

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 <i>Els Van Damme -- Department of Biotechnology</i>	4		1	A:1	120
2	I002621 Gene Regulation and Epigenetics <i>Tina Kyndt -- Department of Biotechnology</i>	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>	5		1	A:2	150
2	I002612 Industrial Biotechnology <i>Wim Soetaert -- Department of Biotechnology</i>	5		1	A:1	150
3	I002613 Human and Animal Biotechnology <i>Daisy Vanrompay -- Department of Animal Sciences and Aquatic Ecology</i>	5		1	A:2	150

1.3 Biological Data Sciences 11 credits

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

1.4 Engineering and Technology 12 credits

Nr	Course	CRDT	Ref	MT1	Session	Study
1	I003071 Process Engineering 2 <i>Paul Van der Meeren -- Department of Green Chemistry and Technology</i>	5		1	A:1	150
2	I001280 Experimental Design <i>Stijn Luca -- Department of Data Analysis and Mathematical Modelling</i>	3		1	A:2	75
3	I002617 Bio-imaging and Image Informatics <i>Andre Skirtach -- Department of Biotechnology</i>	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 <i>Nico Boon -- Department of Biotechnology</i>	4		1	A:1	120
2	I003077 Biotechnology in a Professional and Societal Context <i>Tom Van de Wiele -- Department of Biotechnology</i>	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
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1	I003078	Human Health Interactions with the Nutrition and Microbiome Interphase <i>Tom Van de Wiele -- Department of Biotechnology</i>	6		A:1	180
2	D012490	Cancer Genetics <i>Kaat Durinck -- Department of Biomolecular Medicine</i>	5		A:2	150
3	I002622	Immunology <i>Daisy Vanrompay -- Department of Animal Sciences and Aquatic Ecology</i>	5		A:2	150
4	D012549	Stem Cell Biology and Reprogramming <i>BJORN HEINDRYCKX -- Department of Human Structure and Repair</i>	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 <i>Monica Höfte -- Department of Plants and Crops</i>	5			A:2	150
2	I002628 Molecular Plant Breeding <i>Steven Maenhout -- Department of Plants and Crops</i>	5			A:1	150
3	I002629 Plant Phenotyping Technologies <i>Kris Audenaert -- Department of Plants and Crops</i>	3			A:2	90
4	I002630 Functional Plant Biology <i>Danny Geelen -- Department of Plants and Crops</i>	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 <i>Wim Soetaert -- Department of Biotechnology</i>	5			A:2	150
2	I002632 Metabolic Engineering and Modelling of Micro-organisms <i>Marjan De Mey -- Department of Biotechnology</i>	4			A:2	120
3	I002633 Functional (Meta)genomics <i>Inge Van Bogaert -- Department of Biotechnology</i>	4			A:2	120
4	I002634 Synthetic Biology <i>Marjan De Mey -- Department of Biotechnology</i>	4			A:2	120
5	I002635 Enzyme Engineering and Modelling <i>Tom Desmet -- Department of Biotechnology</i>	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 module from the following list. Students from the Major Green Biotechnology subscribe to 18 credit units from 1 to 2 modules from the following list. 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 15 credit 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 <i>Willem Waegeman -- Department of Data Analysis and Mathematical Modelling</i>	4			A:1	120
2	I003054 Computer Vision for Life Sciences <i>Jan Verwaeren -- Department of Data Analysis and Mathematical Modelling</i>	5			A:2	150
3	I003021 Advanced Biosystems Modelling <i>Paul Van Liedekerke -- Department of Data Analysis and Mathematical Modelling</i>	5			A:2	150
4	I001280 Experimental Design <i>Stijn Luca -- Department of Data Analysis and Mathematical Modelling</i>	3			A:2	75
5	I003068 Management for Engineers <i>Jeroen Buyse -- Department of Agricultural Economics</i>	4			A:1	120
6	I002718 Economics and Management of Natural Resources <i>Stijn Speelman -- Department of Agricultural Economics</i>	4			A:2	120
7	I002750 Isotopes in Biosciences <i>Pascal Boeckx -- Department of Green Chemistry and Technology</i>	5			A:1	150

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

A minimum of 5 credit units is required from module 3.1.1 "Cross-Disciplinary Elective Set for Bioscience Engineers"

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 <i>Marjan De Mey -- Department of Biotechnology</i>	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 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 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