GHENT UNIVERSITY

Study Programme

Academic year 2026-2027

Programme jointly offered by Ghent University,Vrije Universiteit Brussel

Master of Science in Biomedical Engineering

Language of instruction: English

Programme version 15

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 organised by UGent;
- Courses marked with 'v' are organized by VUB.

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

1.1 General Courses Biomedical Robotics and Biomaterials — 10 credits

Subscribe to 10 credit units from the following list.
The student chooses in which master's year the courses below are taken.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E063671	Biomaterials and Tissue Engineering *Ruslan Dmitriev -- Department of Human Structure and Repair*	5	j		A:1	150
2	E010610	Biomedical Robotics and Assistive Technologies *Joost Geeroms -- Vrije Universiteit Brussel*	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 *Charlotte Debbaut -- Department of Electronics and Information Systems*	6	u		A:1	180

2	E092892	Computational Tissue and Structure Mechanics *Nele Famaey -- Department of Electronics and Information Systems*	6	u		A:1	180
3	E010620	Computational Neurophysiology *Sarah Verhulst -- Department of Information Technology*	6	j		A:1	180
4	E078231	Computational and Numerical Methods in Medical Physics *Brent van der Heyden -- Department of Electronics and Information Systems*	6	u		A: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.
- 10 credit units in year 1
- 19 credit units in year 2

3.1 Elective Courses Biomedical Engineering

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E099300	Industry Internship Engineering and Architecture [en, nl] *Patrick Segers -- Department of Electronics and Information Systems*	6	u		A:J	180
2	E099400	Research Internship *Patrick Segers -- Department of Electronics and Information Systems*	6	u		A:J	180
3	E099400	Research Internship *Patrick Segers -- Department of Electronics and Information Systems*	3	u		B:J	90
4	E092913	Modeling in Medicine and Biomedical Engineering: Case Studies *Patrick Segers -- Department of Electronics and Information Systems*	3	u		A:1	90
5	E074500	Molecular Scale Modelling in Bio(medical) Engineering *Ahmadreza Mehdipour -- Department of Applied Physics*	6	u		A:1	180
6	E022250	Bioelectromagnetism *Wout Joseph -- Department of Information Technology*	4	u		C:2	120
7	E076221	Manufacturing Planning and Control *Birger Raa -- Department of Industrial Systems Engineering and Product Design*	6	u		A:1	180
8	E075310	Ethics, Engineering and Society [nl] *Seppe Segers -- Department of Philosophy and Moral Sciences*	3	u		A:2	90
9	E006400	Wave Physics in Living Matter *Wout Joseph -- Department of Information Technology*	6	u		A:2	180
10	I001967	Intellectual Property and Valorization	3	u			90

3.2 Elective Courses Neuro-engineering

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E092841	Advanced Image and Signal Processing *Stefaan Vandenberghe -- Department of Electronics and Information Systems*	3	u		A:1	90
2	E027762	Applied Magnetic Resonance Imaging Physics *Pim Pullens -- Department of Electronics and Information Systems*	3	u		A:2	90
3	E900436	Neuro-physiological Signal Processing and Network Analysis *Jeroen Van Schependom -- Vrije Universiteit Brussel*	4	v		A:2	120
4	E092930	Translational Neuroscience *Christian Vanhove -- Department of Electronics and Information Systems*	3	u		A:2	90
5	E092960	Neural Interfaces, Neuromodulation and Minimally Invasive Neurotechnology *Vincent Keereman -- Department of Electronics and Information Systems*	3	u		A:2	90
6	E092970	Auditory Computation, Modelling and Devices *Sarah Verhulst -- Department of Information Technology*	3	u		A:2	90
7	E092852	Contrast Agents and Biomarkers for Imaging and Therapy *Christian Vanhove -- Department of Electronics and Information Systems*	3	u		A:1	90
8	E010620	Computational Neurophysiology *Sarah Verhulst -- Department of Information Technology*	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 *Charlotte Debbaut -- Department of Electronics and Information Systems*	6	u		A:1	180
2	E092892	Computational Tissue and Structure Mechanics *Nele Famaey -- Department of Electronics and Information Systems*	6	u		A:1	180

3	C003120	Physics and Chemistry of Nanostructures *Zeger Hens -- Department of Chemistry*	6	u		B:2	180
4	D001923	Tissue Engineering *Ruslan Dmitriev -- Department of Human Structure and Repair*	6	u		A:1	180
5	E010630	Plasma Technology for Biomedical Applications *Nathalie De Geyter -- Department of Applied Physics*	6	u		A:1	180
6	E074500	Molecular Scale Modelling in Bio(medical) Engineering *Ahmadreza Mehdipour -- Department of Applied Physics*	6	u		A:1	180

3.4 Elective Courses Sensors and Medical Devices

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E030761	Microphotonics *Dries Van Thourhout -- Department of Information Technology*	6	u		A:1	180
2	E030930	Biophotonics *Nicolas Le Thomas -- Department of Information Technology*	4	u		A:1	120
3	E008446	Sensors, Actuators and Electronic Microsystems *Herbert De Smet -- Department of Electronics and Information Systems*	6	u		A:2	180
4	E030610	Photonics [nl] *Günther Roelkens -- Department of Information Technology*	6	u		A:2	180
5	E900437	Micro and Nanobiotechnology *Externe lesgever -- Vrije Universiteit Brussel*	3	v		A:2	90
6	E092981	Biomedical Devices: Sensors, Stimulators and Drug Delivery *Johan Stiens -- Vrije Universiteit Brussel*	4	v		A:2	120
7	E027790	Control of Drug-Delivery Systems *Clara Ionescu -- Department of Electromechanical, Systems and Metal Engineering*	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 *Nico Buls -- Vrije Universiteit Brussel*	3	v		A:2	90
2	E025110	Nuclear Physics *Michel Sonck -- Vrije Universiteit Brussel*	3	v		A:2	90
3	E092880	Nuclear Reactors and Cyclotrons *Michel Sonck -- Vrije Universiteit Brussel*	3	v		(A:1)[d]	90
4	E038110	Technology of Radiotherapy *Werner De Gersem -- Department of Human Structure and Repair*	3	u		A:1	90
5	E027870	Medical Dosimetry *Nico Buls -- Vrije Universiteit Brussel*	3	v		A:1	90
6	E025490	Radiologic Techniques *Brent van der Heyden -- Department of Electronics and Information Systems*	3	u		A:1	90
7	E078220	Radioprotection and Regulations [nl] *Michel Sonck -- Vrije Universiteit Brussel*	3	v		A:2	90
8	E025470	Radiochemistry [nl] *Filip De Vos -- Department of Pharmaceutical Analysis*	3	u		A:2	90
9	E025480	Radiobiology and Radiopathology *Marc Van Eijkeren -- Department of Human Structure and Repair*	3	u		A:2	90
10	E078231	Computational and Numerical Methods in Medical Physics *Brent van der Heyden -- Department of Electronics and Information Systems*	6	u		A:1	180

3.6 Elective Courses Artificial Intelligence and Digital Health

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E900560	Techniques of Artificial Intelligence *Externe lesgever -- Vrije Universiteit Brussel*	6	v		A:2	180
2	E092841	Advanced Image and Signal Processing *Stefaan Vandenberghe -- Department of Electronics and Information Systems*	3	u		A:1	90
3	E900570	Virtual Reality	5	v			150
4	E900580	Deep Learning *Externe lesgever -- Vrije Universiteit Brussel*	6	v		A:1	180

5	E900590	Reinforcement Learning *Externe lesgever -- Vrije Universiteit Brussel*	6	v		A:J	180
6	E900565	Statistical Foundations of Machine Learning *Externe lesgever -- Vrije Universiteit Brussel*	6	v		A:2	180
7	E061330	Machine Learning *Joni Dambre -- Department of Electronics and Information Systems*	6	u		B:1	180
8	C003713	Introduction to Bioinformatics *Kathleen Marchal -- Department of Plant Biotechnology and Bioinformatics*	3	u		A:2	90
9	E900550	Advanced Methods in Bioinformatics *Externe lesgever -- Vrije Universiteit Brussel*	6	v		A:2	180

3.7 Elective Courses Ghent University or VUB

Choose no more than 9 credit units from
- the programme catalogue of Ghent University, including the list with Ghent University Electives.
- the programme catalogue of VUB (partner university in this programme)
- the programme catalogue of KULeuven (as interuniversity guest student, only possible after prior approval by the Programme Board)

Subject to approval by the Programme Board/Faculty.

4 Elective Courses 3 credits

Subscribe to no less than 3 and no more than 6 credit units from no less than 1 and no more than 2 elective modules from the following list. Subject to approval by the faculty.

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] *Hiep Luong -- Department of Telecommunications and Information Processing*	6			A:J	180
2	E098010	Integrated Portfolio [en, nl] *Hiep Luong -- Department of Telecommunications and Information Processing*	3			B:J	90

5 Master's Dissertation 24 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E091103	Master's Dissertation	24		2	B: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 cours name, using the following ISO codes:

bg: Bulgarian	de: German	es: Spanish	ja: Japanese	pl: Polish	sh: Kroatian/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 in 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 2027-2028	f: annually, from 2028-2029	i: annually, from 2029-2030
b: tri-annually	d: bi-annually, from 2027-2028	g: bi-annually, from 2028-2029	j: bi-annually, from 2029-2030
	e: tri-annually, from 2027-2028	h: tri-annually, from 2028-2029	k: tri-annually, from 2029-2030