UCLouvain

MATH2M

2025 - 2026

Master [120] in Mathematics

At Louvain-la-Neuve - 120 credits - 2 years - Day schedule - In French
Dissertation/Graduation Project : **YES** - Internship : **NO**
Activities in English: **YES** - Activities in other languages : **YES**
Activities on other sites : **NO**
Main study domain : **Sciences**
Organized by: **Faculty of Science (SC)**
Programme acronym: **MATH2M** - Francophone Certification Framework: 7

Table of contents

MATH2M - Introduction

Introduction

Introduction

The Master 120 in Mathematics offers

- a thorough education in cutting-edge fundamental mathematics with an orientation towards either research;
- an interdisciplinary program in physics, statistics, probability, cryptography, information theory, financial mathematics, actuarial science, etc.;
- the possibility of including advanced courses from other universities within your programme of specialisation;
- teaching based on your personal learning history;
- the opportunity to carry out part of your programme abroad;
- the possibility of moving directly to the second year of the Master in statistics, biostatistics and actuarial science.

Your profile

You

- have a sense of the precision and rigour of reasoning
- wish to develop your analytical skills and apply your capacity for reasoning and your spirit of abstraction in order to understand, model and solve complex situations in every field of application of mathematics;
- are committed to research and wish to carry out a first project in collaboration with internationally renowned researchers

Your future job

Whatever his specialisation, the mathematician will be able to exercise his talents in a variety of very different professional sectors and to make the most of the powerful tools he has developed in situations that are often a long way from mathematics.

The disciplinary knowledge and skills of the mathematician can be exploited in fundamental mathematical research and in teaching mathematics. These skills also offer access to many professions in which mathematics interacts with other disciplines (particularly in research laboratories in the climatology sector, in meteorology and in astronomy, in research and development institutes in the biochemistry and pharmacology sectors, in analysis and development departments in the economics sector, in finance and insurance, in computer companies, in cryptography and in telecommunications).

Your programme

The solid training in fundamental mathematics will equip you with tools in the main mathematical disciplines. It is completed by optional courses in your chosen fields in mathematics or in closely related fields (applied mathematics, physics, statistics and biostatistics, actuarial science, computing...).

MATH2M - Teaching profile

Learning outcomes

By the end of the course the student will have acquired the knowledge of the discipline and the transferable skills needed to practise the many professional activities that require substantial mathematical skills: research, but also highly varied professions in which mathematics interacts with other fields and mathematicians collaborate with people who come from different intellectual backgrounds.

The skills acquired during the course will allow him to adapt to different professional contexts (linked, for example, to economic sciences, to the engineering sciences, to health sciences) and to acquire rapidly the techniques specific to his profession.

The programme offers a general education in the important fields of fundamental mathematics, including recent advanced subjects, and allows the student to deal in depth with closely related fields that have already been introduced in the Bachelor in Mathematics (especially physics, but also statistics, actuarial science, and computing).

As with any UCL graduate, the graduate Master in Mathematics will be capable of taking a critical, constructive and innovative view of the present-day world and its problems, of acting as a responsible and competent citizen in society and in his professional milieu, of independently acquiring and using new knowledge and skills throughout his professional life, and of managing major projects in all their aspects, both individually and as part of a team.

On successful completion of this programme, each student is able to :

1. Analyser, en profondeur et sous divers points de vue, un problème mathématique ou un système complexe relevant de disciplines scientifiques autres que les mathématiques, pour en extraire les points essentiels et les mettre en relation avec les outils théoriques les mieux adaptés.

2.

Master the disciplinary knowledge and basic transferable skills whose acquisition began in the Bachelor programme. He will have expanded his basic disciplinary knowledge and skills.

2.1 Choose and use the fundamental methods and tools of calculation to solve mathematical problems.
2.2 Recognise the fundamental concepts of important current mathematical theories.
2.3 Establish the main connections between these theories, analyse them and explain them through the use of examples.

3. Show evidence of abstract thinking and of a critical spirit.

3.1 Identify the unifying aspects of different situations and experiences.
3.2 Argue within the context of the axiomatic method.
3.3 Construct and draw up a proof independently, clearly and rigorously.

4. Communicate in a scientific manner.

4.1 Write a mathematical text in French according to the conventions of the discipline.
4.2 Structurer un exposé oral en l'adaptant au niveau d'expertise des interlocuteurs.
4.3 Communiquer en anglais (niveau C1 pour la compréhension à la lecture, niveau B2 pour la compréhension à l'audition et l'expression orale et écrite, CECRL).

5. Begin a research project thanks to a deeper knowledge of one or more fields and their problematic issues in current mathematics. This knowledge aims at allowing the student to interact with other researchers in the context of a research project at doctoral level.

5.1 Develop in an independent way his mathematical intuition by anticipating the expected results (formulating conjectures) and by verifying their consistency with already existing results.
5.2 Gather material and summarise the current state of knowledge relating to a mathematical problem.
5.3 Ask relevant and lucid questions on an advanced mathematical topic in an independent manner.

6. Show evidence of independent learning.

6.1 Find sources in the mathematical literature and assess their relevance.
6.2 Correctly locate an advanced mathematical text in relation to knowledge acquired.
6.3 Ask oneself relevant and lucid questions on a mathematical topic in an independent manner.

7. Adapt to various professional contexts.

7.1 Do a statistical analysis of large sets of data with the help of softwares.
7.2 Master several fields of current probability and mathematical statistics and their problems.
7.3 Use basic concepts and models in survival analysis, specific tools of biostatistics and techniques and standards of clinical tests.
7.4 Exploit in an integrated way various know-hows in actuarial sciences and in financial mathematics in order to analyse complex problems in quantitative management of risks.
7.5 Use fundamental tools of computing and programming in order to solve management problems involved in the financial impact of risks.

Programme structure

The programme for the Master in Mathematical Sciences is composed of:

- core subjects of 50 credits, of which 26 credits are for the dissertation;
- a focus of 30 credits;

- one option and selected courses for 40 credits.

Note here that:

- a part of the programme of study corresponding to around 30 credits (some of which may be involved in writing the dissertation) may be performed in the context of one of the international mobility programmes established by the Faculty.
- Courses already taken as part of the in-depth minor in mathematics may not be included in the student's Master programme
- With the agreement of the School of Mathematics, the student may defer to the second year an activity scheduled for the first year or bring forward to the first year an activity scheduled for the second year (with the exception of LMAT2997 and LMAT2999). In these cases, timetable clashes may arise. For a standard programme, this Master will total, whatever the focus, the options and/or the optional courses chosen, a minimum of 120 credits divided into two annual sections of 60 credits each.

MATH2M Programme

Detailed programme by subject

CORE COURSES [50.0]

O Mandatory
⊠ Optional
△ Not offered in 2025-2026
⊘ Not offered in 2025-2026 but offered the following year
⊕ Offered in 2025-2026 but not the following year
△ ⊕ Not offered in 2025-2026 or the following year
Activity with requisites
Open to incoming exchange students
Not open to incoming exchange students
[FR] Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

				Year 1	Year 2
O Mémoire et séminaire (28 credits)					
O LMAT2997	Thesis tutorial	Ahmed Adrioueche Pedro Dos Santos Santana Forte Vaz	EN [q2] [15h] [2 Credits]		x
O LMAT2999	Mémoire	Pedro Dos Santos Santana Forte Vaz (coord.)	FR [q2] [] [26 Credits]		x
O Cours thématiques en mathématique					
L'étudiant·e choisit au moins 20 crédits dans la liste ci-dessous :					
⊠ LMAT2130	Partial differential equations	Heiner Olbermann	EN [q1] [30h+15h] [5 Credits]	x	x
⊠ LMAT2415	Advanced harmonic analysis	Jean Van Schaftingen	EN [q1] [30h+15h] [5 Credits]	x	x
⊠ LMAT2250	Calculus of variations	Augusto Ponce	EN [q2] [30h+15h] [5 Credits] ⊘ *> English-friendly*	x	x
⊠ LMAT2120	Groups theory	Pierre-Emmanuel Caprace	EN [q1] [30h+15h] [5 Credits] ⊕ *> English-friendly*	x	x
⊠ LMAT2150	Category theory	Marino Gran	EN [q1] [30h+15h] [5 Credits] *> French-friendly*	x	x
⊠ LMAT2221	Universal algebra	Enrico Vitale	EN [q2] [30h+15h] [5 Credits] ⊕ *> English-friendly*	x	x
⊠ LMAT2215	Homological algebra	Tim Van der Linden	EN [q1] [30h+15h] [5 Credits] ⊘ *> French-friendly*	x	x
⊠ LMAT2430	Lie's therory elements and differential geometry	Pierre Bieliavsky	EN [q2] [30h+15h] [5 Credits]	x	x

				Year 1	2
⊠ LMAT2420	Complex analysis	Christophe Charlier (compensates Tom Claeys)	EN [q2] [30h+15h] [5 Credits] *> French-friendly*	x	x
⊠ LMAT2140	Algebraic topology	Pascal Lambrechts	EN [q1] [30h+15h] [5 Credits]	x	x
⊠ LMAT2240	Low-dimensional topology	Pedro Dos Santos Santana Forte Vaz	EN [q2] [30h+15h] [5 Credits]	x	x
⊠ LMAT2266	Lie Theory		FR [q1] [30h+15h] [5 Credits]	x	x
○ LMAT2170	History and epistemology of mathematics *The LMAT2170 teaching unit is compulsory if the student has not acquired the corresponding credits in the "Approfondissement en sciences mathématiques". If the credits have already been acquired, it must be replaced by a teaching unit from the list of elective courses.*	Pierre Bieliavsky Pierre Bieliavsky (compensates Marino Gran) Pierre-Emmanuel Caprace Pierre-Emmanuel Caprace (compensates Marino Gran) Jean Van Schaftingen Jean Van Schaftingen (compensates Marino Gran)	FR [q2] [30h+15h] [5 Credits]	x	

○ Philosophy (2 credits)

Students will choose from the following
2 credits to choose between

⊠ LSC2001	Introduction to contemporary philosophy	Peter Verdée Peter Verdée (compensates Charles Pence)	FR [q2] [30h] [2 Credits]		x
⊠ LSC2220	Philosophy of science	Alexandre Guay	EN [q2] [30h] [2 Credits]		x
⊠ LFILO2003E	Ethics in the Sciences and technics (sem)	Alexandre Guay Hervé Jeanmart René Rezsohazy	FR [q2] [15h+15h] [2 Credits]		x
⊠ LTHEO2840	Science and Christian faith	Benoît Bourgine Paulo Jorge Dos Santos Rodrigues	FR [q1] [15h] [2 Credits]		x

⊠ Optional courses :

These credits are not counted within the 120 required credits.

⊠ LSST1001	IngénieuxSud	Stéphanie Merle Jean-Pierre Raskin	FR [q1+q2] [15h+45h] [5 Credits]	x	x
⊠ LSST1002M	Information and critical thinking - MOOC	Anne Bauwens (compensates Jean-François Rees)	FR [q2] [30h+15h] [3 Credits]	x	x

RESEARCH FOCUS [30.0]

In the research focus, the programme offers a general education in the major fields of fundamental mathematics and a deeper education in one of the research areas of the School of Mathematics. In seminar LMAT2160, a research project is set up by the students. With the agreement of the School, students may replace courses in the research focus by courses in research given in other universities, by courses chosen from the various options, or by courses in the Master in Physics.

- Mandatory
- Optional
- Not offered in 2025-2026
- Not offered in 2025-2026 but offered the following year
- Offered in 2025-2026 but not the following year
- Not offered in 2025-2026 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

Content:

				Year 1	Year 2
LMAT2160	Training seminar for mathematical researchers	Pierre-Emmanuel Caprace Jean Van Schaftingen	FR [q1] [15h] [5 Credits] > English-friendly	x	
LMAT2165	Personal project in mathematics	Pierre Bieliavsky Pedro Dos Santos Santana Forte Vaz	FR [q2] [15h] [5 Credits] > English-friendly	x	

Cours thématiques en mathématique

L'étudiant·e choisit au moins 5 à 10 crédits supplémentaires dans la liste des cours thématiques en mathématique du tronc commun.

Cours approfondis

L'étudiant.e choisit de 10 à 15 crédits parmi les cours ci-dessous :

Avanced topics

LMAT2910	Advanced topics in mathematics 1	Pierre-Emmanuel Caprace	EN [q1] [0h+30h] [5 Credits]	x	x
LMAT2920	Advanced topics in mathematics 2	Heiner Olbermann	EN [q2] [30h] [5 Credits]	x	x
LMAT2930	Advanced topics in mathematics 3	Bohdan Bulanyi	EN [q2] [30h] [5 Credits]	x	x
LMAT2940	Advanced topics in mathematics 4	Marino Gran	EN [q2] [0h+22.5h] [5 Credits]	x	x
LMAT2915	Advanced topics in mathematics 5		EN [q2] [0h+30h] [5 Credits]	x	x
LMAT2925	Advanced topics in mathematics 6		EN [q2] [30h] [5 Credits]	x	x
LMAT2935	Advanced topics in mathematics 7		EN [q2] [30h] [5 Credits]	x	x
LMAT2945	Advanced topics in mathematics 8		EN [q1] [0h+22.5h] [5 Credits]	x	x

Cours approfondis de mathématique à l'ULB et à la KULeuven

L'étudiant·e pourra choisir, en concertation avec le conseiller aux études, des cours empruntés dans les programmes des masters en sciences mathématiques de la KULeuven ou de l'ULB (finalité approfondie). Vous trouverez ci-dessous, à titre informatif, une sélection de cours de la KULeuven qui complètent adéquatement le programme MATH2M. Il est de la responsabilité de l'étudiant·e de vérifier si les informations concernant ces cours sont toujours d'actualité, et d'entreprendre les démarches auprès de l'Université qui les organise.

EMATK2080	Algebraic Geometry 1		EN [q1] [26h+9h] [6 Credits]	x	x
EMATK2007	Operator Algebras		EN [q2] [20h+20h] [6 Credits]	x	x
EMATK2268	Orthogonal Polynomials and Random Matrices		EN [q2] [26h] [6 Credits]	x	x
EMATK2099	Algebraic Number Theory		EN [q2] [26h+10h] [6 Credits]	x	x
EMATK2005	Riemann Surfaces		EN [q2] [26h+6h] [6 Credits]	x	x
EMATK2017	Algebraic Geometry II		EN [q2] [26h+10h] [6 Credits]	x	x

OPTIONS [40.0]

Whatever the focus followed, the student completes the programme to obtain 120 credits.

> Option in Statistics *[en-prog-2025-math2m-lmath221o]*
> Option sciences actuarielles *[en-prog-2025-math2m-lmath222o]*
> Option mathématiques appliquées *[en-prog-2025-math2m-lmath101o]*
> Option biostatistique *[en-prog-2025-math2m-lmath102o]*
> Autres cours au choix *[en-prog-2025-math2m-lmath100o]*

OPTION IN STATISTICS [30.0]

- Mandatory
- Optional
- Not offered in 2025-2026
- Not offered in 2025-2026 but offered the following year
- Offered in 2025-2026 but not the following year
- Not offered in 2025-2026 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

UCLouvain graduates in the Master in Mathematics with option in general statistics have direct access to the second year of the Master in Statistics with orientation in general statistics.

Content:

				Year 1	Year 2
LSTAT2040	Statistical analysis	Anouar El Ghouch	FR [q2] [30h+15h] [5 Credits]	x	x
LSTAT2020	Statistical softwares and basic statistical programming	Céline Bugli	FR [q1] [15h+15h] [3 Credits]	x	x
LDATS2030	Statistique et data sciences avec R: Programmation avancée	Anouar El Ghouch	FR [q2] [15h+15h] [3 Credits]	x	x
LSTAT2110	Data Analysis	Olivier Caelen	FR [q1] [30h+7.5h] [5 Credits]	x	x
LSTAT2120	Linear models	Christian Hafner	EN [q1] [30h+7.5h] [5 Credits] *> French-friendly*	x	x
LSTAT2140	Non parametric statistics	Eugen Pircalabelu	FR [q1] [15h+5h] [4 Credits] *> English-friendly*	x	x

Cours au choix

Students will choose one course from the following

LSTAT2440	Inference and Data Reduction		EN [q1] [15h+7.5h] [5 Credits]		x
LDATS2450	Statistical learning. Estimation, selection and inference	Eugen Pircalabelu	EN [q2] [30h+7.5h] [5 Credits]		x
LINMA2470	Stochastic modelling	Philippe Chevalier Quentin Lété	EN [q2] [30h+22.5h] [5 Credits] *> French-friendly*	x	

OPTION SCIENCES ACTUARIELLES

- Mandatory
- Optional
- Not offered in 2025-2026
- Not offered in 2025-2026 but offered the following year
- Offered in 2025-2026 but not the following year
- Not offered in 2025-2026 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

NB : Students wishing to subsequently enroll in the Master in Actuarial Sciences may valorize all the compulsory courses of the ACTU2M program for which the credits have been validated in MATH2M.

From 27 to 29credit(s)

Content:

				Year 1	Year 2
LACTU2010	Property and casualty insurance actuarial science	Michel Denuit	EN [q1] [45h+7.5h] [7 Credits]	x	x
LACTU2030	Life insurance actuarial science	Donatien Hainaut	EN [q1] [30h+7.5h] [5 Credits]	x	x
LACTU2040	Social security and pension actuarial science	Karim Barigou Pierre Devolder	EN [q2] [30h+7.5h] [5 Credits]	x	x
LACTU2170	Financial valuation of actuarial liabilities	Donatien Hainaut	FR [q2] [45h+15h] [7 Credits]	x	x
LACTU2240	Actuarial Science in Finance: Advanced Processes and Life Insurance Engineering	Donatien Hainaut	FR [q1] [30h] [5 Credits]	x	x
LACTU2210	Quantitative Risk Management	Christian Hafner	EN [q2] [30h] [5 Credits] > *French-friendly*	x	x

OPTION MATHÉMATIQUES APPLIQUÉES [30.0]

- Mandatory
- Optional
- Not offered in 2025-2026
- Not offered in 2025-2026 but offered the following year
- Offered in 2025-2026 but not the following year
- Not offered in 2025-2026 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

Content:

				Year 1	Year 2
LINMA2380	Matrix computations	Raphaël Jungers	EN [q1] [30h+22.5h] [5 Credits] > *French-friendly*	x	x
LINMA2470	Stochastic modelling	Philippe Chevalier Quentin Lété	EN [q2] [30h+22.5h] [5 Credits] > *French-friendly*	x	x
LINMA2471	Optimization models and methods II	François Glineur Geovani Nunes Grapiglia	EN [q1] [30h+22.5h] [5 Credits] > *French-friendly*	x	x
LINMA2345	Game theory	Matthew Philippe (compensates Raphaël Jungers)	EN [q2] [30h+22.5h] [5 Credits] > *French-friendly*	x	x
LINMA2450	Combinatorial optimization	Julien Hendrickx Geovani Nunes Grapiglia	EN [q1] [30h+22.5h] [5 Credits] > *French-friendly*	x	x
LINMA2171	Numerical Analysis : Approximation, Interpolation, Integration	Pierre-Antoine Absil	EN [q1] [30h+22.5h] [5 Credits] > *French-friendly*	x	x

				Year 1	2
⊠ LINMA2472	Algorithms in data science	Julien Calbert (compensates Jean-Charles Delvenne) Benoît Legat (coord.)	EN [q1] [30h+22.5h] [5 Credits] > *French-friendly*	x	x
⊠ LMAT2450	Cryptography	Olivier Pereira	EN [q1] [30h+15h] [5 Credits] > *French-friendly*	x	x
⊠ LINMA2111	Discrete mathematics II : Algorithms and complexity	Vincent Blondel Gaëtan Cassiers (compensates Jean-Charles Delvenne) Thomas Peters (compensates Jean-Charles Delvenne)	EN [q1] [30h+22.5h] [5 Credits] > *French-friendly*	x	x

OPTION BIOSTATISTIQUE [30.0]

- Mandatory
- Optional
- Not offered in 2025-2026
- Not offered in 2025-2026 but offered the following year
- Offered in 2025-2026 but not the following year
- Not offered in 2025-2026 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

UCL graduates in the Master in Mathematics with option in general statistics have access to the second year of the Master in Statistics with biostatistics orientation. Students will choose one course between LSTAT2130 and LSTAT2220. Students will choose one course from the following

Content:

				Year 1	Year 2
LSTAT2020	Statistical softwares and basic statistical programming	Céline Bugli	FR [q1] [15h+15h] [3 Credits]	x	x
LDATS2030	Statistique et data sciences avec R: Programmation avancée	Anouar El Ghouch	FR [q2] [15h+15h] [3 Credits]	x	x
LSTAT2040	Statistical analysis	Anouar El Ghouch	FR [q2] [30h+15h] [5 Credits]	x	x
LSTAT2110	Data Analysis	Olivier Caelen	FR [q1] [30h+7.5h] [5 Credits]	x	x
LSTAT2120	Linear models	Christian Hafner	EN [q1] [30h+7.5h] [5 Credits] *> French-friendly*	x	x
LSTAT2330	Statistics in clinical trials.	Catherine Legrand Annie Robert	FR [q2] [22.5h+7.5h] [5 Credits]	x	x

Une unité d'enseignement parmi

LSTAT2130	Introduction to Bayesian statistics	Philippe Lambert	EN [q2] [22.5h+7.5h] [4 Credits]	x	x
LSTAT2220	Analysis of survival and duration data	Ingrid Van Keilegom	FR [q1] [15h+5h] [4 Credits] *> English-friendly*	x	x

AUTRES COURS AU CHOIX

- Mandatory
- Optional
- Not offered in 2025-2026
- Not offered in 2025-2026 but offered the following year
- Offered in 2025-2026 but not the following year
- Not offered in 2025-2026 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

Content:

				Year 1	Year 2
LMAT2440	Number theory	Pierre-Emmanuel Caprace Olivier Pereira	EN [q1] [30h+15h] [5 Credits] > English-friendly	x	x
LMAT2460	Finite mathematics and combinatorial structures	Raphaël Jungers Raphaël Jungers (compensates Jean-Charles Delvenne)	FR [q1] [30h] [5 Credits]	x	x
LPHYS2114	Nonlinear dynamics	Michel Crucifix	EN [q1] [22.5h+22.5h] [5 Credits] > French-friendly	x	x

Supplementary classes

To access this Master, students must have a good command of certain subjects. If this is not the case, in the first annual block of their Masters programme, students must take supplementary classes chosen by the faculty to satisfy course prerequisites.

- Mandatory
- Optional
- Not offered in 2025-2026
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- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

Enseignements supplémentaires

LMAT1221	Mathematical analysis : integration	Heiner Olbermann	FR [q1] [30h+30h] [5 Credits] > English-friendly
LMAT1222	Complex analysis 1	Tom Claeys	FR [q2] [30h+15h] [5 Credits] > English-friendly
LMAT1321	Functional analysis and partial differential equations	Jean Van Schaftingen	FR [q1] [45h+45h] [7 Credits] > English-friendly
LMAT1323	Topology	Pedro Dos Santos Santana Forte Vaz	FR [q1] [30h+15h] [5 Credits] > English-friendly
LMAT1231	Multilinear algebra and group theory	Pierre-Emmanuel Caprace	FR [q1] [30h+30h] [5 Credits] > English-friendly
LMAT1236	Introduction to logic: set theory	Tim Van der Linden	EN [q2] [30h+15h] [5 Credits] > English-friendly

⛒ LMAT1237	Introduction to logic: model theory	Enrico Vitale	FR [q2] [30h+15h] [5 Credits] ∅ 🌐 > *English-friendly*
⛒ LMAT1241	Geometry II	Pierre Bieliavsky	FR [q2] [45h+30h] [6 Credits] 🌐 > *English-friendly*
⛒ LMAT1271	Calculation of probability and statistical analysis	Anna Kiriliouk	FR [q2] [30h+30h] [6 Credits] 🌐 > *English-friendly*
⛒ LMAT1371	Probability Theory	Karim Barigou	FR [q2] [30h+22.5h] [5 Credits] 🌐
⛒ LMAT1151	Numerical analysis : tools and software of calculus	Jean Van Schaftingen	FR [q1] [30h+45h] [5 Credits] 🌐 > *English-friendly*
⛒ LMAT1351	Approximation: methods et theory	Tom Claeys	EN [q1] [30h+30h] [5 Credits] 🌐 > *French-friendly*

Course prerequisites

There are no prerequisites between course units (CUs) for this programme, i.e. the programme activity (course unit, CU) whose learning outcomes are to be certified and the corresponding credits awarded by the jury before registration in another CU.

The programme's courses and learning outcomes

For each UCLouvain training programme, a reference framework of learning outcomes specifies the the skills expected of every graduate on completion of the programme. Course unit descriptions specify targeted learning outcomes, as well as the unit's contribution to reference framework of learning outcomes.

MATH2M - Information

Access Requirements

Master course admission requirements are defined by the French Community of Belgium Decree of 7 November 2013 defining the higher education landscape and the academic organisation of courses.

General and specific admission requirements for this programme must be satisfied at the time of enrolling at the university.

Unless explicitly mentioned, the bachelor's, master's and licentiate degrees listed in this table or on this page are to be understood as those issued by an institution of the French, Flemish or German-speaking Community, or by the Royal Military Academy.

In the event of the divergence between the different linguistic versions of the present conditions, the French version shall prevail.

SUMMARY

Specific access requirements

In addition to meeting the access conditions described below, candidates will have to provide proof of a sufficient command of the French language (level B1 of the CEFR, Common European Framework of Reference for Languages).

Students who wish to be admitted on the basis of a dossier (see tables below) are invited to consult the criteria for the evaluation of application.

University Bachelors

Diploma	Special Requirements	Access	Remarks
UCLouvain Bachelors			
Bachelor in Mathematics		Direct access	
Bachelor in Physics	Si l'étudiant a suivi la Minor in Mathematics	Direct access	In some cases, the UCLouvain Enrolment Office, after reviewing their online enrolment or re-enrolment application, will ask the students concerned to provide an enrolment authorisation from the faculty/ school.
Bachelor in Engineering	Si l'étudiant a suivi la Minor in Mathematics	Direct access	In some cases, the UCLouvain Enrolment Office, after reviewing their online enrolment or re-enrolment application, will ask the students concerned to provide an enrolment authorisation from the faculty/ school.
Bachelor in Engineering	Si l'étudiant·e a suivi la Specialization track in Applied Mathematics	Access with additional training	In some cases, the UCLouvain Enrolment Office, after reviewing their online enrolment or re-enrolment application, will ask the students concerned to provide an enrolment authorisation from the faculty/ school.

Others Bachelors of the French speaking Community of Belgium	
	Direct access
Bachelors of the Dutch speaking Community of Belgium	
	Direct access
Foreign Bachelors	
	Access based on application

Non university Bachelors

> Find out more about links to the university

Holders of a 2nd cycle University degree

Diploma	Special Requirements	Access	Remarks
"Licenciés"			
		Direct access	
Masters			
		Direct access	

Holders of a non-University 2nd cycle degree

Access based on validation of professional experience

It is possible, under certain conditions, to use one's personal and professional experience to enter a university course without having the required qualifications. However, validation of prior experience does not automatically apply to all courses. Find out more about Validation of priori experience.

Access based on application

Access based on application : access may be granted either directly or on the condition of completing additional courses of a maximum of 60 ECTS credits, or refused.

The first step in the procedure is to submit a file online (see https://uclouvain.be/en/study/inscriptions/futurs-etudiants.html).

Students who wish to be admitted on the basis of a dossier are invited to consult the criteria for the evaluation of application.

Admission and Enrolment Procedures for general registration

Teaching method

Whenever possible, teachers in the School of Mathematics give priority to close supervision: small-group work, individual tuition, rapid and personalised feedback on activities, active participation of students in the School's teaching decisions. A

ll the courses in the programme contribute to the acquisition of skills such as the capacity for abstract thinking and for reasoning. Other skills (aptitude for communication, independent learning, document research) are especially exercised in seminars (where students are responsible for work progress), in work linked to the preparation of the dissertation and in the dissertation activity (the Thesis Tutorial, which specifically concentrates on scientific communication in English).

The interdisciplinary character of the programme is reinforced by the presence in the options of courses taken from the Masters programmes in physics, in statistics and biostatistics, in actuarial science and in applied mathematics.

Students may take introduction to research courses in neighbouring universities in order to learn about mathematical research subjects that are not offered by UCLouvain.

Evaluation

The evaluation methods comply with the Academic regulations and procedures. More detailed explanation of the modalities specific to each learning unit are available on their description sheets under the heading "Learning outcomes evaluation method".

Assessment methods conform to academic regulations and procedures. More details on the methods employed in each teaching unit are available in their description sheet, under the heading 'Assessment methods for student learning'.

Different methods are in place in order to evaluate the knowledge and skills acquired in the course of the learning period; these are adapted to the following types of performance: continuous assessment, especially for practical exercises; assessment of individual work (reading, consultation of databases and bibliographical references, monograph and report writing); overall assessment (written and/or oral) during examination sessions; assessment of public presentations.

Whatever the teaching language of an activity, students may choose to present the corresponding assessment in English or in French. Exceptions are the Thesis Tutorial, philosophy courses and activities specific to the teaching focus.

Mobility and/or Internationalisation outlook

Students will have the opportunity of making an Erasmus, Mercator or other study period. The aim of such a study period is either to follow around 30 course credits, or to write the dissertation, while at the same time having the chance to discover another country and a different culture.

Partner universities are located in Dutch-speaking Belgium (in this case, the entire second year of the Master may take place outside UCL), in Europe (Italy, Spain, France, Denmark), in Australia, in Canada, in South Africa and in Japan. See this page for a detailed presentation of the international mobility activities organised by the Faculty of Sciences. Courses LMAT2910 - Advanced topics 1, LMAT2920 - Advanced topics 2 and LMAT2930 - Advanced topics 3 are given by visiting professors from various Belgian and foreign institutions.The titles of these courses are generic in order to maintain the greatest flexibility and the best match with the development of research.

These courses are often taught in English.

Possible trainings at the end of the programme

The Master in Mathematics gives access to the doctorate in science.

The general statistics, biostatistics, and actuarial science options allow access to the second year of the corresponding Master, with a possible additional maximum of 15 credits in the second year programme of the corresponding Master.

Contacts

Curriculum Management

Entity

Structure entity	SST/SC/MATH
Denomination	(MATH)
Faculty	Faculty of Science (SC)
Sector	Sciences and Technology (SST)

Acronym	MATH
Postal address	Chemin du Cyclotron 2 - bte L7.01.02 1348 Louvain-la-Neuve Tel: +32 (0) 10 47 31 52 - Fax: +32 (0) 10 47 25 30
Website	https://uclouvain.be/fr/facultes/sc/math

Academic supervisor: Jean Van Schaftingen

Jury

- President: Tim Van der Linden
- Secretary and Study advisor: Heiner Olbermann
- Study advisor for the master's degree in teaching: Laure Ninove

Useful Contact(s)

- Administrative manager for the student's annual program: Catherine De Roy