

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 11

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> Indicative price: € 0	6			A:1	180
2	C003695 Applied High-throughput Analysis <i>Tim De Meyer -- Department of Data Analysis and Mathematical Modelling</i> Indicative price: € 0	6		1	A:1	180
3	C003696 Genome Biology <i>Klaas Vandepoele -- Department of Plant Biotechnology and Bioinformatics</i> Indicative price: € 0	6		1	A:2	180
4	C004000 Integrative Biology <i>Kathleen Marchal -- Department of Plant Biotechnology and Bioinformatics</i> Indicative price: € 0	3		1	A:2	80
5	C003698 Design Project <i>Tim De Meyer -- Department of Data Analysis and Mathematical Modelling</i> Indicative price: € 0	9		1	A:J	270
6	C004122 Capita Selecta in Bioinformatics <i>Kathleen Marchal -- Department of Plant Biotechnology and Bioinformatics</i> Indicative price: € 0	3			A:1	75

2 Courses Related to the Main Subject 78 credits

2.1 Systems Biology Module 29 credits

Subscribe to no more than 17 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. Below is given a list of interesting courses organized per topic. Note the list is not redundant. If reorientation courses are required, they should also be accommodated here.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C003709 Evolutionary Biology <i>Quinten Bafort -- Department of Plant Biotechnology and Bioinformatics</i> Indicative price: € 0	3		1	A:2	80
2	C003527 Biostatistics <i>Kathleen Marchal -- Department of Plant Biotechnology and Bioinformatics</i> Indicative price: € 0	3		1	B:1	80
3	C003617 Modelling of Biological Systems <i>Steven Maere -- Department of Plant Biotechnology and Bioinformatics</i> Indicative price: € 0	3		2	A:1	80
4	C003526 Structural Bioinformatics <i>Savvas Savvides -- Department of Biochemistry, Physiology and Microbiology</i> Indicative price: € 0	3		2	A:1	80

2.1.1 Reorientation Courses

Subscribe to no more than 17 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C003713 Introduction to Bioinformatics <i>Kathleen Marchal -- Department of Plant Biotechnology and Bioinformatics</i> Indicative price: € 0	3			A:2	90
2	C003080 Programming <i>Peter Dawyndt -- Department of Mathematics, Computer Science and Statistics</i> Indicative price: € 0	5	UKV		C:1	150
3	C003712 Cellular and Molecular Biology <i>Moritz Nowack -- Department of Plant Biotechnology and Bioinformatics</i> Indicative price: € 75	6			A:1	180
4	I002615 Protein Chemistry <i>Els Van Damme -- Department of Biotechnology</i> Indicative price: € 0	4			A:1	120
5	I002611 Plant Biotechnology <i>Laurens Pauwels -- Department of Biotechnology</i> Indicative price: € 3	5			A:2	150
6	I002621 Gene Regulation and Epigenetics <i>Tina Kyndt -- Department of Biotechnology</i> Indicative price: € 0	3			A:2	90
7	D012701 Advanced Human Genetics <i>Sofie Symoens -- Department of Biomolecular Medicine</i> Indicative price: unknown	6			A:2	180
8	C003098 The Plant Cell <i>Lieven De Veylder -- Department of Plant Biotechnology and Bioinformatics</i> Indicative price: € 0	3			A:2	80
9	C003525 Structure and Function of Biological Macromolecules <i>Savvas Savvides -- Department of Biochemistry, Physiology and Microbiology</i> Indicative price: € 0	4			A:1	120
10	C004456 Linux for Bioinformatics Environment <i>Svitlana Lukicheva -- Department of Plant Biotechnology and Bioinformatics</i> Indicative price: € 0	3			A:1	80
11	C003778 Statistics and Probability <i>Oliver Dukes -- Department of Mathematics, Computer Science and Statistics</i> Indicative price: € 0	6			A:1	180
12	I002756 Applied Statistics <i>Louis Coussement -- Department of Data Analysis and Mathematical Modelling</i> Indicative price: unknown	5			A:1	150
13	C004096 Molecular Cell Biology <i>Roosmarijn Vandenbroucke -- Department of Molecular Biology</i> Indicative price: € 0	5			A:1	130

2.1.2 Biomedical & Plant Biotechnology

Subscribe to no more than 17 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	D012531 Molecular Immunology <i>Tom Taghon -- Department of Diagnostic Sciences</i> Indicative price: € 0	5			A:2	150
2	D012490 Cancer Genetics <i>Kaat Durinck -- Department of Biomolecular Medicine</i> Indicative price: € 0	5			A:2	150
3	C002722 Molecular Cancer Biology <i>Geert Berx -- Department of Molecular Biology</i> Indicative price: € 0	3			A:1	80
4	C003379 Immunology [nl] <i>Martin Guillems -- Department of Molecular Biology</i> Indicative price: € 0	4			A:2	109
5	C003825 Functional Plant Genomics <i>Tom Jacobs -- Department of Plant Biotechnology and Bioinformatics</i>	3			A:1	80

[Indicative price: € 0](#)

6	C003100	Molecular Plant Breeding <i>Tom Ruttink -- Department of Plant Biotechnology and Bioinformatics</i> Indicative price: € 97	3		A:1	80
7	C003086	Proteomics <i>Bart Devreese -- Department of Biochemistry, Physiology and Microbiology</i> Indicative price: € 0	3		A:1	80

2.1.3 Computational Biology

[Subscribe to no more than 17 credit units from the following list.](#)

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C004655 High-dimensional Biological Data Modeling <i>Vanessa Vermeirssen -- Department of Molecular Biology</i> Indicative price: € 0	3			A:2	90
2	C002719 Microbial Genomics <i>Caroline De Tender -- Department of Biochemistry, Physiology and Microbiology</i> Indicative price: € 0	3			A:2	80
3	C004528 Ecological Modelling <i>Dries Bonte -- Department of Biology</i> Indicative price: unknown	4			A:1	120
4	C002241 Population Ecology [nl] <i>Luc Lens -- Department of Biology</i> Indicative price: € 0	4			A:1	110
5	C003625 Population Processes [nl] <i>Luc Lens -- Department of Biology</i> Indicative price: € 0	6			A:1	180
6	I003054 Computer Vision for Life Sciences <i>Jan Verwaeren -- Department of Data Analysis and Mathematical Modelling</i> Indicative price: € 0	5			A:2	150
7	C003088 Drug Design <i>Savvas Savvides -- Department of Biochemistry, Physiology and Microbiology</i> Indicative price: € 10	3			A:2	80
8	C003615 Experimental Structural Biology <i>Savvas Savvides -- Department of Biochemistry, Physiology and Microbiology</i> Indicative price: € 0	5			A:2	135
9	C004662 Foundations and Applications of Molecular Dynamics <i>Toon Verstraeten -- Department of Physics and Astronomy</i> Indicative price: € 0	3			A:1	80

2.1.4 Statistics

[Subscribe to no more than 16 credit units from the following list.](#)

Nr	Course	CRDT	Ref	MT1	Session	Study
1	I001280 Experimental Design <i>Stijn Luca -- Department of Data Analysis and Mathematical Modelling</i> Indicative price: € 15	3			A:2	75
2	C004079 Categorical Data Analysis <i>Beatrijs Moerkerke -- Department of Data-analysis</i> Indicative price: € 15	6			A:1	180
3	C003398 Analysis of Clustered and Longitudinal Data <i>Johan Steen -- Department of Mathematics, Computer Science and Statistics</i> Indicative price: € 130	5			A:2	150
4	C004413 Causal Machine Learning <i>Stijn Vansteelandt -- Department of Mathematics, Computer Science and Statistics</i> Indicative price: € 5	5			A:2	150

2.1.5 Programming

[Subscribe to no more than 6 credit units from the following list.](#)

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C002178 Scripting Languages [nl] <i>Peter Dawyndt -- Department of Mathematics, Computer Science and Statistics</i> Indicative price: € 0	6			A:2	180

2.1.6 Entrepreneurship and Regulation

Subscribe to no more than 6 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E027880 Introduction to Medical Device Legislation <i>Patrick Segers -- Department of Electronics and Information Systems</i> Indicative price: unknown	3			A:2	90
2	E076471 Dare to Start <i>Wouter Haerick -- Department of Information Technology</i> Indicative price: unknown	3			A:2	90

2.1.7 Individual Track

Subscribe to no more than 17 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

19 credits

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C004611 Biological Databases <i>Wim Van Crielinge -- Department of Data Analysis and Mathematical Modelling</i> Indicative price: € 0	3		1	A:2	90
2	C003701 Selected Topics in Mathematical Optimization <i>Paul Van Liedekerke -- Department of Data Analysis and Mathematical Modelling</i> Indicative price: € 0	3			A:1	75
3	C003083 Bioinformatics Algorithms <i>Veerle Fack -- Department of Mathematics, Computer Science and Statistics</i> Indicative price: € 0	3		1	A:2	80
4	I003053 Machine Learning for Life Sciences <i>Willem Waegeman -- Department of Data Analysis and Mathematical Modelling</i> Indicative price: € 0	4			A:1	120
5	C004612 Advanced AI for Bioinformatics <i>Willem Waegeman -- Department of Data Analysis and Mathematical Modelling</i> Indicative price: € 0	6			A:1	180

2.3 Master's Dissertation

30 credits

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C003721 Master's Dissertation Indicative price: unknown	30		2	A:J	900

3 Elective Courses

9 credits

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

3.1 Elective Course List

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

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C004001 Internship Indicative price: unknown	6			A:1	150
2	A003107 Advanced Academic English <i>Geert Jacobs -- Department of Linguistics</i> Indicative price: € 0	3	UKV		A:1, B:2	90

3.2 Elective Courses UGent

Subscribe to no more than 9 credit units from the courses of Ghent University including the Intensive Programmes of the Faculty of Bioscience Engineering and the [Ghent University Elective Courses](#). Subject to approval by the curriculum committee.

Programme related study costs

Type: Laptop

Name: laptop

Indicative price: € 1,000

Optional: No

Fulltime standard learning track year: 1

Available through Student Association : No

Usability and Lifetime within the Course Unit : intensive

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 2027-2028	f: annually, from 2028-2029	i: annually, from 2029-2030
b: tri-annually	d: bi-annually, from 2027-2028	g: bi-annually, from 2028-2029	j: bi-annually, from 2029-2030
	e: tri-annually, from 2027-2028	h: tri-annually, from 2028-2029	k: tri-annually, from 2029-2030

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.