Study Programme

Academic year 2024-2025

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

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

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

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.

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

3.1.1 Electives major

3.2 Computer Science

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

3.3 Data Science

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

3.4 Physics

Nr	Course		CRDT	Ref	MT1	Session	Study
1	C004220	Statistical Physics	6			A:1	180
		Jan Ryckebusch -- Department of Physics and Astronomy					

Nr	Course		CRDT	Ref	MT1	Session	Study
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 Melissa Tuytens -- 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.

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

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 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