in Engineering: it may still be possible to enter via preparatory program after assessment. We basically want students to get at level with students taking our BSc in Biomedical engineering programs at UGent or VUB, so you can verify the expected requirements.
Information on admission requirements and the administrative procedure for admission on the basis of a diploma obtained abroad, can be found on the following page: www.ugent.be/prospect/en/administration/enrolment-or-registration.

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FACULTY OF ENGINEERING AND ARCHITECTURE

2025-26

www.ugent.be/ea/bme

LANGUAGE REQUIREMENTS

Language requirements Dutch: no language requirements

Language requirements for this study programme differ from the required standard level for English taught study programmes as specified in the Ghent University Education and Examination Code:
English: TOEFL 580 (paper-based) - TOEFL 92 (internet-based) - TOEFL 237 (computer-based) - IELTS: 6.5

PRACTICAL INFORMATION

Study programme

studiekiezer.ugent.be/master-of-science-in-biomedical-engineering-en/programma

Information sessions

Graduation Fair
afstudeerbeurs.gent/en/students/further-studies

Enrolling institution

Ghent University, Vrije Universiteit Brussel

Information on enrolment at Ghent University.

Application Deadline (for International degree students)

For students who **need a visa**: before 1st of April
For students who **do not need a visa**: before 1st of June
Read more

Tuition fee

More information is to be found on: www.ugent.be/tuitionfee

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