GHENT UNIVERSITY

Study Programme

Academic year 2021-2022

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

Language of instruction: English

Programme version 9

1 General Courses — 72 credits

The references in the list below represent the following fields:
- Basic Life Science (BLS)
- Biomedical Technology (BT)
- Medical Device Design (MDD)
- Health Care (HC)

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E074010	Quantitative Cell Biology	3	BLS	1		90
2	E092660	From Genome to Organism	6	BLS	1		180
3	E092620	Modelling of Physiological Systems *Patrick Segers -- Department of Electronics and Information Systems*	6	BLS	1		180
4	E010370	Biomedical Imaging	3	BT	1	A:1	90
5	E032500	Bioelectronics	3	BT	1		90
6	E063670	Biomaterials	6	BT	1		180
7	E063680	Biomechanics *Charlotte Debbaut -- Department of Electronics and Information Systems*	6	BT	1		180
8	E010381	Technology in Clinical Neuroscience *Pieter van Mierlo -- Department of Electronics and Information Systems*	3	BT	1		90
9	E092730	Medical Physics *Klaus Bacher -- Department of Human Structure and Repair*	3	BT	1		90
10	E092802	Biomedical Product Development *Ewout Vansteenkiste -- Department of Physics and Astronomy*	6	MDD	1	A:J	180
11	E092681	Medical Equipment *Sunny Eloot -- Department of Internal Medicine and Pediatrics*	5	MDD	1		150
12	E092721	Human and Environment, Safety and Regulations *Carlos De Wagter -- Department of Human Structure and Repair*	4	MDD	1		120
13	E074120	Technology and Design of Artificial Organs *Thierry Bové -- Department of Human Structure and Repair*	6	MDD	2		180
14	E003280	Clinical Study Design and Biostatistics *Barbara Vanderstraeten -- Department of Human Structure and Repair*	3	HC	2	A:1	90
15	E015590	Leadership in Health Care *Pascal Verdonck -- Department of Electronics and Information Systems*	3	HC	2	A:2	90
16	E015570	Health Information and Decision Support Systems *Jef Vandemeulebroucke -- Vrije Universiteit Brussel*	3	HC	2	A:2	90
17	E092813	Hospital Project	3	HC	2		90

2 Elective Courses — 24 credits

Subscribe to 24 credit units from no less than 1 and no more than 5 modules from the following list. Subject to approval by the faculty.
- 6 credit units in year 1
- 18 credit units in year 2

2.1 Elective Courses Biomedical Engineering

Subscribe to no more than 24 credit units from the following list. Subject to approval by the faculty.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E092913	Modeling in Medicine and Biomedical Engineering: Case Studies *Patrick Segers -- Department of Electronics and Information Systems*	3				90

2	E022250	Bioelectromagnetism *Wout Joseph -- Department of Information Technology*	4			120
3	E022030	Biomedical Acoustics	6			180
4	E027790	Control of Drug-Delivery Systems *Clara Ionescu -- Department of Electromechanical, Systems and Metal Engineering*	4		A:2	120
5	E027770	Data Analytics in Healthcare and Connected Care *Sofie Van Hoecke -- Department of Electronics and Information Systems*	6		A:2	180
6	E099960	Internship 1 [en, nl] *Patrick Segers -- Department of Electronics and Information Systems*	3		B:2, A:1	90
7	E099970	Internship 2 [en, nl] *Patrick Segers -- Department of Electronics and Information Systems*	3		B:2, A:1	90
8	E099980	Internship 3 [en, nl] *Patrick Segers -- Department of Electronics and Information Systems*	6		B:2, A:1	180
9	E099920	International Internship 1 *Patrick Segers -- Department of Electronics and Information Systems*	3		B:2, A:1	90
10	E099930	International Internship 2 *Patrick Segers -- Department of Electronics and Information Systems*	3		B:2, A:1	90
11	E099940	International Internship 3 *Patrick Segers -- Department of Electronics and Information Systems*	6		B:2, A:1	180
12	E076221	Manufacturing Planning and Control *Birger Raa -- Department of Industrial Systems Engineering and Product Design*	6		A:1	180
13	E075310	Ethics, Engineering and Society [nl] *Guido Pennings -- Department of Philosophy and Moral Sciences*	3		A:2	90
14	E016330	Artificial Intelligence *Aleksandra Pizurica -- Department of Telecommunications and Information Processing*	6		A:1	180

2.2 Elective Courses Cluster Medical Devices

Subscribe to at most 24 credit units from the modules from the following list. Subject to approval by the faculty.

2.2.1 Advanced Design Methods in Biomedical Engineering

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E040520	Computional Fluid Dynamics	3				90
2	E092891	Computational Biomechanics *Nele Famaey -- Department of Electronics and Information Systems*	3				90
3	E092922	From Medical Image to Computational Model [nl, en]	6			B:1, A:1	180

2.2.2 Assistive Technologies

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E900430	Biomedical Robotics	5				150
2	E900431	Virtual Reality	5				150

2.2.3 Micro and Nano Devices

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E030900	Design of Microsystems [nl] *Jan Doutreloigne -- Department of Electronics and Information Systems*	6			A:1	180
2	E030761	Microphotonics [nl, en] *Dries Van Thourhout -- Department of Information Technology*	6			B:1, A:1	180
3	E030930	Biophotonics *Nicolas Le Thomas -- Department of Information Technology*	4			A:1	120
4	E008445	Sensors and Actuators *Herbert De Smet -- Department of Electronics and Information Systems*	6			A:2	180
5	E030610	Photonics [nl] *Roel Baets -- Department of Information Technology*	6			A:2	180
6	E900433	Micro and Nanobiotechnology	3				90
7	E900434	Technological Processes for Photonics and Electronics [nl, en]	4			B:J, A:J	120
8	E900435	Embedded Bioelectronics Systems	5				150
9	E092980	Biomedical Devices	4				120
10	E092990	Architecture and Fabrication of Biomedical Microsystems	3				90

2.3 Elective Courses Cluster Health Care

Subscribe to at most 24 credit units from the modules from the following list. Subject to approval by the faculty.

2.3.1 Personalized Medicine

Nr	Course		CRDT	Ref	MT1	Session	Study
1	C003120	Physics and Chemistry of Nanostructures *Zeger Hens -- Department of Chemistry*	6				180
2	E092852	Contrast Agents and Biomarkers for Imaging and Therapy *Christian Vanhove -- Department of Electronics and Information Systems*	3			A:1	90
3	E027780	Scientific and Clinical Applications of Magnetic Nanoparticles *Annelies Coene -- Department of Electromechanical, Systems and Metal Engineering*	3			A:2	90

2.3.2 Neuro-engineering

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E092841	Advanced Image and Signal Processing [nl, en] *Stefaan Vandenberghe -- Department of Electronics and Information Systems*	3			B:1, A:1	90
2	E027761	Nuclear Magnetic Resonance Imaging Technology *Roel Van Holen -- Department of Electronics and Information Systems*	3			A:2	90
3	E900436	Neuro-physiological Signal Processing and Network Analysis [nl, en] *Guy Nagels -- Vrije Universiteit Brussel*	4			B:2, A:2	120
4	E092930	Translational Neuroscience *Christian Vanhove -- Department of Electronics and Information Systems*	3			A:2	90
5	E092960	Neural Interfaces, Neuromodulation and Minimally Invasive Neurotechnology *Vincent Keereman -- Department of Electronics and Information Systems*	3			A:2	90
6	E092970	Auditory Computation, Modelling and Devices *Sarah Verhulst -- Department of Information Technology*	3			A:2	90

2.3.3 Engineering (Physics) in Oncology

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E027750	Measurement Techniques in Nuclear Science *Freya Blekman -- Vrije Universiteit Brussel*	3			A:2	90
2	E025110	Nuclear Physics [nl, en] *Michel Sonck -- Vrije Universiteit Brussel*	3			B:2, A:2	90
3	E092880	Nuclear Reactors and Cyclotrons *Michel Sonck -- Vrije Universiteit Brussel*	3			A:1	90
4	E038110	Technology of Radiotherapy *Werner De Gersem -- Department of Human Structure and Repair*	3			A:1	90
5	E027870	Medical Dosimetry *Nico Buls -- Vrije Universiteit Brussel*	3			A:1	90
6	E025490	Radiologic Techniques *Klaus Bacher -- Department of Human Structure and Repair*	3			A:1	90
7	E078220	Radioprotection and Regulations [nl] *Michel Sonck -- Vrije Universiteit Brussel*	3			A:2	90
8	E025470	Radiochemistry [nl] *Filip De Vos -- Department of Pharmaceutical Analysis*	3			A:2	90
9	E025480	Radiobiology and Radiopathology *Marc Van Eijkeren -- Department of Human Structure and Repair*	3			A:2	90
10	E092852	Contrast Agents and Biomarkers for Imaging and Therapy *Christian Vanhove -- Department of Electronics and Information Systems*	3			A:1	90

2.4 Elective Courses Study Programme VUB

Subscribe to no more than 24 credit units from the Elective Courses list VUB. Subject to approval by the faculty.
For list see www.ugent.be/ea > Opleidingen > Opleidingsaanbod > Overzicht opleidingen Master na Bachelor

2.5 Elective Courses Ghent University of VUB

Subscribe to no more than 24 credit units from Elective Courses Ghent University or VUB. Subject to approval by the faculty.

3 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 2022-2023	f: annually, from 2023-2024	i: annually, from 2024-2025
b: tri-annually	d: bi-annually, from 2022-2023	g: bi-annually, from 2023-2024	j: bi-annually, from 2024-2025
	e: tri-annually, from 2022-2023	h: tri-annually, from 2023-2024	k: tri-annually, from 2024-2025