

Faculty of Sciences

Master of Science in Mathematics

Language of instruction: Dutch

Programme version 10

## 1 General Courses 24 credits

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C004546 Mathematics and Society Hans Vernaeve -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6		1	A:J	180
2	C003758 Machine Learning [en] Yvan Saeys -- Department of Applied Mathematics and Computer Science	6		1	A:1	180
3	C000217 Coding Theory Leo Storme -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6		1	A:2	165
4	C003684 Internship Marnix Van Daele -- Department of Applied Mathematics and Computer Science	6		2	A:J	180

## 2 Majors 24 credits

Subscribe to 1 major from the following list.

### 2.1 Major Pure Mathematics 24 credits

Subscribe to 24 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C003009 Galois Geometry Leo Storme -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6		1	A:1	165
2	C004547 Logic II [en] Andreas Weiermann -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6		1	A:2	165
3	C003012 Banach Spaces and Banach Algebras Hans Vernaeve -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6		1	A:1	165
4	C003824 Analytic Number Theory [en, nl] Jasson Vindas Diaz -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6		1	A:2	165
5	C003013 Linear Algebraic Groups [en] Tom De Medts -- Department of Mathematics: Algebra and Geometry	6		1	A:2	165

### 2.2 Major Applied Mathematics 24 credits

Subscribe to 24 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C004370 Mathematical Modelling of Fuzziness Chris Cornelis -- Department of Applied Mathematics and Computer Science	6		1	A:1	165
2	C004011 Advanced Numerical Methods Marnix Van Daele -- Department of Applied Mathematics and Computer Science	6		1	A:2	180
3	C000242 Financial Mathematics: Discrete Stochastic Models David Vyncke -- Department of Applied Mathematics and Computer Science	6		1	A:1	165
4	C002678 Statistical Inference [en] Oliver Dukes -- Department of Applied Mathematics and Computer Science	6		1	A:2	165
5	C003349 Discrete Algorithms Veerle Fack -- Department of Applied Mathematics and Computer Science	6		1	A:2	165

## 3 Elective Courses 42 credits

Subscribe to 42 credit units from no less than 1 and no more than 9 modules from the following list. Subject to approval by the faculty.

### 3.1 Mathematical depth

Subscribe to no more than 30 credit units from the following list.

Subscribe to at most 1 modules from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C000145 Algorithmic Graph Theory Gunnar Brinkmann -- Department of Applied Mathematics and Computer Science	6			A:2	165
2	C001026 Computer Algebra Andreas Weiermann -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6			A:2	165
3	C000802 Partial Differential Equations [en] Michael Ruzhansky -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6			A:1	165
4	C004109 Functional Analysis [en] Jasson Vindas Diaz -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6			A:1 <sup>a</sup>	180
5	C002677 Proof Theory Andreas Weiermann -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6			A:1 <sup>a</sup>	165
6	C002337 Finite Geometry [en] Bart De Bruyn -- Department of Mathematics: Algebra and Geometry	6			(A:2) <sup>d</sup>	165
7	C004548 Incidence Geometry Koen Thas -- Department of Mathematics: Algebra and Geometry	6			(A:1) <sup>d</sup>	180
8	C004549 Advanced Topics in Group Theory [en] Tom De Medts -- Department of Mathematics: Algebra and Geometry	6			(A:2) <sup>d</sup>	180
9	C004550 Measure Theory [en, nl] Andreas Weiermann -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6			(A:1) <sup>d</sup>	180
10	C004084 History and Philosophy of Sciences: Mathematics Maarten Van Dyck -- Department of Philosophy and Moral Sciences	6			A:1 <sup>a</sup>	165
11	E011320 Queueing Theory [en] Joris Walraevens -- Department of Telecommunications and Information Processing	6			A:1	180
12	C004551 Academic Internship [nl, en] Jasson Vindas Diaz -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6			A:J	180

### 3.1.1 Electives major

Subscribe to no more than 30 credit units from other major courses.

## 3.2 Computer Science

Subscribe to no more than 24 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C003775 Functional Programming Christophe Scholliers -- Department of Applied Mathematics and Computer Science	6			A:1	180
2	C003782 Algorithms and Datastructures 3 Gunnar Brinkmann -- Department of Applied Mathematics and Computer Science	6			A:1	180
3	C003785 Automata, Computability and Complexity Leo Storme -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6			A:2	180
4	C003241 Fundaments of Programming Languages Christophe Scholliers -- Department of Applied Mathematics and Computer Science	6			A:1	165

## 3.3 Data Science

Subscribe to no more than 24 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C003549 Analysis of High Dimensional Data [en] Lieven Clement -- Department of Applied Mathematics and Computer Science	5			A:1	150
2	C004413 Causal Machine Learning [en] Stijn Vansteelandt -- Department of Applied Mathematics and Computer Science	5			A:2	150
3	C004552 Soft Computing Chris Cornelis -- Department of Applied Mathematics and Computer Science	6			A:2 <sup>a</sup>	165
4	C004041 Data Visualization Bart Mesuere -- Department of Applied Mathematics and Computer Science	3			A:2	90
5	C002950 Survival Analysis [en] Els Goetghebeur -- Department of Applied Mathematics and Computer Science	5			A:2	150

## 3.4 Physics

Subscribe to no more than 30 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
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1	C004220	Statistical Physics Jan Ryckebusch -- Department of Physics and Astronomy	6			A:1	180
2	C004451	General Relativity [en] Archisman Ghosh -- Department of Physics and Astronomy	6			A:1	180
3	C001427	Introduction to the Dynamics of Atmospheres Piet Termonia -- Department of Physics and Astronomy	6			A:1	180
4	C004506	Quantum Field Theory [en] Thomas Mertens -- Department of Physics and Astronomy	6			A:1	180
5	C003668	Quantum Computing [en] Frank Verstraete -- Department of Physics and Astronomy	6			A:2	180
6	C004222	Atomic and Molecular Physics Jonas Joos -- Department of Solid State Sciences	5			A:2	150

### 3.5 Financial Mathematics and Economics

[Subscribe to no more than 26 credit units from the following list.](#)

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C001814	Financial Mathematics: Continuous Stochastic Models Michèle Vanmaele -- Department of Applied Mathematics and Computer Science	6			165
2	F000683	Investment Analysis [en] Michael Frömmel -- Department of Economics	6		A:1	180
3	F000944	Data Science for Finance and Insurance [en] Kris Boudt -- Department of Economics	4		A:1	120
4	F000723	Financial Econometrics [en] Gerdie Everaert -- Department of Economics	4		A:1	120
5	F000628	Microeconomics: Decision Theory Dirk Van de gaer -- Department of Economics	6		A:1	180

### 3.6 Biosciences

[Subscribe to no more than 15 credit units from the following list.](#)

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C003711	Computational Challenges in Bioinformatics [en] Peter Dawyndt -- Department of Applied Mathematics and Computer Science	6		A:2	180
2	C003401	Statistical Genomics [en] Lieven Clement -- Department of Applied Mathematics and Computer Science	5		A:1	150
3	I002445	Modelling and Simulation of Biosystems Michiel Stock -- Department of Data Analysis and Mathematical Modelling	4		A:2	120

### 3.7 Entrepreneurship

[Subscribe to no more than 14 credit units from the following list.](#)

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E076431	Introduction to Entrepreneurship [en] Petra Andries -- Department of Marketing, Innovation and Organisation	3		A:1	90
2	E076460	Dare to Venture [en] Johan Verrue -- Department of Marketing, Innovation and Organisation	4		A:2	120
3	F000551	Business Skills [en] Mieke Audenaert -- Department of Marketing, Innovation and Organisation	4		C:2	120
4	A005646	Introduction to Corporate Law Diederik Bruloot -- Department of Interdisciplinary Study of Law, Private Law and Business Law	3		A:1	90

### 3.8 Education

[Subscribe to no more than 18 credit units from the following list.](#)

Nr	Course	CRDT	Ref	MT1	Session	Study
1	H002197	The Teacher within School and Society Melissa Tuytens -- Department of Educational Studies	4		A:1	120
2	H002196	Classroom Management and Reflection Tijs Rotsaert -- Department of Educational Studies	4		A:2	120
3	H002198	Psychology of Adolescence Wim Beyers -- Department of Developmental, Personality and Social Psychology	4		A:1	120
4	H002226	Teaching Methodology: Mathematics I Hendrik Van Maldeghem -- Department of Mathematics: Algebra and Geometry	6		A:J	180

### 3.9 Elective Courses UGent and other Universities

Subscribe to no more than 12 credit units from the Bachelor and Master study programmes of UGent including the [Ghent University elective courses](#) or, from other universities of the Flemish and French Community or, [Erasmus+ partner universities](#) including the [ENLIGHT](#) (online) elective courses. Subject to approval by the faculty.

## 4 Master's Dissertation

30 credits

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C002308 Master's Dissertation N. N.	30		2	A:J	825

#### 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