

Faculty of Sciences, Faculty of Engineering and Architecture, Faculty of Bioscience Engineering

Master of Science in Bioinformatics -- Systems Biology

Language of instruction: English

Programme version 8

1 General Courses 33 credits

1.1 Applied Bioinformatics Module 33 credits

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C003694 Statistical Genomics <i>Lieven Clement -- Department of Mathematics, Computer Science and Statistics</i>	6			A:1	180
2	C003695 Applied High-throughput Analysis <i>Tim De Meyer -- Department of Data Analysis and Mathematical Modelling</i>	6		1	A:1	180
3	C003696 Genome Biology <i>Klaas Vandepoele -- Department of Plant Biotechnology and Bioinformatics</i>	6		1	A:2	180
4	C004000 Integrative Biology <i>Kathleen Marchal -- Department of Plant Biotechnology and Bioinformatics</i>	3		1	A:2	80
5	C003698 Design Project <i>Jan Fostier -- Department of Information Technology</i>	9		1	A:J	270
6	C004122 Capita Selecta in Bioinformatics <i>Kathleen Marchal -- Department of Plant Biotechnology and Bioinformatics</i>	3			A:1	75

2 Courses Related to the Main Subject 81 credits

2.1 Systems Biology Module 30 credits

Subscribe to 18 credit units from no less than 1 and no more than 4 modules from the following list.
Subject to approval by the curriculum committee.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C003709 Evolutionary Biology <i>Yves Van de Peer -- Department of Plant Biotechnology and Bioinformatics</i>	3		1	A:2	80
2	C003527 Biostatistics <i>Kathleen Marchal -- Department of Plant Biotechnology and Bioinformatics</i>	3		1	B:1	80
3	C003617 Modelling of Biological Systems <i>Steven Maere -- Department of Plant Biotechnology and Bioinformatics</i>	3		2	A:1	80
4	C003086 Proteomics <i>Bart Devreese -- Department of Biochemistry, Physiology and Microbiology</i>	3		2	A:1	80

2.1.1 Microbial Module

Subscribe to no more than 15 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C002724 Molecular Microbial Ecology <i>Marie Joossens -- Department of Biochemistry, Physiology and Microbiology</i>	3			A:2	80
2	C002714 Host-Parasite Interactions <i>Dirk de Graaf -- Department of Biochemistry, Physiology and Microbiology</i>	3			A:1	80
3	C002719 Microbial Genomics <i>Aurélien Carlier -- Department of Biochemistry, Physiology and Microbiology</i>	3			A:2	80
4	C004394 Microbes in Biotechnology <i>Marie Joossens -- Department of Biochemistry, Physiology and Microbiology</i>	6			A:1	150

2.1.2 Biochemistry and Structural Biology Module

Subscribe to no more than 15 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C003525 Structure and Function of Biological Macromolecules <i>Savvas Savvides -- Department of Biochemistry, Physiology and Microbiology</i>	4			A:1	120
2	C003526 Structural Bioinformatics <i>Savvas Savvides -- Department of Biochemistry, Physiology and Microbiology</i>	3			A:1	80
3	C003088 Drug Design <i>Savvas Savvides -- Department of Biochemistry, Physiology and Microbiology</i>	3			A:2	80
4	C003615 Experimental Structural Biology <i>Savvas Savvides -- Department of Biochemistry, Physiology and Microbiology</i>	5			A:2	135

2.1.3 Biomedical Oriented Module

Subscribe to no more than 18 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C002716 Human Genetics and Genetic Diseases <i>Bruce Poppe -- Department of Biomolecular Medicine</i>	3			A:1	80
2	C002722 Molecular Cancer Biology <i>Geert Berx -- Department of Molecular Biology</i>	3			A:1	80
3	C002708 Experimental Molecular Cell Biology <i>Rudi Beyaert -- Department of Molecular Biology</i>	3			A:2	80
4	C002720 Molecular and Experimental Immunology <i>Martin Guillems -- Department of Molecular Biology</i>	3			A:1	80
5	C002738 Transgenetics of Animal Model Organisms <i>Claude Libert -- Department of Molecular Biology</i>	6			A:2	160
6	D012490 Cancer Genetics <i>Kaat Durinck -- Department of Biomolecular Medicine</i>	5			A:2	150
7	D012701 Advanced Human Genetics <i>Sofie Symoens -- Department of Biomolecular Medicine</i>	6				180
8	D000652 Developmental Genetics and Gene Regulation <i>Elfride De Baere -- Department of Biomolecular Medicine</i>	6				180
9	D012531 Molecular Immunology <i>Tom Taghon -- Department of Diagnostic Sciences</i>	5			A:2	150
10	C003379 Immunology [nl] <i>Martin Guillems -- Department of Molecular Biology</i>	4			A:2	109

2.1.4 Plant Biotechnology Module

Subscribe to no more than 20 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C003104 Plant Research Technologies <i>Hilde Nelissen -- Department of Plant Biotechnology and Bioinformatics</i>	3			A:1	75
2	C003825 Functional Plant Genomics <i>Klaas Vandepoele -- Department of Plant Biotechnology and Bioinformatics</i>	3			A:1	80
3	C003098 The Plant Cell <i>Daniël Van Damme -- Department of Plant Biotechnology and Bioinformatics</i>	3			A:2	80
4	C003099 Plant Growth and Development <i>Tom Beeckman -- Department of Plant Biotechnology and Bioinformatics</i>	3			A:2	80
5	C003329 Physiological Regulation in Plants <i>Dominique Van Der Straeten -- Department of Biology</i>	5			A:1	150
6	C003100 Molecular Plant Breeding <i>Tom Ruttink -- Department of Plant Biotechnology and Bioinformatics</i>	3			A:1	80

2.1.5 Population Genetics Module

Subscribe to no more than 19 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C003372 Genetics II [nl] <i>Wout Boerjan -- Department of Plant Biotechnology and Bioinformatics</i>	4			A:1	120
2	C003326 Conservation Genetics <i>Philippe Helsen -- Department of Biology</i>	5			A:2	150
3	C002241 Population Ecology [nl] <i>Luc Lens -- Department of Biology</i>	4			A:1	110

4	C003625	Population Processes [nl] <i>Luc Lens -- Department of Biology</i>	6		A:1	180
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2.1.6 Statistics Module

Subscribe to no more than 21 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C004079	Categorical Data Analysis <i>Beatrijs Moerkerke -- Department of Data-analysis</i>	6		A:1	180
2	C003398	Analysis of Clustered and Longitudinal Data <i>Stijn Vansteelandt -- Department of Mathematics, Computer Science and Statistics</i>	5		A:2	150
3	I001280	Experimental Design <i>Stijn Luca -- Department of Data Analysis and Mathematical Modelling</i>	3		A:2	75
4	C002884	Epidemiology and Clinical Trials <i>Herman Van Oyen -- Department of Public Health and Primary Care</i>	5		A:1	150
5	C004413	Causal Machine Learning <i>Stijn Vansteelandt -- Department of Mathematics, Computer Science and Statistics</i>	5		A:2	150

2.1.7 Informatics Module

Subscribe to no more than 18 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C003776	System Programming [nl] <i>Filip De Turck -- Department of Information Technology</i>	6		A:1	180
2	C003772	Object Oriented Programming [nl] <i>Kris Coolsaet -- Department of Mathematics, Computer Science and Statistics</i>	6		A:2	180
3	C003771	Databases [nl] <i>Guy De Tré -- Department of Telecommunications and Information Processing</i>	6		A:1	180

2.1.8 Individual Track

Subscribe to no more than 18 credit units from domain-specific or related courses, including courses from other specialisation tracks of the Master of Science in Bioinformatics (if the initial competences are met). Subject to approval by the curriculum committee.

2.2 Applied Mathematics and Informatics Module

21 credits

Nr	Course	CRDT	Ref	MT1	Session	Study
1	I002642	Biological Databases <i>Wim Van Crielinge -- Department of Data Analysis and Mathematical Modelling</i>	3	1	B:2	90
2	C002732	Programming for Bioinformatics <i>Pieter De Bleser -- Department of Molecular Biology</i>	6	1	A:1	160
3	C003701	Selected Topics in Mathematical Optimization <i>Paul Van Liedekerke -- Department of Data Analysis and Mathematical Modelling</i>	3		A:2	75
4	C003083	Bioinformatics Algorithms <i>Veerle Fack -- Department of Mathematics, Computer Science and Statistics</i>	3	1	A:2	80
5	I002091	Predictive Modelling <i>Willem Waegeman -- Department of Data Analysis and Mathematical Modelling</i>	6		A:1	150

2.3 Master's Dissertation

30 credits

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C003721	Master's Dissertation <i>N. N.</i>	30	2	A:J	900

3 Elective Courses

6 credits

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

3.1 Elective Course List

Subscribe to 6 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C004001	Internship <i>N. N.</i>	6		A:1	150

3.2 Elective Courses UGent

Subscribe to 6 credit units from the courses of Ghent University including the Intensive Programmes of the Faculty of Bioscience Engineering and the [Ghent University elective course list](#). Subject to approval by the curriculum committee.

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 2023-2024	f: annually, from 2024-2025	i: annually, from 2025-2026
b: tri-annually	d: bi-annually, from 2023-2024	g: bi-annually, from 2024-2025	j: bi-annually, from 2025-2026
	e: tri-annually, from 2023-2024	h: tri-annually, from 2024-2025	k: tri-annually, from 2025-2026