

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 <i>Els Van Damme -- Department of Biotechnology</i> Indicative price: € 8	4		1	A:1	120
2	I002621 Gene Regulation and Epigenetics <i>Tina Kyndt -- Department of Biotechnology</i> Indicative price: unknown	3		1	A:2	90

1.2 Biotechnology 15 credits

Nr	Course	CRDT	Ref	MT1	Session	Study
1	I002611 Plant Biotechnology <i>Laurens Pauwels -- Department of Biotechnology</i> Indicative price: unknown	5		1	A:2	150
2	I002612 Industrial Biotechnology <i>Wim Soetaert -- Department of Biotechnology</i> Indicative price: € 15	5		1	A:1	150
3	I002613 Human and Animal Biotechnology <i>Daisy Vanrompay -- Department of Animal Sciences and Aquatic Ecology</i> 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 <i>Wim Van Crielinge -- Department of Data Analysis and Mathematical Modelling</i> Indicative price: unknown	5		1	A:1	150
2	I002616 Genome Analysis <i>Tim De Meyer -- Department of Data Analysis and Mathematical Modelling</i> 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 <i>Paul Van der Meeren -- Department of Green Chemistry and Technology</i> Indicative price: € 10	5		1	A:1	150
2	I001280 Experimental Design <i>Stijn Luca -- Department of Data Analysis and Mathematical Modelling</i> Indicative price: € 15	3		1	A:2	75
3	I002617 Bio-imaging and Image Informatics <i>Andre Skirtach -- Department of Biotechnology</i> 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
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1	I002614	Microbiomics <i>Nico Boon -- Department of Biotechnology</i> Indicative price: unknown	4	1	A:1	120
2	I002619	Management for Engineers <i>Jeroen Buysse -- Department of Agricultural Economics</i> Indicative price: € 0	4	2	A:1	120
3	I002933	Biotechnology in a Professional and Societal Context <i>Tom Van de Wiele -- Department of Biotechnology</i> 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 <i>Daisy Vanrompay -- Department of Animal Sciences and Aquatic Ecology</i> Indicative price: € 20	5			A:2	150
2	I002623 Interphase Processes of Host-associated Micro-organisms <i>Tom Van de Wiele -- Department of Biotechnology</i> Indicative price: unknown	5			A:1	150
3	I002624 Biochemical and Molecular Nutrition <i>John Van Camp -- Department of Food Technology, Safety and Health</i> Indicative price: € 4	3			A:1	90
4	D012549 Stem Cell Biology and Reprogramming <i>BJORN HEINDRYCKX -- Department of Human Structure and Repair</i> Indicative price: unknown	4			A:2	120
5	D012490 Cancer Genetics <i>Kaat Durinck -- Department of Biomolecular Medicine</i> 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 <i>Monica Höfte -- Department of Plants and Crops</i> Indicative price: € 0	5			A:2	150
2	I002627 Plants and Microclimate <i>Kathy Steppe -- Department of Plants and Crops</i> Indicative price: € 15	5			A:1	150
3	I002628 Molecular Plant Breeding <i>Danny Geelen -- Department of Plants and Crops</i> Indicative price: unknown	5			A:1	150
4	I002629 Plant Phenotyping Technologies <i>Kris Audenaert -- Department of Plants and Crops</i> Indicative price: € 0	3			A:2	90
5	I002630 Functional Plant Biology <i>Danny Geelen -- Department of Plants and Crops</i> 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 <i>Wim Soetaert -- Department of Biotechnology</i> Indicative price: € 15	5			A:2	150

2	I002632	Metabolic Engineering and Modelling of Micro-organisms <i>Marjan De Mey -- Department of Biotechnology</i> Indicative price: € 5	4			A:2	120
3	I002633	Functional (Meta)genomics <i>Inge Van Bogaert -- Department of Biotechnology</i> Indicative price: € 0	4			A:2	120
4	I002634	Synthetic Biology <i>Marjan De Mey -- Department of Biotechnology</i> Indicative price: € 0	4			A:2	120
5	I002635	Enzyme Engineering and Modelling <i>Tom Desmet -- Department of Biotechnology</i> 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 <i>Gerben Menschaert -- Department of Data Analysis and Mathematical Modelling</i> Indicative price: unknown	5			A:2	150
2	I002932 Machine Learning for Life Sciences <i>Willem Waegeman -- Department of Data Analysis and Mathematical Modelling</i> Indicative price: € 0	5			A:1	150
3	C003701 Selected Topics in Mathematical Optimization <i>Paul Van Liedekerke -- Department of Data Analysis and Mathematical Modelling</i> Indicative price: € 0	3			A:1	75
4	I002636 Spatio-temporal Models Indicative price: unknown	3				90
5	C004456 Linux for Bioinformatics Environment <i>Herman De Beukelaer -- Department of Plant Biotechnology and Bioinformatics</i> Indicative price: € 0	3			A:2	80
6	C004000 Integrative Biology <i>Kathleen Marchal -- Department of Plant Biotechnology and Bioinformatics</i> 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] <i>Kristien Van Reeth -- Department of Translational Physiology, Infectiology and Public Health</i> Indicative price: unknown	4	R		A:1	100
2	E063671 Biomaterials and Tissue Engineering <i>Peter Dubrueel -- Department of Organic Chemistry</i> Indicative price: unknown	5	R		A:1	150
3	I001905 Medical Biotechnology and Parasitology <i>Vrije Universiteit Brussel, Geert Raes</i> Indicative price: unknown	4	R		A:2	117

4	I001965	Applied Immunology <i>Vrije Universiteit Brussel, Jo Van Ginderachter</i> Indicative price: unknown	5	R			125
5	J000454	Cutting Edge Technologies for Drug Delivery - Nanomedicines <i>Stefaan De Smedt -- Department of Pharmaceutics</i> Indicative price: € 0	3	R		A:2	90
6	I002516	Crop Protection [nl] <i>Patrick De Clercq -- Department of Plants and Crops</i> Indicative price: € 25	5	G		A:1	150
7	I002515	Crop Husbandry [nl] <i>Steven Maenhout -- Department of Plants and Crops</i> 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 <i>Christian Stevens -- Department of Green Chemistry and Technology</i> Indicative price: € 20	4	W		A:1	120
10	I002510	Reaction Kinetics and Reactor Design [nl] <i>Paul Van der Meeren -- Department of Green Chemistry and Technology</i> Indicative price: € 10	5	W		A:2	150
11	I002607	Resource Recovery Technology <i>Ramon Ganigué -- Department of Biotechnology</i> Indicative price: € 0	6	W		A:2	180
12	I002672	Process Control <i>Paul Van Liedekerke -- Department of Data Analysis and Mathematical Modelling</i> Indicative price: € 0	5	C		A:2	150
13	C004122	Capita Selecta in Bioinformatics <i>Kathleen Marchal -- Department of Plant Biotechnology and Bioinformatics</i> Indicative price: € 0	3	C		A:1	75
14	I003021	Advanced Biosystems Modelling <i>Paul Van Liedekerke -- Department of Data Analysis and Mathematical Modelling</i> 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] <i>Wim Verbeke -- Department of Agricultural Economics</i> Indicative price: € 0	5			A:2	150
2	I001967 Intellectual Property and Valorization <i>Benedikt Sas -- Department of Food Technology, Safety and Health</i> Indicative price: unknown	3			A:2	90
3	C000833 Project Management [nl] <i>Mario Vanhoucke -- Department of Business Informatics and Operations Management</i> Indicative price: € 75	4			A:2	120
4	E076471 Dare to Start <i>Wouter Haerick -- Department of Information Technology</i> Indicative price: unknown	3			A:2	90
5	E076460 Dare to Venture <i>Johan Verrue -- Department of Marketing, Innovation and Organisation</i> Indicative price: unknown	4			A:2	120
6	I001949 Entrepreneurship [nl] <i>Petra Andries -- Department of Marketing, Innovation and Organisation</i> 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] <i>Paul Van der Meeren -- Department of Green Chemistry and Technology</i> Indicative price: € 0	5	a		A:J	150

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

bg: Bulgarian	de: German	es: Spanish	ja: Japanese	pl: Polish	sh: Croatian/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 is 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.