

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 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 Crielinge -- 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 | 4 | | 1 | A:1 | 120 |

| | | | | | | |
|---|---------|--|---|---|-----|-----|
| | | Indicative price: unknown | | | | |
| 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 | 4 | | | A:2 | 120 |

| | | | | | |
|---|---------------------------------------|--|---|--|---------|
| | Indicative price: € 5 | | | | |
| 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 Wim Van Criekinge -- 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 Dubrueel -- 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 [nl] Vrije Universiteit Brussel, Jo Van Ginderachter Indicative price: unknown | 5 | R | A:2 | 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 N. N. 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 Meerem -- 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 Frank Gielen -- 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 Meerem -- Department of Green Chemistry and Technology Indicative price: € 0 | 5 | a | A:J | 150 |
| 2 | I002638 | International Internship [en, nl] Paul Van der Meerem -- Department of Green Chemistry and Technology | 5 | a | A:J | 150 |

| | | | | | | |
|---|---------|--|----|---|-----|-----|
| | | Indicative price: € 0 | | | | |
| 3 | I002639 | Extended Internship [en, nl] Paul Van der Meerem -- Department of Green Chemistry and Technology Indicative price: € 0 | 10 | a | A:J | 300 |
| 4 | I002640 | Extended International Internship [en, nl] Paul Van der Meerem -- Department of Green Chemistry and Technology Indicative price: € 0 | 10 | a | A:J | 300 |
| 5 | I001944 | Bio-ethics Farah Focquaert -- 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 [en, nl] Mieke Uyttendaele -- Department of Food Technology, Safety and Health Indicative price: unknown | 3 | | A:J | 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 | | | 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.