

## 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
Su	bscribe to 1 n	najor from the following list.				
2.	1 Major F	Pure Mathematics			24	credits
Su	bscribe to 24	credit units from the following list.	CODT	Dof MT4	Cossion	Ctudy
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 A	applied Mathematics			24	credits
Su	bscribe to 24	credit units from the following list.	000T			
Nr 1	Course C004370	Mathematical Modelling of Fuzziness Chris Cornelis Department of Applied Mathematics and Computer Science	CRDT 6	Ref M11 1	A:1	Study 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
<u>م</u>	Elective	Courses			12	orodite

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

Sul Sul	bscribe to no bscribe to at	more than 30 credit units from the following list. 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:1ª	180
5	C002677	Proof Theory Andreas Weiermann Department of Mathematics: Analysis, Logic and Discrete Mathematics	6			A:1ª	165
6	C002337	Finite Geometry [en] Bart De Bruyn Department of Applied Mathematics and Computer Science	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 Applied Mathematics and Computer Science	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	1.1 Electiv	ves major					
Sul	bscribe to no	more than 30 credit units from other major courses.					
3.2	2 Compu	iter Science					
Sul Nr	b <mark>scribe to no</mark> Course_	more than 24 credit units from the following list.	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:2ª	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	4 Physics	3					

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

25-04-2025 21:06

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 Financ	ial Mathematics and Economics					
Su	bscribe to no	more than 26 credit units from the following list.	0005	5 (		<b>•</b> •	
1 1	Course C001814	Financial Mathematics: Continuous Stochastic Models Michèle Vanmaele Department of Applied Mathematics and Computer Science	6	Ker	MIT1	Session	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 Bioscie	ences					
Su Nr	<mark>bscribe to nc</mark> Course	more than 15 credit units from the following list.	CRDT	Ref	MT1	Session	Studv
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	1002445	Modelling and Simulation of Biosystems Michiel Stock Department of Data Analysis and Mathematical Modelling	4			A:2	120
3.	7 Entrep	reneurship					
Su	bscribe to no	more than 14 credit units from the following list.	CRDT	Ref	MT1	Session	Study
1	E076431	Introduction to Entrepreneurship [en] Petra Andries Department of Marketing, Innovation and Organisation	3	Rei		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 Educat	ion					
Su	bscribe to no	more than 18 credit units from the following list.	ODDT	Def	NATA	0	Otender
1 1	H002197	The Teacher within School and Society Melissa Tuytens Department of Educational Studies	4	Ret	IVI I 1	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 <u>Ghent University</u> <u>elective courses</u> or, from other universities of the Flemish and French Community or, <u>Erasmus+ partner universities</u> including the <u>ENLIGHT</u> (online) elective courses. Subject to approval by the faculty.

4 Master's Dissertation			30	credits
Nr Course	CRDT R	ef MT1	Session	Study
1 C002308 Master's Dissertation	30	2	A:J	825
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#### 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:

#### 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
b: tri-annually	d: bi-annually, from 2025-2026
	e: tri-annually, from 2025-2026

f: annually, from 2026-2027 g: bi-annually, from 2026-2027 h: tri-annually, from 2026-2027 i: annually, from 2027-2028 j: bi-annually, from 2027-2028 k: tri-annually, from 2027-2028