GHENT UNIVERSITY

Study Programme

Academic year 2023-2024

Faculty of Sciences

Master of Science in Biochemistry and Biotechnology

Language of instruction: English

Programme version 7

1 General Courses — 30 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	C003525	Structure and Function of Biological Macromolecules *Savvas Savvides -- Department of Biochemistry, Physiology and Microbiology*	4		1	A:1	120
2	C003526	Structural Bioinformatics *Savvas Savvides -- Department of Biochemistry, Physiology and Microbiology*	3		1	A:1	80
3	C000500	Bioinformatics 2 *Yves Van de Peer -- Department of Plant Biotechnology and Bioinformatics*	3		1	A:2	80
4	C003527	Biostatistics *Caroline De Tender -- Department of Biochemistry, Physiology and Microbiology*	4		1	A:1	120
5	C003671	Biotechnology and Society *Nick Vangheluwe -- Department of Plant Biotechnology and Bioinformatics*	3		2	A:J	80
6	C003616	Systems Biology *Bert De Rybel -- Department of Plant Biotechnology and Bioinformatics*	4		1	A:2	120
7	C002381	Biotechnology: Biosafety, GMP and Intellectual Property *Koen Vanhalst -- Department of Molecular Biology*	3		2	A:1	80
8	C002865	Bioethics *Farah Focquaert -- Department of Philosophy and Moral Sciences*	3		2	A:1	80
9	C003106	Preparation of Master's Dissertation *Peter Vandenabeele -- Department of Molecular Biology*	3		2	B:1	80

2 Majors — 30 credits

Subscribe to 1 major from the following list. Subject to approval by the faculty.
Students with minor research choose another major than the courses of the focus.

2.1 Major Bioinformatics and Systems Biology — 30 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	C002732	Programming for Bioinformatics *Pieter De Bleser -- Department of Molecular Biology*	6		1	A:1	160
2	C002700	Comparative Genomics *Klaas Vandepoele -- Department of Plant Biotechnology and Bioinformatics*	3		1	A:2	80
3	C004456	Linux for Bioinformatics Environment *Herman De Beukelaer -- Department of Plant Biotechnology and Bioinformatics*	3		1	A:2	80
4	C003083	Bioinformatics Algorithms *Veerle Fack -- Department of Mathematics, Computer Science and Statistics*	3		1	A:2	80
5	C003084	Project Bioinformatics and Systems Biology *Herman De Beukelaer -- Department of Plant Biotechnology and Bioinformatics*	6		1	A:J	170
6	C003617	Modelling of Biological Systems *Steven Maere -- Department of Plant Biotechnology and Bioinformatics*	3		2	A:1	80
7	C002703	Data Mining *Yvan Saeys -- Department of Mathematics, Computer Science and Statistics*	3		2	A:1	80
8	C003085	Databases for Bioinformatics *Pieter De Bleser -- Department of Molecular Biology*	3		2	A:1	80

2.2 Major Biochemistry and Structural Biology — 30 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	C003086	Proteomics *Bart Devreese -- Department of Biochemistry, Physiology and Microbiology*	3		1	A:1	80
2	C003670	Biomolecular Production Methods *Leander Meuris -- Department of Biochemistry, Physiology and Microbiology*	4		1	A:1	110
3	C003088	Drug Design *Savvas Savvides -- Department of Biochemistry, Physiology and Microbiology*	3		1	A:2	80
4	C003615	Experimental Structural Biology *Savvas Savvides -- Department of Biochemistry, Physiology and Microbiology*	5		1	A:2	135
5	C003089	Project Biochemistry and Structural Biology *Elien De Bousser -- Department of Biochemistry, Physiology and Microbiology*	6		1	A:J	170
6	C002695	Bionanotechnology *Kevin Braeckmans -- Department of Pharmaceutics*	3		2	A:1	80
7	C002717	Metabolic Engineering *Alain Goossens -- Department of Plant Biotechnology and Bioinformatics*	3		2	A:1	80
8	C002713	Glycobiology *Loes van Schie -- Department of Biochemistry, Physiology and Microbiology*	3		2	A:1	80

2.3 Major Biomedical Biotechnology 30 credits

Subscribe to 30 credit units from the following list, with 6 credit units with reference a.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	C002725	Molecular Pathophysiology and Experimental Therapy *Charlotte Scott -- Department of Molecular Biology*	6		1	A:1	160
2	C002738	Transgenetics of Animal Model Organisms *Claude Libert -- Department of Molecular Biology*	6		1	A:2	160
3	C002708	Experimental Molecular Cell Biology *Rudi Beyaert -- Department of Molecular Biology*	3		1	A:2	80
4	C003090	Project Biomedical Biotechnology *Jens Staal -- Department of Molecular Biology*	6		1	A:J	170
5	C002716	Human Genetics and Genetic Diseases *Bruce Poppe -- Department of Biomolecular Medicine*	3		2	A:1	80
6	C002722	Molecular Cancer Biology *Geert Berx -- Department of Molecular Biology*	3	a	2	A:1	80
7	C002728	Neurobiology *Geert van Loo -- Department of Molecular Biology*	3	a	2	A:1	80
8	C002699	Cellular Stress, Cell Death and Senescence *Mathieu Bertrand -- Department of Molecular Biology*	3	a	2	A:1	80
9	C002720	Molecular and Experimental Immunology *Martin Guilliams -- Department of Molecular Biology*	3	a	2	A:1	80

2.4 Major Microbial Biotechnology 30 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	C002711	Food Microbiology and Safety *Kurt Houf -- Department of Veterinary and Biosciences*	3		1	A:1	80
2	C004007	Molecular Bacteria-Host Interactions *Petra Van Damme -- Department of Biochemistry, Physiology and Microbiology*	3		1	A:2	80
3	C002715	Host-Virus Interactions *Xavier Saelens -- Department of Biochemistry, Physiology and Microbiology*	3		1	A:1	80
4	C002719	Microbial Genomics *Aurélien Carlier -- Department of Biochemistry, Physiology and Microbiology*	3		1	A:2	80
5	C002724	Molecular Microbial Ecology *Marie Joossens -- Department of Biochemistry, Physiology and Microbiology*	3		1	A:2	80
6	C003092	Project Microbial Biotechnology *Lisa Slachmuylders -- Department of Biochemistry, Physiology and Microbiology*	6		1	A:J	170
7	C004394	Microbes in Biotechnology *Marie Joossens -- Department of Biochemistry, Physiology and Microbiology*	6		2	A:1	150
8	C002714	Host-Parasite Interactions *Dirk de Graaf -- Department of Biochemistry, Physiology and Microbiology*	3		2	A:1	80

2.5 Major Plant Biotechnology 30 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	C003095	Plant Environment Interactions *Dominique Van Der Straeten -- Department of Biology*	3		1	A:1	80
2	C003097	Plant Biotic Interactions *Sofie Goormachtig -- Department of Plant Biotechnology and Bioinformatics*	3		1	A:2	80
3	C003098	The Plant Cell *Lieven De Veylder -- Department of Plant Biotechnology and Bioinformatics*	3		1	A:2	80
4	C003099	Plant Growth and Development *Moritz Nowack -- Department of Plant Biotechnology and Bioinformatics*	3		1	A:2	80
5	C003100	Molecular Plant Breeding *Tom Ruttink -- Department of Plant Biotechnology and Bioinformatics*	3		2	A:1	80
6	C003101	Project Plant Biotechnology *Michiel Vandecasteele -- Department of Plant Biotechnology and Bioinformatics*	6		1	A:J	170
7	C003102	The Plant Factory *Frank Van Breusegem -- Department of Plant Biotechnology and Bioinformatics*	3		2	A:1	80
8	C003825	Functional Plant Genomics *Lieven De Veylder -- Department of Plant Biotechnology and Bioinformatics*	3		1	A:1	80

2.5.1 Elective Course List Plant Biotechnology 3 credits

Subscribe to 3 credit units from the following list.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	C003618	Advanced Plant Biotic Interactions *Bartel Vanholme -- Department of Plant Biotechnology and Bioinformatics*	3		2	A:1	80
2	C003163	Plant Yield *Hilde Nelissen -- Department of Plant Biotechnology and Bioinformatics*	3		2	A:1	80
3	C002717	Metabolic Engineering *Alain Goossens -- Department of Plant Biotechnology and Bioinformatics*	3		2	A:1	80
4	C004006	Advanced Plant Cell Biology and Signaling *Daniël Van Damme -- Department of Plant Biotechnology and Bioinformatics*	3		2	A:1	80

3 Elective Courses 30 credits

Subscribe to 1 minor from the following list. Subject to approval by the faculty.

3.1 Minor Research 30 credits

Subscribe to no less than 1 and no more than 2 modules from the following list. Subject to approval by the faculty.

3.1.1 Focus

Subscribe to no less than 21 and no more than 30 credit units from 1 focus from the following list.
Focus has to be different from the major.
Courses for which MT1 mentions '1' are mandatory and must be followed in the first master's year.

3.1.1.1 Focus Bioinformatics and System Biology

Subscribe to no less than 21 and no more than 30 credit units from the following list, distributed over the first standard learning path as follows: 21 credit units in year 1.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	C002732	Programming for Bioinformatics *Pieter De Bleser -- Department of Molecular Biology*	6		1	A:1	160
2	C002700	Comparative Genomics *Klaas Vandepoele -- Department of Plant Biotechnology and Bioinformatics*	3		1	A:2	80
3	C004456	Linux for Bioinformatics Environment *Herman De Beukelaer -- Department of Plant Biotechnology and Bioinformatics*	3		1	A:2	80
4	C003083	Bioinformatics Algorithms *Veerle Fack -- Department of Mathematics, Computer Science and Statistics*	3		1	A:2	80
5	C003084	Project Bioinformatics and Systems Biology *Herman De Beukelaer -- Department of Plant Biotechnology and Bioinformatics*	6		1	A:J	170
6	C003617	Modelling of Biological Systems *Steven Maere -- Department of Plant Biotechnology and Bioinformatics*	3		2	A:1	80
7	C002703	Data Mining *Yvan Saeys -- Department of Mathematics, Computer Science and Statistics*	3		2	A:1	80

8	C003085	Databases for Bioinformatics *Pieter De Bleser -- Department of Molecular Biology*	3		2	A:1	80

3.1.1.2 Focus Biochemistry and Structural Biology

Subscribe to no less than 21 and no more than 30 credit units from the following list, distributed over the first standard learning path as follows: 21 credit units in year 1.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	C003086	Proteomics *Bart Devreese -- Department of Biochemistry, Physiology and Microbiology*	3		1	A:1	80
2	C003670	Biomolecular Production Methods *Leander Meuris -- Department of Biochemistry, Physiology and Microbiology*	4		1	A:1	110
3	C003088	Drug Design *Savvas Savvides -- Department of Biochemistry, Physiology and Microbiology*	3		1	A:2	80
4	C003615	Experimental Structural Biology *Savvas Savvides -- Department of Biochemistry, Physiology and Microbiology*	5		1	A:2	135
5	C003089	Project Biochemistry and Structural Biology *Elien De Bousser -- Department of Biochemistry, Physiology and Microbiology*	6		1	A:J	170
6	C002695	Bionanotechnology *Kevin Braeckmans -- Department of Pharmaceutics*	3		2	A:1	80
7	C002717	Metabolic Engineering *Alain Goossens -- Department of Plant Biotechnology and Bioinformatics*	3		2	A:1	80
8	C002713	Glycobiology *Loes van Schie -- Department of Biochemistry, Physiology and Microbiology*	3		2	A:1	80

3.1.1.3 Focus Biomedical Biotechnology

Subscribe to no less than 21 and no more than 30 credit units from the following list, distributed over the first standard learning path as follows: 21 credit units in year 1.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	C002725	Molecular Pathophysiology and Experimental Therapy *Charlotte Scott -- Department of Molecular Biology*	6		1	A:1	160
2	C002738	Transgenetics of Animal Model Organisms *Claude Libert -- Department of Molecular Biology*	6		1	A:2	160
3	C002708	Experimental Molecular Cell Biology *Rudi Beyaert -- Department of Molecular Biology*	3		1	A:2	80
4	C003090	Project Biomedical Biotechnology *Jens Staal -- Department of Molecular Biology*	6		1	A:J	170
5	C002716	Human Genetics and Genetic Diseases *Bruce Poppe -- Department of Biomolecular Medicine*	3		2	A:1	80
6	C002722	Molecular Cancer Biology *Geert Berx -- Department of Molecular Biology*	3	a	2	A:1	80
7	C002728	Neurobiology *Geert van Loo -- Department of Molecular Biology*	3	a	2	A:1	80
8	C002699	Cellular Stress, Cell Death and Senescence *Mathieu Bertrand -- Department of Molecular Biology*	3	a	2	A:1	80
9	C002720	Molecular and Experimental Immunology *Martin Guilliams -- Department of Molecular Biology*	3	a	2	A:1	80

3.1.1.4 Focus Microbial Biotechnology

Subscribe to no less than 21 and no more than 30 credit units from the following list, distributed over the first standard learning path as follows: 21 credit units in year 1.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	C002711	Food Microbiology and Safety *Kurt Houf -- Department of Veterinary and Biosciences*	3		1	A:1	80
2	C004007	Molecular Bacteria-Host Interactions *Petra Van Damme -- Department of Biochemistry, Physiology and Microbiology*	3		1	A:2	80
3	C002715	Host-Virus Interactions *Xavier Saelens -- Department of Biochemistry, Physiology and Microbiology*	3		1	A:1	80
4	C002719	Microbial Genomics *Aurélien Carlier -- Department of Biochemistry, Physiology and Microbiology*	3		1	A:2	80
5	C002724	Molecular Microbial Ecology *Marie Joossens -- Department of Biochemistry, Physiology and Microbiology*	3		1	A:2	80

6	C003092	Project Microbial Biotechnology *Lisa Slachmuylders -- Department of Biochemistry, Physiology and Microbiology*	6	1	A:J	170
7	C004394	Microbes in Biotechnology *Marie Joossens -- Department of Biochemistry, Physiology and Microbiology*	6	2	A:1	150
8	C002714	Host-Parasite Interactions *Dirk de Graaf -- Department of Biochemistry, Physiology and Microbiology*	3	2	A:1	80

3.1.1.5 Focus Plant Biotechnology

Subscribe to no less than 21 and no more than 30 credit units from the following list, distributed over the first standard learning path as follows: 21 credit units in year 1.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	C003095	Plant Environment Interactions *Dominique Van Der Straeten -- Department of Biology*	3		1	A:1	80
2	C003097	Plant Biotic Interactions *Sofie Goormachtig -- Department of Plant Biotechnology and Bioinformatics*	3		1	A:2	80
3	C003098	The Plant Cell *Lieven De Veylder -- Department of Plant Biotechnology and Bioinformatics*	3		1	A:2	80
4	C003099	Plant Growth and Development *Moritz Nowack -- Department of Plant Biotechnology and Bioinformatics*	3		1	A:2	80
5	C003100	Molecular Plant Breeding *Tom Ruttink -- Department of Plant Biotechnology and Bioinformatics*	3		2	A:1	80
6	C003101	Project Plant Biotechnology *Michiel Vandecasteele -- Department of Plant Biotechnology and Bioinformatics*	6		1	A:J	170
7	C003102	The Plant Factory *Frank Van Breusegem -- Department of Plant Biotechnology and Bioinformatics*	3		2	A:1	80
8	C003825	Functional Plant Genomics *Lieven De Veylder -- Department of Plant Biotechnology and Bioinformatics*	3		1	A:1	80

3.1.2 Elective Courses

Subscribe to at most 9 credit units from no less than 1 and no more than 2 modules from the following list.

3.1.2.1 Elective Course List

Subscribe to no more than 9 credit units from the following list.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	C002681	Advanced Programming in Bioinformatics *Pieter De Bleser -- Department of Molecular Biology*	3		2	A:1	80
2	C002720	Molecular and Experimental Immunology *Martin Guilliams -- Department of Molecular Biology*	3		2	A:1	80
3	C002697	Biotechnological Techniques in Medical Diagnostics *Dieter Deforce -- Department of Pharmaceutics*	3		2	B:2	80
4	J000454	Cutting Edge Technologies for Drug Delivery - Nanomedicines *Stefaan De Smedt -- Department of Pharmaceutics*	3		2	A:2	90
5	C002699	Cellular Stress, Cell Death and Senescence *Mathieu Bertrand -- Department of Molecular Biology*	3		2	A:1	80
6	C003311	Phylogenetics *Olivier De Clerck -- Department of Biology*	4		2	A:1	120
7	C002717	Metabolic Engineering *Alain Goossens -- Department of Plant Biotechnology and Bioinformatics*	3		2	A:1	80
8	C002737	The Eukaryotic Cell Cycle *Lieven De Veylder -- Department of Plant Biotechnology and Bioinformatics*	3		2	A:1	80
9	C002706	Epigenetics *Wim Vanden Berghe -- Department of Molecular Biology*	3		2	A:1	80
10	C002718	Metabolomics [nl] *Kris Morreel -- Department of Plant Biotechnology and Bioinformatics*	3		2	A:1	80
11	C002727	Molecular Simulations of Biosystems *Toon Verstraelen -- Department of Physics and Astronomy*	3		2	A:1	80
12	C004455	Advanced Biomolecular 3D-structure Determination by X-ray Crystallography and Cryo-Electron Microscopy *Kenneth Verstraete -- Department of Biochemistry, Physiology and Microbiology*	3		2	A:1	80
13	C003695	Applied High-throughput Analysis *Tim De Meyer -- Department of Data Analysis and Mathematical Modelling*	6		2	A:1	180

14	C004008	Laboratory Animal Science *Katleen Hermans -- Department of Pathobiology, Pharmacology and Zoological Medicine*	6	2	A:1	180
15	C004009	History and Philosophy of Sciences [nl] *Maarten Van Dyck -- Department of Philosophy and Moral Sciences*	3	2	(A:1)[d]	90

3.1.2.2 Elective Courses UGent and other Universities

Subscribe to no more than 9 credit units from the study programmes of UGent including courses from the other majors or the Ghent University elective courses, or courses from other universities of the Flemish Community or (online) courses from Erasmus+ partner universities, distributed over the first standard learning path as follows: no more than 9 credit units in year 2.

3.2 Minor Interdisciplinary Combination 30 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	C003105	Project Interdisciplinary Combination *Michiel Vandecasteele -- Department of Plant Biotechnology and Bioinformatics*	6		1	A:J	170

3.2.1 Elective Courses UGent or other Universities 24 credits

Subscribe to 24 credit units from the study programmes of UGent (no more than 9 credits from the own study programme), courses from other universities of the Flemish Community, or with the permission of the Study Programme Committee, from non-Flemish universities within the ERASMUS+ programme.
The minor allow a focus on another discipline.
The courses must be included in a specific discipline, approved by the Study Programme Committee, and can not be a specialisation within the programme.

3.3 Minor Economics and Business Administration 30 credits

Subscribe to 30 credit units from no less than 1 and no more than 2 modules from the following list.

3.3.1 General Courses

Subscribe to no less than 24 and no more than 30 credit units from the following list, distributed over the first standard learning path as follows: no more than 24 credit units in year 1.
Dare to Venture can be chosen if you have already subscribed to Introduction to Entrepreneurship.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	F000758	Economics [nl] *Bruno Merlevede -- Department of Economics*	5			A:1	150
2	E076431	Introduction to Entrepreneurship *Petra Andries -- Department of Marketing, Innovation and Organisation*	3			A:1	90
3	E076460	Dare to Venture *Johan Verrue -- Department of Marketing, Innovation and Organisation*	4			A:2	120
4	F000845	Business Administration [nl] *Mirjam Knockaert -- Department of Marketing, Innovation and Organisation*	4			A:2	120
5	F000551	Business Skills *Mieke Audenaert -- Department of Marketing, Innovation and Organisation*	4			C:2	120
6	F000768	Marketing Management [nl] *Maggie Geuens -- Department of Marketing, Innovation and Organisation*	6			A:1	180
7	F000855	Organization Theory *Gosia Kozusznik -- Department of Marketing, Innovation and Organisation*	4			A:2	120
8	F000596	Business Cycles and Growth [nl] *Freddy Heylen -- Department of Economics*	6			A:1	180
9	F000446	Markets and Prices [nl] *Dirk Van de gaer -- Department of Economics*	6			A:1	180
10	F000093	Financial Markets and Institutions [nl] *Rudi Vander Vennet -- Department of Economics*	5			A:2	150
11	F000752	Environmental Economics and Policy [nl] *Brent Bleys -- Department of Economics*	4			B:2	120
12	F000859	Corporate Social Responsibility [nl] *Saskia Crucke -- Department of Marketing, Innovation and Organisation*	3			A:2	90

3.3.2 Elective Courses UGent or other Universities

Subscribe to no more than 6 credit units to be chosen from the study programmes of:
- UGent including the Ghent University elective courses,
- Other higher education of the Flemish Community,
- Erasmus+ partner universities including the ENLIGHT (online) elective courses.

4 Master's Dissertation 30 credits

Nr	Course		CRDT	Ref	MT1	Session	Study

1	C002310	Master's Dissertation *N. N.*	30	2	B:J	840	

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 2024-2025	f: annually, from 2025-2026	i: annually, from 2026-2027
b: tri-annually	d: bi-annually, from 2024-2025	g: bi-annually, from 2025-2026	j: bi-annually, from 2026-2027
	e: tri-annually, from 2024-2025	h: tri-annually, from 2025-2026	k: tri-annually, from 2026-2027