GHENT UNIVERSITY

Study Programme

Academic year 2025-2026

Faculty of Bioscience Engineering

Master of Science in Bioscience Engineering: Cell and Gene Biotechnology

Language of instruction: English

Programme version 4

1 General Courses — 55 credits

1.1 Molecular Biology — 7 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002615	Protein Chemistry *Els Van Damme -- Department of Biotechnology*	4		1	A:1	120
2	I002621	Gene Regulation and Epigenetics *Tina Kyndt -- Department of Biotechnology*	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*	5		1	A:2	150
2	I002612	Industrial Biotechnology *Wim Soetaert -- Department of Biotechnology*	5		1	A:1	150
3	I002613	Human and Animal Biotechnology *Daisy Vanrompay -- Department of Animal Sciences and Aquatic Ecology*	5		1	A:2	150

1.3 Biological Data Sciences — 11 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002610	Bioinformatics *Wim Van Criekinge -- Department of Data Analysis and Mathematical Modelling*	5		1	A:1	150
2	I003075	Omics *Tim De Meyer -- Department of Data Analysis and Mathematical Modelling*	6		1	A:2	180

1.4 Engineering and Technology — 12 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I003071	Process Engineering 2 *Paul Van der Meeren -- Department of Green Chemistry and Technology*	5		1	A:1	150
2	I001280	Experimental Design *Stijn Luca -- Department of Data Analysis and Mathematical Modelling*	3		1	A:2	75
3	I002617	Bio-imaging and Image Informatics *Andre Skirtach -- Department of Biotechnology*	4		1	A:1	120

1.5 Society and Scientific Communication and Integrity — 10 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I003076	Fit-for-Purpose Methods in Microbial Research *Nico Boon -- Department of Biotechnology*	4		1	A:1	120
2	I003077	Biotechnology in a Professional and Societal Context *Tom Van de Wiele -- Department of Biotechnology*	6		2	A:J	180

2 Majors

Subscribe to 1 major from the following list.

2.1 Major Red Biotechnology: Biomedical — 20 credits

Nr	Course		CRDT	Ref	MT1	Session	Study

1	I003078	Human Health Interactions with the Nutrition and Microbiome Interphase *Tom Van de Wiele -- Department of Biotechnology*	6		A:1	180
2	D012490	Cancer Genetics *Kaat Durinck -- Department of Biomolecular Medicine*	5		A:2	150
3	I002622	Immunology *Daisy Vanrompay -- Department of Animal Sciences and Aquatic Ecology*	5		A:2	150
4	D012549	Stem Cell Biology and Reprogramming *BJORN HEINDRYCKX -- Department of Human Structure and Repair*	4		A:2	120

2.2 Major Green Biotechnology: Plant 17 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002626	Plants, Pathogens and Pests *Monica Höfte -- Department of Plants and Crops*	5			A:2	150
2	I002628	Molecular Plant Breeding *Steven Maenhout -- Department of Plants and Crops*	5			A:1	150
3	I002629	Plant Phenotyping Technologies *Kris Audenaert -- Department of Plants and Crops*	3			A:2	90
4	I002630	Functional Plant Biology *Danny Geelen -- Department of Plants and Crops*	4			A:2	120

2.3 Major White Biotechnology: Industrial 20 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002631	Industrial Fermentation Processes and Downstream Processing *Wim Soetaert -- Department of Biotechnology*	5			A:2	150
2	I002632	Metabolic Engineering and Modelling of Micro-organisms *Marjan De Mey -- Department of Biotechnology*	4			A:2	120
3	I002633	Functional (Meta)genomics *Inge Van Bogaert -- Department of Biotechnology*	4			A:2	120
4	I002634	Synthetic Biology *Marjan De Mey -- Department of Biotechnology*	4			A:2	120
5	I002635	Enzyme Engineering and Modelling *Tom Desmet -- Department of Biotechnology*	3			A:1	90

3 Elective Courses

Students from the Major Red Biotechnology or the Major White Biotechnology subscribe to 15 credit units from 1 to 2 module(s) from the following list. Students from the Major Green Biotechnology subscribe to 18 credit units from 1 to 2 module(s) from the following list.
A minimum of 5 credit units is required from module 3.1.1 "Cross-Disciplinary Elective Set for Bioscience Engineers".
Courses for which the final competencies are already (largely) achieved by another course in the curriculum cannot be included as part of the elective set.
Subject to approval by the faculty.

3.1 Cross-Disciplinary Elective Courses 15 credits

3.1.1 Cross-Disciplinary Elective Set for Bioscience Engineers

Subscribe to course units from the following list, with no more than 10 credit units with reference A.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I003053	Machine Learning for Life Sciences *Willem Waegeman -- Department of Data Analysis and Mathematical Modelling*	4			A:1	120
2	I003054	Computer Vision for Life Sciences *Jan Verwaeren -- Department of Data Analysis and Mathematical Modelling*	5			A:2	150
3	I003021	Advanced Biosystems Modelling *Paul Van Liedekerke -- Department of Data Analysis and Mathematical Modelling*	5			A:2	150
4	I001280	Experimental Design *Stijn Luca -- Department of Data Analysis and Mathematical Modelling*	3			A:2	75
5	I003068	Management for Engineers *Jeroen Buysse -- Department of Agricultural Economics*	4			A:1	120
6	I002718	Economics and Management of Natural Resources *Stijn Speelman -- Department of Agricultural Economics*	4			A:2	120
7	I002750	Isotopes in Biosciences *Pascal Boeckx -- Department of Green Chemistry and Technology*	5			A:1	150

8	I003055	Biodiversity and Nature Conservation [nl] *Lander Baeten -- Department of Environment*	4			A:1	120
9	I002586	Multidisciplinary Analysis of Climate Change *Pascal Boeckx -- Department of Green Chemistry and Technology*	3			A:2	90
10	I003056	Human Nutrition and Health *John Van Camp -- Department of Food Technology, Safety and Health*	5			A:1	150
11	I002758	Food Marketing and Consumer Behaviour *Wim Verbeke -- Department of Agricultural Economics*	5			A:1	150
12	I003067	Bioethics *Michiel De Proost -- Department of Philosophy and Moral Sciences*	3			A:1	75
13	I002637	Internship [en, nl] *Peter Ragaert -- Department of Food Technology, Safety and Health*	5	A		A:J	150
14	I002638	International Internship [en, nl] *Peter Ragaert -- Department of Food Technology, Safety and Health*	5	A		A:J	150
15	I002639	Extended Internship [en, nl] *Peter Ragaert -- Department of Food Technology, Safety and Health*	10	A		A:J	300
16	I002640	Extended International Internship [en, nl] *Peter Ragaert -- Department of Food Technology, Safety and Health*	10	A		A:J	300

3.2 Open Choice

Subscribe to course units from courses offered at Ghent University, including the Ghent University Elective Courses and courses from the majors.
Maximum 8 credit units language courses are allowed within this master programme.

4 Master's Dissertation — 30 credits

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

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 2026-2027	f: annually, from 2027-2028	i: annually, from 2028-2029
b: tri-annually	d: bi-annually, from 2026-2027	g: bi-annually, from 2027-2028	j: bi-annually, from 2028-2029
	e: tri-annually, from 2026-2027	h: tri-annually, from 2027-2028	k: tri-annually, from 2028-2029