

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 <i>Patrick Segers -- Department of Electronics and Information Systems</i>	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 <i>Charlotte Debbaut -- Department of Electronics and Information Systems</i>	6	BT	1		180
8	E010381 Technology in Clinical Neuroscience <i>Pieter van Mierlo -- Department of Electronics and Information Systems</i>	3	BT	1		90
9	E092730 Medical Physics <i>Klaus Bacher -- Department of Human Structure and Repair</i>	3	BT	1		90
10	E092802 Biomedical Product Development <i>Ewout Vansteenkiste -- Department of Physics and Astronomy</i>	6	MDD	1	A:J	180
11	E092681 Medical Equipment <i>Sunny Eloit -- Department of Internal Medicine and Pediatrics</i>	5	MDD	1		150
12	E092721 Human and Environment, Safety and Regulations <i>Carlos De Wagter -- Department of Human Structure and Repair</i>	4	MDD	1		120
13	E074120 Technology and Design of Artificial Organs <i>Thierry Bové -- Department of Human Structure and Repair</i>	6	MDD	2		180
14	E003280 Clinical Study Design and Biostatistics <i>Barbara Vanderstraeten -- Department of Human Structure and Repair</i>	3	HC	2	A:1	90
15	E015590 Leadership in Health Care <i>Pascal Verdonck -- Department of Electronics and Information Systems</i>	3	HC	2	A:2	90
16	E015570 Health Information and Decision Support Systems <i>Jef Vandemeulebroucke -- Vrije Universiteit Brussel</i>	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 <i>Patrick Segers -- Department of Electronics and Information Systems</i>	3				90

2	E022250	Bioelectromagnetism <i>Wout Joseph -- Department of Information Technology</i>	4			120
3	E022030	Biomedical Acoustics	6			180
4	E027790	Control of Drug-Delivery Systems <i>Clara Ionescu -- Department of Electromechanical, Systems and Metal Engineering</i>	4		A:2	120
5	E027770	Data Analytics in Healthcare and Connected Care <i>Sofie Van Hoecke -- Department of Electronics and Information Systems</i>	6		A:2	180
6	E099960	Internship 1 [en, nl] <i>Patrick Segers -- Department of Electronics and Information Systems</i>	3		B:2, A:1	90
7	E099970	Internship 2 [en, nl] <i>Patrick Segers -- Department of Electronics and Information Systems</i>	3		B:2, A:1	90
8	E099980	Internship 3 [en, nl] <i>Patrick Segers -- Department of Electronics and Information Systems</i>	6		B:2, A:1	180
9	E099920	International Internship 1 <i>Patrick Segers -- Department of Electronics and Information Systems</i>	3		B:2, A:1	90
10	E099930	International Internship 2 <i>Patrick Segers -- Department of Electronics and Information Systems</i>	3		B:2, A:1	90
11	E099940	International Internship 3 <i>Patrick Segers -- Department of Electronics and Information Systems</i>	6		B:2, A:1	180
12	E076221	Manufacturing Planning and Control <i>Birger Raa -- Department of Industrial Systems Engineering and Product Design</i>	6		A:1	180
13	E075310	Ethics, Engineering and Society [nl] <i>Guido Pennings -- Department of Philosophy and Moral Sciences</i>	3		A:2	90
14	E016330	Artificial Intelligence <i>Aleksandra Pizurica -- Department of Telecommunications and Information Processing</i>	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	Computational Fluid Dynamics	3			90
2	E092891	Computational Biomechanics <i>Nele Famaey -- Department of Electronics and Information Systems</i>	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] <i>Jan Doutreloigne -- Department of Electronics and Information Systems</i>	6		A:1	180
2	E030761	Microphotonics [nl, en] <i>Dries Van Thourhout -- Department of Information Technology</i>	6		B:1, A:1	180
3	E030930	Biophotonics <i>Nicolas Le Thomas -- Department of Information Technology</i>	4		A:1	120
4	E008445	Sensors and Actuators <i>Herbert De Smet -- Department of Electronics and Information Systems</i>	6		A:2	180
5	E030610	Photonics [nl] <i>Roel Baets -- Department of Information Technology</i>	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 <i>Zeger Hens -- Department of Chemistry</i>	6				180
2	E092852 Contrast Agents and Biomarkers for Imaging and Therapy <i>Christian Vanhove -- Department of Electronics and Information Systems</i>	3			A:1	90
3	E027780 Scientific and Clinical Applications of Magnetic Nanoparticles <i>Annelies Coene -- Department of Electromechanical, Systems and Metal Engineering</i>	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] <i>Stefaan Vandenberghe -- Department of Electronics and Information Systems</i>	3			B:1, A:1	90
2	E027761 Nuclear Magnetic Resonance Imaging Technology <i>Roel Van Holen -- Department of Electronics and Information Systems</i>	3			A:2	90
3	E900436 Neuro-physiological Signal Processing and Network Analysis [nl, en] <i>Guy Nagels -- Vrije Universiteit Brussel</i>	4			B:2, A:2	120
4	E092930 Translational Neuroscience <i>Christian Vanhove -- Department of Electronics and Information Systems</i>	3			A:2	90
5	E092960 Neural Interfaces, Neuromodulation and Minimally Invasive Neurotechnology <i>Vincent Keereman -- Department of Electronics and Information Systems</i>	3			A:2	90
6	E092970 Auditory Computation, Modelling and Devices <i>Sarah Verhulst -- Department of Information Technology</i>	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 <i>Freya Blekman -- Vrije Universiteit Brussel</i>	3			A:2	90
2	E025110 Nuclear Physics [nl, en] <i>Michel Sonck -- Vrije Universiteit Brussel</i>	3			B:2, A:2	90
3	E092880 Nuclear Reactors and Cyclotrons <i>Michel Sonck -- Vrije Universiteit Brussel</i>	3			A:1	90
4	E038110 Technology of Radiotherapy <i>Werner De Gersem -- Department of Human Structure and Repair</i>	3			A:1	90
5	E027870 Medical Dosimetry <i>Nico Buls -- Vrije Universiteit Brussel</i>	3			A:1	90
6	E025490 Radiologic Techniques <i>Klaus Bacher -- Department of Human Structure and Repair</i>	3			A:1	90
7	E078220 Radioprotection and Regulations [nl] <i>Michel Sonck -- Vrije Universiteit Brussel</i>	3			A:2	90
8	E025470 Radiochemistry [nl] <i>Filip De Vos -- Department of Pharmaceutical Analysis</i>	3			A:2	90
9	E025480 Radiobiology and Radiopathology <i>Marc Van Eijkeren -- Department of Human Structure and Repair</i>	3			A:2	90
10	E092852 Contrast Agents and Biomarkers for Imaging and Therapy <i>Christian Vanhove -- Department of Electronics and Information Systems</i>	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](http://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
----	--------	------	-----	-----	---------	-------

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