GHENT UNIVERSITY

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 *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 Applied Mathematics and Computer Science*	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 Deepening

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[a]	180
5	C002677	Proof Theory *Andreas Weiermann -- Department of Mathematics: Analysis, Logic and Discrete Mathematics*	6			A:1[a]	165
6	C002337	Finite Geometry [en] *Bart De Bruyn -- Department of Applied Mathematics and Computer Science*	6			(A:2)[d]	165
7	C004548	Incidence Geometry *Koen Thas -- Department of Mathematics: Algebra and Geometry*	6			(A:1)[d]	180
8	C004549	Advanced Topics in Group Theory [en] *Tom De Medts -- Department of Applied Mathematics and Computer Science*	6			(A:2)[d]	180
9	C004550	Measure Theory [en, nl] *Andreas Weiermann -- Department of Mathematics: Analysis, Logic and Discrete Mathematics*	6			(A:1)[d]	180
10	C004084	History and Philosophy of Sciences: Mathematics *Maarten Van Dyck -- Department of Philosophy and Moral Sciences*	6			A:1[a]	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[a]	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

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 Applied Mathematics and Computer Science*	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 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