

At Louvain-la-Neuve - 180 credits - 3 years - Day schedule - In French

Dissertation/Graduation Project : **NO** - Internship : **NO**

Activities in English: **YES** - Activities in other languages : **NO**

Activities on other sites : **NO**

Main study domain : **Sciences**

Organized by: **Faculty of Science (SC)**

MATH1BA - Introduction

Introduction

Introduction

You love mathematics.

You want to learn to reason rigorously and critically.

You want to develop your creativity to solve problems, model and visualize complex situations, drawing on modern digital tools and a rich, solid mathematical tradition.

You have a good sense of argumentation and want to communicate your ideas in a faithful, accessible and attractive way.

UCLouvain offers you a training program that will enable you to acquire the skills needed to :

- develop and apply cutting-edge mathematics,
- transmit mathematical knowledge to a variety of audiences,
- support decision-making through rational data analysis.

Your profile

A solid background in mathematics, such as a strong mathematics option in secondary education, is highly recommended for mathematics studies. It is also important to have a good general scientific and technological culture, a good command of the French language and a good knowledge of English.

Your future job

Mathematicians are active in many fields where mathematics interacts with other disciplines: chemical and pharmaceutical industries, insurance, finance and actuarial science, consulting, modeling, systems planning and optimization, computer and data sciences, artificial intelligence, cryptography and computer security, astronomy, weather forecast, climate science, ecology and more.

Mathematicians share their passion for mathematics as teachers in upper secondary and higher education.

Mathematicians also contribute to mathematical research. They develop our understanding of the world by introducing new concepts, tools and constructions, and by studying them rigorously. They identify and implement the concepts and tools needed to solve mathematical problems of importance to our society, our economic activity or the development of other scientific disciplines.

Your programme

The Bachelor of Mathematical Sciences program consists of 180 credits.

The 150 general training credits cover

- Fundamental mathematics: algebra (linear algebra, group theory, commutative algebra, etc.), geometry (affine geometry, vector geometry, differential geometry, topology) and analysis (functions of several variables, complex analysis, measure theory, differential equations and functional analysis).
- Applied mathematics: probability, data analysis and inferential statistics, numerical analysis and computer programming,
- Other scientific disciplines, including physics, chemistry, biology, earth science and economics.

The program offers the possibility of selecting certain courses to focus more on fundamental or applied mathematics. The main language of instruction is French, with a few courses in English and English courses for scientists.

The training is based on progressive learning and a program that allows time for high-quality personal work, with high-quality close supervision: exercise sessions, laboratories, group or individual work, tutorials and the opportunity to carry out initial personal research under the guidance of a teacher.

The 30-credit minor allows you to go deeper in training in mathematics or statistics and data science. Other minor choices allow you to develop skills in related disciplines (physics, computer science, economics and management, philosophy) or to open up to other disciplines.

Your parcours

At the end of the bachelor's program, students will have acquired the disciplinary foundations needed for further studies with :

- A master's degree in mathematics
- A master's degree in mathematics education
- In the fields of statistics and data science : A Master's degree in actuarial science / A Master's degree in data science, with an emphasis on statistics / A Master's degree in statistics, general orientation / A master's degree in statistics, with a focus on biostatistics (after taking or adding 3 biology credits).

All these Master's degrees are accessible regardless of the choice of minor. Other master's degrees are available under certain conditions.

MATH1BA Programme

Detailed programme by subject

- Mandatory
- ✘ Optional
- △ Not offered in 2024-2025
- ⊖ Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 or the following year
- Activity with requisites
- 🌐 Open to incoming exchange students
- 🚫 Not open to incoming exchange students

[FR]

Year

1 2 3

o Probabilités et statistiques (16 credits)

○ LMAFY1101	Data exploration and introduction to statistical inference	Anouar El Ghouch	PS [q2] [30h+30h] [5 Credits] 	X		
○ LMAT1271	Calculation of probability and statistical analysis					

				Year		
				1	2	3
⌘ LTECO2300	Societies, cultures, religions : Ethical questions	Marcela Lobo Bustamante	PK [q1] [15h] [2 Credits]			x

o Bloc au choix

o Analyse

o LMAT1121	Differential and integral calculus	Cécile Coyette (compensates Tom Claeys)	FB [q1] [30h +30h] [5 Credits]
o LMAT1122	Mathematical analysis : differentiation	Augusto Ponce	FB [q2] [45h +45h] [8 Credits]

o Algèbre et géométrie

o LMAT1131	Linear Algebra	Marino Gran	FB [q1] [45h +45h] [8 Credits]
o LMAT1141	Geometry I	Pascal Lambrechts	FB [q2] [45h +30h] [7 Credits]

o Physique et physique mathématique

o LPHYS1111	Mechanics 1	Giacomo Bruno Jan Govaerts	FB [q1] [45h +45h] [8 Credits]
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o Analyse numérique et Informatique

o LINFO1101	Introduction to programming	Kim Mens Siegfried Nijssen Charles Pecheur	FB [q1] [30h +30h] [6 Credits]
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o Probabilités et statistiques

o LMAFY1101	Data exploration and introduction to statistical inference	Anouar El Ghouch	FB [q2] [30h +30h] [5 Credits]
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o Anglais

o LANG1861	English: reading and listening comprehension of scientific texts	Catherine Avery (coord.) Fanny Desterbecq Amandine Dumont (coord.) Marc Piwnik	FB [q2] [10h] [3 Credits]
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o Cours au choix

L'étudiant-e choisit une UE parmi

o LBIO1110	Life : diversity and evolution	Patrick Dumont Alicé Mouton	FB [q1] [30h +10h] [5 Credits]
o LCHM1112	General Chemistry	Yaroslav Filinchuk	FB [q1] [30h +22.5h] [5 Credits]
o LECGE1115	Political Economics	Rigas Oikonomou Gonzague Vannoorenberghe	FB [q1] [45h +15h] [5 Credits]
o LGEO1111	Earth and society : perspectives from geography	Marie Scouvert (compensates Eric Lambin)	FB [q2] [30h +15h] [5 Credits]
o LPHYS1113	Mechanics 2	Vincent Lemaitre	FB [q2] [30h +25h] [5 Credits]

MATH1BA - 2ND ANNUAL UNIT

- Mandatory
- ✘ Optional
- △ Not offered in 2024-2025
- ⊖ Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 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...)

o Majeure

o Analyse

● LMAT1221	Mathematical analysis : integration	Heiner Olbermann	
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o Sciences humaines

o Philosophie

L'étudiant choisit

From 2 to 4 credit(s)

⌘ LSC1120A	Philosophy	Charles Pence	FR [q1] [45h] [2 Credits] 🌐
⌘ LFILO1250A	Logic (partim)	Peter Verdée	FR [q2] [45h] [4 Credits] 🌐 > English- friendly

o Bloc au choix

L'étudiant complète son programme en choisissant des cours des 2 blocs suivants (il est conseillé à l'étudiant de s'inscrire à au moins 10 crédits par bloc annuel). Cependant, avoir suivi tous les cours du bloc Statistique et Informatique est recommandé si vous souhaitez vous inscrire au master en science des données, orientation statistique.

⌘ Bloc Mathématique

MATH1BA - 3RD ANNUAL UNIT

- Mandatory
- ✘ Optional
- △ Not offered in 2024-2025
- ⊖ Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 or the following year
- Activity with requisites
- 🌐 Open to incoming exchange students
- 🌐 Not open to incoming exchange students

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⌘ LTECO2300

o Minor or additional module

*L'étudiant complète sa formation en choisissant un approfondissement ou une mineure dans la liste proposée pour le bachelier en sciences mathématiques. Il répartit les unités d'enseignement dans le 2e et le 3e bloc annuel, de manière à ce que son programme annuel totalise 60 crédits.
Maximum 1 élément(s)*

MATH1BA - Information

Access Requirements

Decree of 7 November 2013 defining the landscape of higher education and the academic organization of studies.

The admission requirements must be met prior to enrolment in the University.

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

SUMMARY

- [General access requirements](#)
- [Specific access requirements](#)
- [Access based on validation of professional experience](#)
- [Special requirements to access some programmes](#)

General access requirements

Except as otherwise provided by other specific legal provisions, admission to undergraduate courses leading to the award of a Bachelor's degree will be granted to students with one of the following qualifications :

1. A Certificate of Upper Secondary Education issued during or after the 1993-1994 academic year by an establishment offering full-time secondary education or an adult education centre in the French Community of Belgium and, as the case may be, approved if it was issued by an educational institution before 1 January 2008 or affixed with the seal of the French Community if it was issued after this date, or an equivalent certificate awarded by the Examination Board of the French Community during or after 1994;
2. A Certificate of Upper Secondary Education issued no later than the end of the 1992-1993 academic year, along with official documentation attesting to the student's ability to pursue higher education for students applying for a full-length undergraduate degree programme;
3. A diploma awarded by a higher education institution within the French Community that confers an academic degree issued under the above-mentioned Decree, or a diploma awarded by a university or institution dispensing full-time higher education in accordance with earlier legislation;
4. A higher education certificate or diploma awarded by an adult education centre;
5. A pass certificate for one of the [entrance examinations](#) organized by higher education institutions or by an examination board of the French Community; this document gives admission to studies in the sectors, fields or programmes indicated therein;
6. A diploma, certificate of studies or other qualification similar to those mentioned above, issued by the Flemish Community of Belgium, the German Community of Belgium or the Royal Military Academy;
7. A diploma, certificate of studies or other qualification obtained abroad and deemed equivalent to the first four mentioned above by virtue of a law, decree, European directive or international convention;

Note:

Requests for equivalence must be submitted to the Equivalence department ([Service des équivalences](#)) of the Ministry of Higher Education and Scientific Research of the French Community of Belgium in compliance with the official deadline.

The following two qualifications are automatically deemed equivalent to the Certificate of Upper Secondary Education (Certificat d'enseignement secondaire supérieur – CESS):

- European Baccalaureate issued by the Board of Governors of a European School,
- International Baccalaureate issued by the International Baccalaureate Office in Geneva.

8. Official documentation attesting to a student's ability to pursue higher education (diplôme d'aptitude à accéder à l'enseignement supérieur - DAES), issued by the Examination Board of the French Community.

Specific access requirements

- Access to bachelor programmes for candidates of nationality outside the European Union who are not assimilated to Belgian nationals is subject to the following criteria:
 - not have obtained a secondary education diploma for more than 3 years maximum. Example: for an admission application for the academic year 2024-2025, you must have obtained your diploma during the academic years 2021-2022, 2022-2023 ou 2023-2024. In the French Community of Belgium, the academic year runs from September 14 to September 13
 - not already hold an undergraduate degree
- Candidates, whatever their nationality, with a secondary school diploma **from a country outside the European Union**, must have obtained an average of 13/20 minimum or, failing that, have obtained this average, have passed one year of study in Belgium (for example special Maths / sciences). A non-successful year will not be taken into consideration.

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Teaching method

Whenever possible, teachers in the School of Mathematics give priority to close supervision: small-group work, individual tuition, rapid

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 https://uclouvain.be/fr/facultes/sc/math
Website	
Academic supervisor:	Jean Van Schaftingen
Jury	
	<ul style="list-style-type: none">• President: Tim Van der Linden• Secretary and Study advisor: Pierre Bieliavsky
Useful Contact(s)	
	<ul style="list-style-type: none">• Administrative manager for the student's annual program: Nathalie Micha

