

Study Programme

Academic year 2023-2024

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

Language of instruction: English

Programme version 13

2 Elective Courses

Sarah Verhulst -- Department of Information Technology

General Courses 60 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	E010371	Medical Imaging Stefaan Vandenberghe Department of Electronics and Information Systems	6	j	1	A:1	180
2	E063671	Biomaterials and Tissue Engineering Ruslan Dmitriev Department of Human Structure and Repair	5	j	1	A:1	150
3	E010382	Neuro-Engineering Science Pieter van Mierlo Department of Electronics and Information Systems	3	u	1	A:1	90
4	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
5	E074123	Artificial Organs Sunny Eloot Department of Internal Medicine and Pediatrics	5	u	1	A:1	150
6	E092802	Biomedical Product Development Ewout Vansteenkiste Department of Physics and Astronomy	6	р	1	A:J	180
7	E092682	Medical Equipment, Safety and Regulations Sunny Eloot Department of Internal Medicine and Pediatrics	5	u	1	A:2	150
8	E027770	Data Analytics in Healthcare and Connected Care Sofie Van Hoecke Department of Electronics and Information Systems	6	р	1	A:2	180
9	E010610	Biomedical Robotics and Assistive Technologies Joost Geeroms Vrije Universiteit Brussel	5	V	1	A:1	150
10	E003280	Clinical Study Design and Biostatistics Barbara Vanderstraeten Department of Human Structure and Repair	3	u	2	A:1	90
11	E092814	Hospital Project Renaat Peleman Department of Internal Medicine and Pediatrics	5	р	2	A:J	150
12	E015590	Leadership in Health Care Johan Stiens Vrije Universiteit Brussel	3	u	2	A:2	90
13	E015570	Health Information and Decision Support Systems Jef Vandemeulebroucke Vrije Universiteit Brussel	3	V	2	A:2	90

Nr Course	credit units from the following list. Subject to approval by the faculty.	CRDT	Ref	MT1	Session	Study
E092923	Computational Bio-Fluid Mechanics Charlotte Debbaut Department of Electronics and Information Systems	6	u	1	A:2	180
E092892	Computational Tissue and Structure Mechanics Nele Famaey Department of Electronics and Information Systems	6	u	1	A:2	180
B E010620	Computational Neurophysiology	6	j	1	A:2	180

6 credits

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A:2

180

30 credits **Elective Courses**

Subscribe to 30 credit units from no less than 1 and no more than 6 modules from the following list. Subject to approval by the faculty.

- 8 credit units in year 122 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	E022250	Bioelectromagnetism Wout Joseph Department of Information Technology	4	u		C:2	120
6	E076221	Manufacturing Planning and Control Birger Raa Department of Industrial Systems Engineering and Product Design	6	u		A:1	180
7	E075310	Ethics, Engineering and Society [nl] Seppe Segers Department of Philosophy and Moral Sciences	3	u		A:2	90
8	E016330	Artificial Intelligence Aleksandra Pizurica Department of Telecommunications and Information Processing	6	u		A:1	180
9	E006400	Wave Physics in Living Matter Wout Joseph Department of Information Technology	6	u		A:2	180
10	E027780	Scientific and Clinical Applications of Magnetic Nanoparticles	3	u			90
3	2 Flactiv	e Courses Neuro-engineering					

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	E027761	Nuclear Magnetic Resonance Imaging Technology Pim Pullens Department of Electronics and Information Systems	3	u		A:2	90
3	E900436	Neuro-physiological Signal Processing and Network Analysis Guy Nagels 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:2	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:2	180
2	E092892	Computational Tissue and Structure Mechanics Nele Famaey Department of Electronics and Information Systems	6	u		A:2	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

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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	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 lonescu Department of Electromechanical, Systems and Metal Engineering	4	u		A:2	120

3.5 Elective Courses Radiation Physics

Nr Co	ourse		CRDT	Ref	MT1	Session	Study
1 E02	27750	Measurement Techniques in Nuclear Science Nico Buls Vrije Universiteit Brussel	3	V		A:2	90
2 E02	25110	Nuclear Physics Michel Sonck Vrije Universiteit Brussel	3	V		A:2	90
3 E09	92880	Nuclear Reactors and Cyclotrons Michel Sonck Vrije Universiteit Brussel	3	V			90
4 E03	38110	Technology of Radiotherapy Werner De Gersem Department of Human Structure and Repair	3	u		A:1	90
5 E02	27870	Medical Dosimetry Nico Buls Vrije Universiteit Brussel	3	V		A:1	90
6 E02	25490	Radiologic Techniques Brent van der Heyden Department of Electronics and Information Systems	3	u		A:1	90
7 E07	78220	Radioprotection and Regulations [nl] Michel Sonck Vrije Universiteit Brussel	3	V		A:2	90
8 E02	25470	Radiochemistry [nl] Filip De Vos Department of Pharmaceutical Analysis	3	u		A:2	90
9 E02	25480	Radiobiology and Radiopathology Marc Van Eijkeren Department of Human Structure and Repair	3	u		A:2	90
10 E07	78230	Computational Methods in Radiation Physics Brent van der Heyden Department of Electronics and Information Systems	6	u		A:2	180

3.6 Elective Courses Artificial Intelligence and Digital Health

Nr Course		CRDT	Ref MT1	Session	Study
1 E900560	Techniques of Artificial Intelligence	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	A:1	150
4 E900580	Deep Learning	6	V	A:1	180
5 E900590	Reinforcement Learning	6	V	A:J	180
6 E900565	Statistical Foundations of Machine Learning	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	6	V	A:2	180

3.7 Elective Courses Ghent University or VUB

Subscribe to no more than 30 credit units from Elective Courses Ghent University or VUB. Subject to approval by the faculty.

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4 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

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 2024-2025 f: annually, from 2025-2026 i: annually, from 2026-2027 b: tri-annually d: bi-annually, from 2024-2025 g: bi-annually, from 2025-2026 j: bi-annually, from 2026-2027 e: tri-annually, from 2024-2025 h: tri-annually, from 2025-2026 k: tri-annually, from 2026-2027

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