

Programme jointly offered by Ghent University, Vrije Universiteit Brussel
Master of Science in Biomedical Engineering

Language of instruction: Dutch

Programme version 16

1 General Courses

58 credits

The interuniversity program Master of Science in Biomedical Engineering is jointly organized with the Vrije Universiteit Brussel (VUB).

The references next to the courses indicate where the courses are organized:

- Courses marked with 'j' are jointly organized by UGent and VUB;
- Courses marked with 'p' are organized in parallel, both at UGent and at VUB;
- Courses marked with 'u' are organized by UGent;
- Courses marked with 'v' are organized by VUB.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E074300 Hospital Technology <i>Sunny Eloit -- Department of Internal Medicine and Pediatrics</i>	7	j	1	B:1	210
2	E015590 Leadership in Health Care <i>UGent - VUB, Johan Stiens -- Vrije Universiteit Brussel</i>	3	j	1	B:1	90
3	E010371 Medical Imaging <i>Stefaan Vandenbergh -- Department of Electronics and Information Systems</i>	6	j	1	B:1	180
4	E092815 Hospital Project <i>Renaat Peleman -- Department of Internal Medicine and Pediatrics</i>	3	p	1	C:2	90
5	E010382 Neuro-Engineering Science <i>Pieter van Mierlo -- Department of Electronics and Information Systems</i>	3	u	1	B:2	90
6	E010600 Micro- and Nanotechnologies for Medical Device Design and Fabrication <i>Maike Op de Beeck -- Department of Electronics and Information Systems</i>	5	j	1	B:2	140
7	E027770 Data Analytics in Healthcare and Connected Care <i>Sofie Van Hoecke -- Department of Electronics and Information Systems</i>	6	p	1	B:2	180
8	E092802 Biomedical Product Development <i>Ewout Vansteenkiste -- Department of Physics and Astronomy</i>	6	p	1	B:J	180
9	E003280 Clinical Study Design and Biostatistics <i>Barbara Vanderstraeten -- Department of Human Structure and Repair</i>	3	u	2	B:1	90
10	E015570 Health Information and Decision Support Systems <i>Vrije Universiteit Brussel, Jef Vandemeulebroucke</i>	3	v	2	B:2	90
11	E027880 Introduction to Medical Device Legislation <i>Patrick Segers -- Department of Electronics and Information Systems</i>	3	u	2		90

1.1

10 credits

Subscribe to 10 credit units from the following list. Subject to approval by the faculty.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E063671 Biomaterials and Tissue Engineering [en] <i>Peter Dubruel -- Department of Organic Chemistry</i>	5	j		A:1	150
2	E010610 Biomedical Robotics and Assistive Technologies [en] <i>Vrije Universiteit Brussel, Joost Geeroms</i>	5	v		A:1	150

2 Elective Courses

6 credits

Subscribe to 6 credit units from the following list. Subject to approval by the faculty.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E092923 Computational Bio-Fluid Mechanics <i>Charlotte Debbaut -- Department of Electronics and Information Systems</i>	6	u		B:1	180
2	E092892 Computational Tissue and Structure Mechanics <i>Nele Famaey -- Department of Electronics and Information Systems</i>	6	u		B:1	180

3	E010620	Computational Neurophysiology <i>Sarah Verhulst -- Department of Information Technology</i>	6	j	B:1	180
4	E078230	Computational Methods in Radiation Physics <i>Brent van der Heyden -- Department of Electronics and Information Systems</i>	6	u	B:1	180

3 Elective Courses

29 credits

Subscribe to 29 credit units from no less than 1 and no more than 6 modules from the following list. Subject to approval by the faculty.

3.1 Elective Courses Biomedical Engineering

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E099300 Industry Internship Engineering and Architecture [en, nl] <i>Patrick Segers -- Department of Electronics and Information Systems</i>	6	u		A:J	180
2	E099400 Research Internship [en] <i>Patrick Segers -- Department of Electronics and Information Systems</i>	6	u		A:J	180
3	E099400 Research Internship [en] <i>Patrick Segers -- Department of Electronics and Information Systems</i>	3	u		B:J	90
4	E074500 Molecular Scale Modelling in Bio(medical) Engineering [en] <i>Ahmadreza Mehdipour -- Department of Applied Physics</i>	6	u		A:1	180
5	E092913 Modeling in Medicine and Biomedical Engineering: Case Studies <i>Patrick Segers -- Department of Electronics and Information Systems</i>	3	u		B:1	90
6	E022250 Bioelectromagnetism [en] <i>Wout Joseph -- Department of Information Technology</i>	4	u		C:2	120
7	E076221 Manufacturing Planning and Control <i>Birger Raa -- Department of Industrial Systems Engineering and Product Design</i>	6	u		B:1	180
8	E075310 Ethics, Engineering and Society <i>Seppe Segers -- Department of Philosophy and Moral Sciences</i>	3	u		A:2	90
9	E006400 Wave Physics in Living Matter <i>Wout Joseph -- Department of Information Technology</i>	6	u		B:2	180

3.2 Elective Courses Neuro-engineering

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E092841 Advanced Image and Signal Processing [en] <i>Stefaan Vandenberghen -- Department of Electronics and Information Systems</i>	3	u		A:1	90
2	E027761 Nuclear Magnetic Resonance Imaging Technology [en] <i>Pim Pullens -- Department of Electronics and Information Systems</i>	3	u		A:2	90
3	E900436 Neuro-physiological Signal Processing and Network Analysis [en] <i>Vrije Universiteit Brussel, Guy Nagels</i>	4	v		A:2	120
4	E092930 Translational Neuroscience [en] <i>Christian Vanhove -- Department of Electronics and Information Systems</i>	3	u		A:2	90
5	E092960 Neural Interfaces, Neuromodulation and Minimally Invasive Neurotechnology [en] <i>Vincent Keereman -- Department of Electronics and Information Systems</i>	3	u		A:2	90
6	E092970 Auditory Computation, Modelling and Devices [en] <i>Sarah Verhulst -- Department of Information Technology</i>	3	u		A:2	90
7	E092852 Contrast Agents and Biomarkers for Imaging and Therapy [en] <i>Christian Vanhove -- Department of Electronics and Information Systems</i>	3	u		A:1	90
8	E010620 Computational Neurophysiology [en] <i>Sarah Verhulst -- Department of Information Technology</i>	6	j		A:1	180

3.3 Elective Courses Biomechanics and Biomaterials

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E092923 Computational Bio-Fluid Mechanics <i>Charlotte Debbaut -- Department of Electronics and Information Systems</i>	6	u		B:1	180
2	E092892 Computational Tissue and Structure Mechanics <i>Nele Famaey -- Department of Electronics and Information Systems</i>	6	u		B:1	180
3	C003120 Physics and Chemistry of Nanostructures [en] <i>Zeger Hens -- Department of Chemistry</i>	6	u		B:2	180
4	D001923 Tissue Engineering [en] <i>Ruslan Dmitriev -- Department of Human Structure and Repair</i>	6	u		A:1	180

5	E010630	Plasma Technology for Biomedical Applications [en] <i>Nathalie De Geyter -- Department of Applied Physics</i>	6	u	A:1	180
6	E074500	Molecular Scale Modelling in Bio(medical) Engineering [en] <i>Ahmadreza Mehdipour -- Department of Applied Physics</i>	6	u	A:1	180

3.4 Elective Courses Sensors and Medical

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E030761 Microphotonics [en] <i>Dries Van Thourhout -- Department of Information Technology</i>	6	u		A:1	180
2	E030930 Biophotonics [en] <i>Nicolas Le Thomas -- Department of Information Technology</i>	4	u		A:1	120
3	E008446 Sensors, Actuators and Electronic Microsystems [en] <i>Herbert De Smet -- Department of Electronics and Information Systems</i>	6	u		A:2	180
4	E030610 Photonics <i>Günther Roelkens -- Department of Information Technology</i>	6	u		A:2	180
5	E900437 Micro and Nanobiotechnology [en] <i>Vrije Universiteit Brussel</i>	3	v		A:2	90
6	E092981 Biomedical Devices: Sensors, Stimulators and Drug Delivery [en] <i>Vrije Universiteit Brussel, Johan Stiens</i>	4	v		A:2	120
7	E027790 Control of Drug-Delivery Systems [en] <i>Clara Ionescu -- Department of Electromechanical, Systems and Metal Engineering</i>	4	u		A:2	120

3.5 Elective Courses Radiation Physics

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E027750 Measurement Techniques in Nuclear Science [en] <i>Vrije Universiteit Brussel, Nico Buls</i>	3	v		A:2	90
2	E025110 Nuclear Physics [en] <i>Vrije Universiteit Brussel, Michel Sonck</i>	3	v		A:2	90
3	E092880 Nuclear Reactors and Cyclotrons <i>Michel Sonck -- Vrije Universiteit Brussel</i>	3	v			90
4	E038110 Technology of Radiotherapy [en] <i>Werner De Gersem -- Department of Human Structure and Repair</i>	3	u		A:1	90
5	E027870 Medical Dosimetry [en] <i>Vrije Universiteit Brussel, Nico Buls</i>	3	v		A:1	90
6	E025490 Radiologic Techniques [en] <i>Klaus Bacher -- Department of Human Structure and Repair</i>	3	u		A:1	90
7	E078220 Radioprotection and Regulations <i>Vrije Universiteit Brussel, Michel Sonck</i>	3	v		A:2	90
8	E025470 Radiochemistry <i>Filip De Vos -- Department of Pharmaceutical Analysis</i>	3	u		A:2	90
9	E025480 Radiobiology and Radiopathology [en] <i>Marc Van Eijkeren -- Department of Human Structure and Repair</i>	3	u		A:2	90
10	E078230 Computational Methods in Radiation Physics <i>Brent van der Heyden -- Department of Electronics and Information Systems</i>	6	u		B:1	180

3.6 Elective Courses Artificial Intelligence and Digital Health

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E900560 Techniques of Artificial Intelligence [en] <i>Vrije Universiteit Brussel</i>	6	v		A:2	180
2	E092841 Advanced Image and Signal Processing [en] <i>Stefaan Vandenberghen -- Department of Electronics and Information Systems</i>	3	u		A:1	90
3	E900570 Virtual Reality [en] <i>Vrije Universiteit Brussel</i>	5	v		A:1	150
4	E900580 Deep Learning [en] <i>Vrije Universiteit Brussel</i>	6	v		A:1	180
5	E900590 Reinforcement Learning [en] <i>Vrije Universiteit Brussel</i>	6	v		A:J	180
6	E900565 Statistical Foundations of Machine Learning [en] <i>Vrije Universiteit Brussel</i>	6	v		A:2	180

7	E061330	Machine Learning [en] <i>Joni Dambre -- Department of Electronics and Information Systems</i>	6	u	B:1	180
8	C003713	Introduction to Bioinformatics [en] <i>Kathleen Marchal -- Department of Plant Biotechnology and Bioinformatics</i>	3	u	A:2	90
9	E900550	Advanced Methods in Bioinformatics [en] <i>Vrije Universiteit Brussel</i>	6	v	A:2	180

3.7 Elective Courses Ghent University or VUB

Subscribe to no more than 29 credit units from Elective Courses Ghent University or VUB. Subject to approval by the faculty.
See www.ugent.be/ea/bme/en

4 Elective Courses 3 credits

In the second master's year, the student chooses 3 to 6 credits from the programmes of Ghent University or VUB. Only courses that can be linked to the Sustainable Development Goals (17 SDGs), as defined by the United Nations.

4.1 Elective Course Sustainable Development Goals 3 credits

The student chooses 3 to 6 credits from the programmes of Ghent University or VUB. Only courses that can be linked to the Sustainable Development Goals (17 SDGs), as defined by the United Nations.

4.2 Elective Courses Sustainable Development Goals: Integrated Portfolio 3 credits

Subscribe to no less than 3 and no more than 6 credit units from the following list. Subject to approval by the faculty.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E098010 Integrated Portfolio [en, nl] <i>Hiep Luong -- Department of Telecommunications and Information Processing</i>	6			A:J	180
2	E098010 Integrated Portfolio [en, nl] <i>Hiep Luong -- Department of Telecommunications and Information Processing</i>	3			B:J	90

5 Master's Dissertation 24 credits

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E091103 Master's Dissertation	24		2	A:J	720

Teaching

When a course is not taught (solely) in the programme's language of instruction, the effectively used languages are indicated in square brackets following the course name, using the following ISO codes:

bg: Bulgarian	de: German	es: Spanish	ja: Japanese	pl: Polish	sh: Croatian/Serbian	zh: Chinese
cs: Czech	el: Greek	fr: French	nl: Dutch	pt: Portuguese	sl: Slovene	
da: Danish	en: English	it: Italian	no: Norwegian	ru: Russian	sv: Swedish	

Semester

Semesters are indicated by their number (1 or 2); semester 3 represents the summer period and J indicates a course spanning semesters 1 and 2. When a capital letter precedes a semester number, the course has multiple offerings. The letter indicates the offering concerned.

When a semester is shown in brackets, the course is not offered this year in the specific offering.

The offering frequency and first year of offering are indicated by the following codes:

a: bi-annually	c: annually, from 2025-2026	f: annually, from 2026-2027	i: annually, from 2027-2028
b: tri-annually	d: bi-annually, from 2025-2026	g: bi-annually, from 2026-2027	j: bi-annually, from 2027-2028
	e: tri-annually, from 2025-2026	h: tri-annually, from 2026-2027	k: tri-annually, from 2027-2028