

Faculty of Sciences

Master of Science in Mathematics

Language of instruction: Dutch

Programme version 9

1 Minors

30 credits

Subscribe to 1 minor from the following list. Subject to approval by the faculty.

1.1 Minor Research

30 credits

Subscribe to 12 credit units from the following list, with

- 6 credit units from the courses with reference a,
- 6 credit units from the courses with reference b.

Subscribe to no less than 1 and no more than 2 modules from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C003683 Seminar Hendrik Van Maldeghem -- Department of Mathematics: Algebra and Geometry	6	a		A:J	165
2	C003684 Internship Marnix Van Daele -- Department of Applied Mathematics and Computer Science	6	a		A:J	180
3	C003685 Literature Study Hans Vernaeye -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6	b		A:J	165

1.1.1 Advanced Research Courses

Subscribe to no less than 6 and no more than 18 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C004119 Capita Selecta in Analysis	6				180
2	C003017 Capita Selecta in Algebra [en]	6			(A:2) ^d	165
3	C004399 Capita Selecta in Incidence Geometry [en, nl] Koen Thas -- Department of Mathematics: Algebra and Geometry	6			(A:1) ^d	180
4	C004400 Capita Selecta in Galois Geometry [en] Leo Storme -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6			A:2 ^a	180
5	C003687 Capita Selecta in Logic	6				165
6	C003688 Capita Selecta in Statistics	6				165
7	C003689 Capita Selecta in Numerical Mathematics	6				165
8	C000145 Algorithmic Graph Theory Gunnar Brinkmann -- Department of Applied Mathematics and Computer Science	6			A:2	165
9	C002329 Astrophysical Simulations Maarten Baes -- Department of Physics and Astronomy	6			A:1	180
10	C003690 Quantum Black Holes and Holography [en, nl] Michal Heller -- Department of Physics and Astronomy	6			(A:2) ^d	180

1.1.2 Elective Courses

Subscribe to no more than 12 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C002180 Polar Spaces Hendrik Van Maldeghem -- Department of Mathematics: Algebra and Geometry	6			A:2	165
2	C003009 Galois Geometry Leo Storme -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6			A:1	165
3	C002677 Proof Theory Andreas Weiermann -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6			A:1 ^a	165
4	C002999 Clifford Analysis	6				165
5	C001998 Infinitesimal Analysis	6				165

6	C000217	Coding Theory Leo Storme -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6	A:2	165
7	C001026	Computer Algebra Andreas Weiermann -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6	A:2	165
8	C004109	Functional Analysis [en] Jasson Vindas Diaz -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6	A:1 ^a	180
9	C002337	Finite Geometry [en] Bart De Bruyn -- Department of Mathematics: Algebra and Geometry	6	(A:2) ^d	165
10	C002676	Continuum Mechanics Geert Verdoolaege -- Department of Applied Physics	6		180
11	C004451	General Relativity [en] Archisman Ghosh -- Department of Physics and Astronomy	6	A:1	180
12	C002512	Cosmology and Galaxy Formation Sven De Rijcke -- Department of Physics and Astronomy	6	A:1	180
13	C001427	Introduction to the Dynamics of Atmospheres Piet Termonia -- Department of Physics and Astronomy	6	A:1	180
14	C001747	Quantum Field Theory [en, nl] Thomas Mertens -- Department of Physics and Astronomy	6	A:1	180
15	C000819	Quantum Electrodynamics Dimitri Van Neck -- Department of Physics and Astronomy	6	(B:2) ^d	180
16	C004220	Statistical Physics Jan Ryckebusch -- Department of Physics and Astronomy	6	A:1	180
17	C000627	Computability and Complexity [en] Giovanni Solda -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6	A:1	165
18	C004370	Mathematical Modelling of Fuzziness Chris Cornelis -- Department of Applied Mathematics and Computer Science	6	A:1	165
19	C001719	Capita Selecta in Soft Computing Chris Cornelis -- Department of Applied Mathematics and Computer Science	6	A:2 ^a	165
20	C004011	Advanced Numerical Methods Marnix Van Daele -- Department of Applied Mathematics and Computer Science	6	A:2	180
21	C001497	Approximation Methods for Boundary Value Problems N. N.	6		165
22	C001307	Applied Functional Analysis	6		165
23	C001700	Representation Theory and Applications	6		165
24	C000242	Financial Mathematics: Discrete Stochastic Models David Vyncke -- Department of Applied Mathematics and Computer Science	6	A:1	165
25	C001814	Financial Mathematics: Continuous Stochastic Models Michèle Vanmaele -- Department of Applied Mathematics and Computer Science	6		165
26	C002678	Statistical Inference [en] Oliver Dukes -- Department of Applied Mathematics and Computer Science	6	A:2	165
27	C002679	Survival Analysis [en] Els Goetghebeur -- Department of Applied Mathematics and Computer Science	6	A:2	165
28	C004413	Causal Machine Learning Stijn Vansteelandt -- Department of Applied Mathematics and Computer Science	6		180
29	C004084	History and Philosophy of Sciences: Mathematics Maarten Van Dyck -- Department of Philosophy and Moral Sciences	6	A:1 ^a	165
30	C004214	Galaxies Ilse De Looze -- Department of Physics and Astronomy	6	A:2	180
31	C000802	Partial Differential Equations [en] Michael Ruzhansky -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6	A:1	165
32	C003824	Analytic Number Theory [en, nl] Jasson Vindas Diaz -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6	A:2	165
33	C003011	Mathematical Logic II [en, nl] Andreas Weiermann -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6	A:2	165
34	C003012	Banach Spaces and Banach Algebras Hans Vernaevae -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6	A:1	165
35	C003013	Linear Algebraic Groups [en] Tom De Medts -- Department of Mathematics: Algebra and Geometry	6	A:2	165

36	C004221	Structure of the Universe Arjen van der Wel -- Department of Physics and Astronomy	6			A:1	180
37	E011320	Queueing Theory [en] Joris Walraevens -- Department of Telecommunications and Information Processing	6			A:1	180
38	C003668	Quantum Computing [en] Frank Verstraete -- Department of Physics and Astronomy	6			A:2	180
39	C003789	Computational Biology Peter Dawyndt -- Department of Applied Mathematics and Computer Science	6			A:2	180
40	C004071	Strongly Correlated Quantum Systems [en] Jutho Haegeman -- Department of Physics and Astronomy	6			A:2	180
41	C003349	Discrete Algorithms Veerle Fack -- Department of Applied Mathematics and Computer Science	6			A:2	165
42	C003758	Machine Learning [en] Yvan Saeys -- Department of Applied Mathematics and Computer Science	6			A:1	180
43	C003785	Automata, Computability and Complexity Leo Storme -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6			A:2	180
44	C004421	Relativistic Hydrodynamics - from Quantum Field Theory to Black Holes [en] Michal Heller -- Department of Physics and Astronomy	6			A:1 ^a	180
45	C004222	Atomic and Molecular Physics Jonas Joos -- Department of Solid State Sciences	6			B:2	180
46	C004221	Structure of the Universe Arjen van der Wel -- Department of Physics and Astronomy	6			A:1	180

1.2 Minor Economics and Insurance

30 credits

[Subscribe to no less than 28 and no more than 32 credit units from the following list.](#)

Nr	Course	CRDT	Ref	MT1	Session	Study
1	F000446	Markets and Prices	6			180
2	F000758	Economics Bruno Merlevede -- Department of Economics	5		A:1	150
3	F000653	Insurances Thomas Verheyen -- Department of Interdisciplinary Study of Law, Private Law and Business Law	6		A:1	180
4	C000291	Commercial Law Diederik Bruloot -- Department of Interdisciplinary Study of Law, Private Law and Business Law	3		A:1	90
5	F000852	Taxation Annelies Roggeman -- Department of Accounting, Corporate Finance and Taxation	5		A:2	150
6	F000683	Investment Analysis [en] Michael Frömmel -- Department of Economics	6		A:1	180
7	F000093	Financial Markets and Institutions	5			150
8	F000083	Macroeconomics Freddy Heylen -- Department of Economics	6		A:1	180
9	F000717	Financial Risk Management [en] Frank De Jonghe -- Department of Economics	6		A:1	180
10	E076431	Introduction to Entrepreneurship [en] Petra Andries -- Department of Marketing, Innovation and Organisation	3		A:1	90
11	E076460	Dare to Venture [en] Johan Verrue -- Department of Marketing, Innovation and Organisation	4		A:2	120
12	F000551	Business Skills [en] Mieke Audenaert -- Department of Marketing, Innovation and Organisation	4		C:2	120
13	F000804	Financial Mathematics Arnaud Devos -- Department of Telecommunications and Information Processing	6		A:2	180

2 Majors

30 credits

[Subscribe to 30 credit units from 1 major from the following list. Subject to approval by the faculty.](#)

2.1 Major Pure Mathematics

30 credits

[Subscribe to 30 credit units from the following list.](#)

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C002180	Polar Spaces Hendrik Van Maldeghem -- Department of Mathematics: Algebra and Geometry	6	1	A:2	165

2	C003009	Galois Geometry Leo Storme -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6	1	A:1	165
3	C004109	Functional Analysis [en] Jasson Vindas Diaz -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6	1	A:1 ^a	180
4	C003011	Mathematical Logic II [en, nl] Andreas Weiermann -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6	1	A:2	165
5	C002999	Clifford Analysis	6	1		165
6	C000802	Partial Differential Equations [en] Michael Ruzhansky -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6	1	A:1	165
7	C003012	Banach Spaces and Banach Algebras Hans Vernaevae -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6	1	A:1	165
8	C003013	Linear Algebraic Groups [en] Tom De Medts -- Department of Mathematics: Algebra and Geometry	6	1	A:2	165
9	C001700	Representation Theory and Applications	6	1		165

2.2 Major Mathematical Physics

30 credits

[Subscribe to 30 credit units from the following list.](#)

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C000802	Partial Differential Equations [en] Michael Ruzhansky -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6	1	A:1	165
2	C004109	Functional Analysis [en] Jasson Vindas Diaz -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6	1	A:1 ^a	180
3	C001700	Representation Theory and Applications	6	1		165
4	C004451	General Relativity [en] Archisman Ghosh -- Department of Physics and Astronomy	6	1	A:1	180
5	C002999	Clifford Analysis	6	1		165
6	C001747	Quantum Field Theory [en, nl] Thomas Mertens -- Department of Physics and Astronomy	6	1	A:1	180
7	C003668	Quantum Computing [en] Frank Verstraete -- Department of Physics and Astronomy	6	1	A:2	180
8	C004220	Statistical Physics Jan Ryckebusch -- Department of Physics and Astronomy	6	1	A:1	180
9	C004222	Atomic and Molecular Physics Jonas Joos -- Department of Solid State Sciences	6	1	B:2	180
10	C004221	Structure of the Universe Arjen van der Wel -- Department of Physics and Astronomy	6	1	A:1	180

2.3 Major Applied Mathematics and Computer Science

30 credits

[Subscribe to 30 credit units from the following list.](#)

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C000802	Partial Differential Equations [en] Michael Ruzhansky -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6	1	A:1	165
2	C001026	Computer Algebra Andreas Weiermann -- Department of Mathematics: Analysis, Logic and Discrete Mathematics	6	1	A:2	165
3	C004370	Mathematical Modelling of Fuzziness Chris Cornelis -- Department of Applied Mathematics and Computer Science	6	1	A:1	165
4	C004011	Advanced Numerical Methods Marnix Van Daele -- Department of Applied Mathematics and Computer Science	6	1	A:2	180
5	C000242	Financial Mathematics: Discrete Stochastic Models David Vyncke -- Department of Applied Mathematics and Computer Science	6	1	A:1	165
6	C002678	Statistical Inference [en] Oliver Dukes -- Department of Applied Mathematics and Computer Science	6	1	A:2	165
7	E011320	Queueing Theory [en] Joris Walraevens -- Department of Telecommunications and Information Processing	6	1	A:1	180
8	C003349	Discrete Algorithms Veerle Fack -- Department of Applied Mathematics and Computer Science	6	1	A:2	165
9	C003758	Machine Learning [en] Yvan Saeys -- Department of Applied Mathematics and Computer Science	6	1	A:1	180

3 Elective Courses

30 credits

Subscribe to no less than 28 and no more than 32 credit units from the 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.
 Subscribe to: no less than 18 credit units 'mathematical courses'.

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