GHENT UNIVERSITY

Study Programme

Academic year 2024-2025

Faculty of Bioscience Engineering

Master of Science in Bioscience Engineering: Cell and Gene Biotechnology

Language of instruction: English

Programme version 3

1 General Courses — 56 credits

1.1 Molecular Biology — 7 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002615	Protein Chemistry *Els Van Damme -- Department of Biotechnology* Indicative price: € 8	4		1	A:1	120
2	I002621	Gene Regulation and Epigenetics *Tina Kyndt -- Department of Biotechnology* Indicative price: unknown	3		1	A:2	90

1.2 Biotechnology — 15 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002611	Plant Biotechnology *Laurens Pauwels -- Department of Biotechnology* Indicative price: unknown	5		1	A:2	150
2	I002612	Industrial Biotechnology *Wim Soetaert -- Department of Biotechnology* Indicative price: € 15	5		1	A:1	150
3	I002613	Human and Animal Biotechnology *Daisy Vanrompay -- Department of Animal Sciences and Aquatic Ecology* Indicative price: € 20	5		1	A:2	150

1.3 Biological Data Sciences — 10 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002610	Bioinformatics *Wim Van Criekinge -- Department of Data Analysis and Mathematical Modelling* Indicative price: unknown	5		1	A:1	150
2	I002616	Genome Analysis *Tim De Meyer -- Department of Data Analysis and Mathematical Modelling* Indicative price: € 0	5		1	A:2	150

1.4 Engineering and Technology — 12 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002618	Process Engineering 2 *Paul Van der Meeren -- Department of Green Chemistry and Technology* Indicative price: € 10	5		1	A:1	150
2	I001280	Experimental Design *Stijn Luca -- Department of Data Analysis and Mathematical Modelling* Indicative price: € 15	3		1	A:2	75
3	I002617	Bio-imaging and Image Informatics *Andre Skirtach -- Department of Biotechnology* Indicative price: unknown	4		1	A:1	120

1.5 Society and Scientific Communication and Integrity — 12 credits

Nr	Course		CRDT	Ref	MT1	Session	Study

1	I002614	Microbiomics *Nico Boon -- Department of Biotechnology* Indicative price: unknown	4	1	A:1	120
2	I002619	Management for Engineers *Jeroen Buysse -- Department of Agricultural Economics* Indicative price: € 0	4	2	A:1	120
3	I002933	Biotechnology in a Professional and Societal Context *Tom Van de Wiele -- Department of Biotechnology* Indicative price: unknown	4	2	A:J	120

2 Majors

Subscribe to 1 major from the following list.

Full-time standard learning track:
Students can choose which of the elective and major course units are taken in the first respectively the second standard learning track year (unless otherwise specified);
in combination with the general course units, students take a total of 54 to 66 credits per standard learning track year. The sum of the total number of credits taken up over the 2 standard learning track years must be 120 credits.

2.1 Major Red Biotechnology: Biomedical — 22 credits

Subscribe to 22 credit units from the following list.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002622	Immunology *Daisy Vanrompay -- Department of Animal Sciences and Aquatic Ecology* Indicative price: € 20	5			A:2	150
2	I002623	Interphase Processes of Host-associated Micro-organisms *Tom Van de Wiele -- Department of Biotechnology* Indicative price: unknown	5			A:1	150
3	I002624	Biochemical and Molecular Nutrition *John Van Camp -- Department of Food Technology, Safety and Health* Indicative price: € 4	3			A:1	90
4	D012549	Stem Cell Biology and Reprogramming *BJORN HEINDRYCKX -- Department of Human Structure and Repair* Indicative price: unknown	4			A:2	120
5	D012490	Cancer Genetics *Kaat Durinck -- Department of Biomolecular Medicine* Indicative price: € 0	5			A:2	150

2.2 Major Green Biotechnology: Plant — 22 credits

Subscribe to 22 credit units from the following list.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002626	Plants, Pathogens and Pests *Monica Höfte -- Department of Plants and Crops* Indicative price: € 0	5			A:2	150
2	I002627	Plants and Microclimate *Kathy Steppe -- Department of Plants and Crops* Indicative price: € 15	5			A:1	150
3	I002628	Molecular Plant Breeding *Danny Geelen -- Department of Plants and Crops* Indicative price: unknown	5			A:1	150
4	I002629	Plant Phenotyping Technologies *Kris Audenaert -- Department of Plants and Crops* Indicative price: € 0	3			A:2	90
5	I002630	Functional Plant Biology *Danny Geelen -- Department of Plants and Crops* Indicative price: unknown	4			A:2	120

2.3 Major White Biotechnology: Industrial — 20 credits

Subscribe to 20 credit units from the following list.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002631	Industrial Fermentation Processes and Downstream Processing *Wim Soetaert -- Department of Biotechnology* Indicative price: € 15	5			A:2	150

2	I002632	Metabolic Engineering and Modelling of Micro-organisms *Marjan De Mey -- Department of Biotechnology* Indicative price: € 5	4		A:2	120
3	I002633	Functional (Meta)genomics *Inge Van Bogaert -- Department of Biotechnology* Indicative price: € 0	4		A:2	120
4	I002634	Synthetic Biology *Marjan De Mey -- Department of Biotechnology* Indicative price: € 0	4		A:2	120
5	I002635	Enzyme Engineering and Modelling *Tom Desmet -- Department of Biotechnology* Indicative price: € 0	3		A:1	90

2.4 Major Computational Biology 22 credits

Subscribe to 22 credit units from the following list.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002642	Biological Databases *Gerben Menschaert -- Department of Data Analysis and Mathematical Modelling* Indicative price: unknown	5			A:2	150
2	I002932	Machine Learning for Life Sciences *Willem Waegeman -- Department of Data Analysis and Mathematical Modelling* Indicative price: € 0	5			A:1	150
3	C003701	Selected Topics in Mathematical Optimization *Paul Van Liedekerke -- Department of Data Analysis and Mathematical Modelling* Indicative price: € 0	3			A:1	75
4	I002636	Spatio-temporal Models Indicative price: unknown	3				90
5	C004456	Linux for Bioinformatics Environment *Herman De Beukelaer -- Department of Plant Biotechnology and Bioinformatics* Indicative price: € 0	3			A:2	80
6	C004000	Integrative Biology *Kathleen Marchal -- Department of Plant Biotechnology and Bioinformatics* Indicative price: € 0	3			A:2	80

3 Elective Courses

Subscribe to 14 credit units for IMCEGBmajorWhite or 12 credit units for other IMCEGBmajors from no less than 1 and no more than 5 modules from the following list.
Full-time standard learning track:
Students can choose which of the elective and major course units are taken in the first respectively the second standard learning track year (unless otherwise specified);
in combination with the general course units, students take a total of 54 to 66 credits per standard learning track year. The sum of the total number of credits taken up over the 2 standard learning track years must be 120 credits.

3.1 Courses from the Majors

Subscribe to no more than 12 or 14 credit units from the majors, with the exception of the courses taken within the chosen major.

3.2 Master Specific Courses

Subscribe to no more than 12 or 14 credit units from the following list.
Elective courses complementary to major:
R = major RED
G = major GREEN
W = major WHITE
C = major COMPUTATIONAL

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I000250	General Virology [nl] *Kristien Van Reeth -- Department of Translational Physiology, Infectiology and Public Health* Indicative price: unknown	4	R		A:1	100
2	E063671	Biomaterials and Tissue Engineering *Peter Dubruel -- Department of Organic Chemistry* Indicative price: unknown	5	R		A:1	150
3	I001905	Medical Biotechnology and Parasitology *Vrije Universiteit Brussel, Geert Raes* Indicative price: unknown	4	R		A:2	117

4	I001965	Applied Immunology *Vrije Universiteit Brussel, Jo Van Ginderachter* Indicative price: unknown	5	R			125
5	J000454	Cutting Edge Technologies for Drug Delivery - Nanomedicines *Stefaan De Smedt -- Department of Pharmaceutics* Indicative price: € 0	3	R		A:2	90
6	I002516	Crop Protection [nl] *Patrick De Clercq -- Department of Plants and Crops* Indicative price: € 25	5	G		A:1	150
7	I002515	Crop Husbandry [nl] *Steven Maenhout -- Department of Plants and Crops* Indicative price: € 20	5	G		A:1	150
8	I002845	Molecular Entomology Indicative price: unknown	5	G		(A:2)[d]	150
9	I002675	Chemical Structure Determination *Christian Stevens -- Department of Green Chemistry and Technology* Indicative price: € 20	4	W		A:1	120
10	I002510	Reaction Kinetics and Reactor Design [nl] *Paul Van der Meeren -- Department of Green Chemistry and Technology* Indicative price: € 10	5	W		A:2	150
11	I002607	Resource Recovery Technology *Ramon Ganigué -- Department of Biotechnology* Indicative price: € 0	6	W		A:2	180
12	I002672	Process Control *Paul Van Liedekerke -- Department of Data Analysis and Mathematical Modelling* Indicative price: € 0	5	C		A:2	150
13	C004122	Capita Selecta in Bioinformatics *Kathleen Marchal -- Department of Plant Biotechnology and Bioinformatics* Indicative price: € 0	3	C		A:1	75
14	I003021	Advanced Biosystems Modelling *Paul Van Liedekerke -- Department of Data Analysis and Mathematical Modelling* Indicative price: € 0	5	C		A:2	150

3.3 Entrepreneurship and Management

Subscribe to no more than 12 or 14 credit units from the following list.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002720	Consumer Behaviour and Marketing of Bio-industrial products [nl] *Wim Verbeke -- Department of Agricultural Economics* Indicative price: € 0	5			A:2	150
2	I001967	Intellectual Property and Valorization *Benedikt Sas -- Department of Food Technology, Safety and Health* Indicative price: unknown	3			A:2	90
3	C000833	Project Management [nl] *Mario Vanhoucke -- Department of Business Informatics and Operations Management* Indicative price: € 75	4			A:2	120
4	E076471	Dare to Start *Wouter Haerick -- Department of Information Technology* Indicative price: unknown	3			A:2	90
5	E076460	Dare to Venture *Johan Verrue -- Department of Marketing, Innovation and Organisation* Indicative price: unknown	4			A:2	120
6	I001949	Entrepreneurship [nl] *Petra Andries -- Department of Marketing, Innovation and Organisation* Indicative price: € 33	3			A:2	75

3.4 Skills and Attitudes

Subscribe to no more than 12 or 14 credit units from the following list, with no more than 10 credit units with reference a.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002637	Internship [en, nl] *Paul Van der Meeren -- Department of Green Chemistry and Technology* Indicative price: € 0	5	a		A:J	150

2	I002638	International Internship [en, nl] *Paul Van der Meeren -- Department of Green Chemistry and Technology* Indicative price: € 0	5	a		A:J	150
3	I002639	Extended Internship [en, nl] *Paul Van der Meeren -- Department of Green Chemistry and Technology* Indicative price: € 0	10	a		A:J	300
4	I002640	Extended International Internship [en, nl] *Paul Van der Meeren -- Department of Green Chemistry and Technology* Indicative price: € 0	10	a		A:J	300
5	I001944	Bio-ethics *Michiel De Proost -- Department of Philosophy and Moral Sciences* Indicative price: € 5	3			A:1	75
6	C002668	Scientific Communication in English *Geert Jacobs -- Department of Linguistics* Indicative price: € 0	5			A:2	150
7	I001784	Seminar *Mieke Uyttendaele -- Department of Food Technology, Safety and Health* Indicative price: unknown	3				75
8	I002641	Laboratory Animal Science *Katleen Hermans -- Department of Pathobiology, Pharmacology and Zoological Medicine* Indicative price: € 0	6			A:1	180

3.5 Open Choice

Subscribe to course units from courses offered at Ghent University and at the alliance partner VUB, including the Ghent University Elective Courses.
A maximum of 2 such courses is allowed.
Maximum 8 credit units language courses are allowed within this master programme.
Subject to approval by the Faculty.

4 Master's Dissertation 30 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I001484	Master's Dissertation *Marjan De Mey -- Department of Biotechnology* Indicative price: € 0	30		2	A:J	900

Programme related study costs

Type: Laptop

Name: Laptop
Indicative price: € 1,000
Optional: No

Type: Lab Material

Name: Lab coat
Indicative price: € 30
Optional: No

Type: Lab Material

Name: Safety glasses
Indicative price: € 15
Optional: No

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 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

Learning materials

The prices stated are indicative and subject to fluctuations.
The list of learning materials per course unit can be found in the course sheets.