

MASTER OF SCIENCE IN BIOMEDICAL ENGINEERING

Organised jointly by Ghent University and Vrije Universiteit Brussel

120 ECTS CREDITS – LANGUAGE: ENGLISH – DEGREE: MASTER OF SCIENCE

COURSE CONTENT

The Master of Science in Biomedical Engineering is an inter-university initiative of Ghent University and Vrije Universiteit Brussel. This programme delivers academically formed engineers of an outstanding international level capable of integrating mathematics, physics, chemistry and life sciences with engineering techniques.

The biomedical engineer creates knowledge from the molecular to the organ and system level. He or she develops new materials, devices, tools, systems and methods for the early diagnosis, prevention and treatment of disease in order to improve and guarantee the health care and quality of life of society.

Our students acquire the necessary research and engineering skills to independently analyse and solve complex problems. They are also naturally trained to function in a multidisciplinary team. They interact with students with different educational backgrounds (different bachelors in engineering, international students, students with (bio)medical background), lecturers from diverse faculties and research areas and work on multidisciplinary projects with students solving multidisciplinary problem cases in group. Students acquire excellent communication skills in oral and written reporting. The biomedical engineer is aware of the ethical and socio-economic aspects of his/her profession and has knowledge of the organisation of our health care system. In the fast-evolving area of biomedical engineering, the master's programme also stimulates an attitude of permanent learning.

COURSE STRUCTURE

The study programme contains 120 credits, spread over four semesters of twelve weeks each. The compulsory part of the master's programme consists of 15 credits on basic life science courses, 24 credits on biomedical engineering technology (biomedical imaging, bio-electronics, biomaterials, biomechanics, medical physics and neuromodulation and imaging), 21 credits on courses relating to medical devices and 12 credits on courses on health care. There is substantial attention for project work in teams on medical product design and in the hospital. The remaining 48 credits are evenly split over a master's dissertation and elective courses to be taken from one or more of our specialisation tracks in medical devices or health care. Students are brought into contact with research and industry via participation to the National Day on Biomedical Engineering, a Biomedical Industry Day and company and field trips. Unique for the programme is the possibility to choose a track that leads to the recognition of 'Expert in Medical Radiation Physics'. This track consists of a package of eight elective courses (24 credits). When students choose this track, the subject of their master's dissertation has to be situated in the domain of medical radiation physics. (Note: to be formally recognised by the Belgian Federal Agency for Nuclear Control (FANC) as an expert in medical radiation physics, the students will have to minimally take an additional year clinical training).

> Master's dissertation

The Master's dissertation is the tailpiece of the programme. The dissertation consists of a substantial original task of a high scientific level, to be elaborated individually by the student (surrounded and supported, however, by a research team), and thus with a high degree of independence. It is via this independent work and the written and oral dissertation report that the student demonstrates his or her capability to get familiar with a relevant biomedical engineering problem, study the problem on a high scientific level, and to report on the subject in diverse manners (master's dissertation, poster, oral public presentation).

PROGRAMME MOBILITY

The basic life science and a number of general biomedical engineering courses are, in principle, offered in parallel at both universities in the first semester of the first Master year, while the more specialist courses are either taught at UGent, VUB or in collaboration between both, with attention for an optimal student and teaching staff mobility. For the elective courses and the master's dissertation, students are free to choose between UGent, VUB or a (international) partner institute with which UGent or VUB has a bilateral agreement. Obviously, students also have the opportunity to study part of their curriculum abroad within the Erasmus+ framework. The student mobility window is in the second master, where students can opt for studying one semester or the complete second year abroad.

The interuniversity programme board overlooks the programme of each individual student and might impose (a limited number) of courses, depending on their formerly acquired credits and competences. As educational tracks are assessed on an individual basis, it is important that students apply in time so individual track records can be studied with care to ensure an optimal selection of courses.

CAREER PERSPECTIVES

The biomedical engineer is employed in industry (medical device and software development and/or production and distribution, pharmaceutical, cosmetic, food products industry), in hospitals (laboratories of academic hospitals, as well as management of academic and general hospitals), universities and research institutes, and in government functions (government and advisory organs). Evidently, the biomedical engineer can also apply for all generic academic engineering jobs.

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TOELATINGSVOORWAARDEN VOOR HOUDERS VAN EEN VLAAMS DIPLOMA

Rechtstreeks:

- Ba ingenieurswetenschappen (uitz. Ba ingenieurswetenschappen: architectuur)
- Ma ingenieurswetenschappen (alle, met titel burgerlijk ingenieur) (uitz. Ma ingenieurswetenschappen: architectuur)
- Ma in Engineering (alle, met titel burgerlijk ingenieur) (uitz. Ma Architectural Engineering)
- Ma bio-ingenieurswetenschappen (alle, met titel bio-ingenieur)
- Ma of Bioscience Engineering (alle, met titel bio-ingenieur)

Rechtstreeks: (naar brugprogramma - 120 studiepunten)

- Ma industriële wetenschappen (alle)
- Ma in Engineering Technology (alle)

Via voorbereidingsprogramma: (max. 90 studiepunten)

- Ba/Ma ingenieurswetenschappen: architectuur
- Ma Architectural Engineering
- Ba bio-ingenieurswetenschappen
- Ba industriële wetenschappen (alle)
- Ba in Engineering Technology (alle)
- Ba/Ma ingenieurswetenschappen (KMS)
- Ba/Ma fysica en sterrenkunde
- bachelor- en/of masterdiploma academisch onderwijs binnen de volgende studiegebieden of een combinatie ervan:
 - Bewegings- en revalidatiewetenschappen
 - Wetenschappen
 - Toegepaste wetenschappen
 - Toegepaste biologische wetenschappen
 - Geneeskunde
 - Tandheelkunde
 - Diergeneeskunde
 - Farmaceutische wetenschappen
 - Biomedische wetenschappen

TAAL

Je voldoet aan de taalvoorwaarden op basis van je Vlaams diploma.

PRAKTISCHE INFORMATIE

Studieprogramma:

<https://studiegids.ugent.be>

> faculteiten > opleidingstypes > ga naar de opleiding van je keuze

Alternatieve trajecten

Meer informatie over voorbereidings- en brugprogramma's op www.ugent.be/ea

volg > alles voor toekomstige studenten > voor wie al een diploma heeft

Infomomenten

Masterbeurs

www.ugent.be/masterbeurs

Infosessie

24 april 2019 - 17 u.-19 u. doorlopend, Campus Ufo, Ufo, Sint-Pietersnieuwstraat 33 - Foyer

www.ugent.be/nl/studeren/masteropleidingen

Contact

Prof Dr Patrick Segers – Faculteit Ingenieurswetenschappen en Architectuur

Opleidingscommissie Ingenieurswetenschappen biomedische ingenieurstechnieken - IBiTech-bioMMeda, 5 Blok B

Campus UZ, Corneel Heymanslaan 10, 9000 Gent

patrick.segers@ugent.be – www.ugent.be/ea/bme

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ADMISSION REQUIREMENTS FOR INTERNATIONAL DEGREE STUDENTS

Students with an academic Bachelor's (or Master's) degree in engineering (university level) can enter the programme without any prerequisites (except for students with a Bachelor's or Master's degree in architecture). This is also the case for students with a Master's degree in bio-engineering.

LANGUAGE

More information regarding the required knowledge of English:
www.ugent.be/languagerequirements

PRACTICAL INFORMATION

Study programme

www.ugent.be/coursecatalogue
> by Faculty > Programme types > select your programme

Application deadline for international degree students

- for students who need a visa: 1st of March
 - for students who do not need a visa: 1st of June
- www.ugent.be/deadline

Enrolling institution

Ghent University or Vrije Universiteit Brussel

Tuition fee

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

Last update: January 2019

Contact

Faculty of Engineering and Architecture
International Relations Officer – Degree students
Annelies Vermeir – annelies.vermeir@ugent.be
T +32 9 264 36 99 – internationalplateau.ea@ugent.be