MATH1BA - Introduction

Introduction

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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.

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]

[redacted]

Year
1 2 3

Probabilités et statistiques (16 credits)

LMAFY1101	Data exploration and introduction to statiscal inference	Anouar El Ghouch	[redacted]

				Year 1	2	3
⊠ LTECO2200	Societies-cultures-religions : Human Questions	Pedro Dusabamahoro Valinho Gomes	FR [q1] [15h] [2 Credits]			x
⊠ LTECO2300	Societies, cultures, religions : Ethical questions	Marcela Lobo Bustamante	FR [q1] [15h] [2 Credits]			x

Bloc au choix

List of available minors

Students can choose to study certain aspects of their bachelor's degree in greater depth:

- Additional module in mathematics
- Additional module in statistics and data science.

They can also choose to develop their skills in related disciplines:

- Minor in physics
- Minor in applied mathematics
- Minor in computer science
- Access minor to master's degree in economics
- Minor in management ("Initiation")
- Minor in Philosophy

Student choose from the list below of the most commonly programmed minors for mathematicians, or apply for access to one of the UCLouvain minors in the full list (https://uclouvain.be/fr/etudier/mineures.html), taking into account any admission requirements.

> Additionnal module in Mathematics *[en-prog-2024-appmath]*
> Approfondissement en statistique et sciences des données *[en-prog-2024-appstat]*
> Minor in Culture and Creation *[en-prog-2024-mincucrea]*
> Minor in Scientific Culture *[en-prog-2024-mincults]*
> Minor in Development and Environment *[en-prog-2024-mindenv]*
> Minor : Issues of Transition and Sustainable Development (*) *[en-prog-2024-mindd]*
> Minor in Economics *[en-prog-2024-minecon]*
> Minor in Gender Studies *[en-prog-2024-mingenre]*
> Minor in Geography *[en-prog-2024-mingeog]*
> Minor in Mangement (basic knowledge) *[en-prog-2024-minogest]*
> Minor in Computer Sciences *[en-prog-2024-minsinf]*
> Minor in Philosophy *[en-prog-2024-minfilo]*
> Minor in entrepreneurship (*) *[en-prog-2024-minmpme]*
> Minor in Economics (open) *[en-prog-2024-minoeco]*
> Minor in Physics *[en-prog-2024-minphys]*
> Minor in numerical technologies and society *[en-prog-2024-minstic]*
> Minor in Applied Mathematics *[en-prog-2024-lminomap]*
> Minor in Mechanics *[en-prog-2024-lminomeca]*
> Mineure Polytechnique *[en-prog-2024-minpoly]*

(*) This programme is the subject of access criteria

Course prerequisites

The **table** below lists the activities (course units, or CUs) for which there are one or more prerequisites within the programme, i.e. the programme CU for which the learning outcomes must be certified and the corresponding credits awarded by the jury before registering for that CU.

These activities are also identified **in the detailed programme**: their title is followed by a yellow square.

Prerequisites and student's annual programme

As the prerequisite is for CU registration puposes only, there are no prerequisites within a programme year. Prerequisites are defined between CUs of different years and therefore influence the order in which the student will be able to register for the programme's CUs.

In addition, when the jury validates a student's individual programme at the beginning of the year, it ensures its coherence, meaning that it may:

- require the student to combine registration in two separate CUs which it considers necessary from a pedagogical point of view.
- transform a prerequisite into a corequisite if the student is in the final year of a degree course.

For more information, please consult the Academic Regulations and Procedures.

 # Prerequisities list

LANG1862 "English: reading and listening comprehension of scientific texts" has prerequisite(s) LANG1861
- LANG1861 - English: reading and listening comprehension of scientific texts

LEPL1402 "Informatique 2" has prerequisite(s) LINFO1101
- LINFO1101 - Introduction to programming

LINFO1121 "Algorithmique et structures de données" has prerequisite(s) LEPL1402
- LEPL1402 - Informatics 2

LINGE1222 "Analyse statistique multivariée" has prerequisite(s) LMAT1271
- LMAT1271 - Calculation of probability and statistical analysis

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.

Detailed programme per annual block

MATH1BA - 1ST ANNUAL UNIT

- Mandatory
- Optional
- Not offered in 2024-2025
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- 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...)

Majeure

Methodology

LMAT1191	Introduction to the mathematical approach	Pierre-Emmanuel Caprace Jean Van Schaftingen	FR [q1+q2] [30h +30h] [5 Credits]

Analyse

LMAT1121	Diffenrential and integral calculus		

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]

Sciences humaines

Philosophie

L'étudiant choisit
From 2 to 4credit(s)

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

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
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

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

Majeure

Analyse

LMAT1321	Functional analysis and partial differential equations	Jean Van Schaftingen	FR [q1] [45h +45h] [7 Credits] > English-friendly

Analyse numérique et Informatique

LMAT1351	Approximation: methods et theory	Tom Claeys	EN [q1] [30h +30h] [5 Credits] > French-friendly

Probabilités et statistiques

LMAT1371	Probability Theory	Karim Barigou	FR [q2] [30h +22.5h] [5 Credits]

Séminaires et travaux de synthèse

LMAT1381	Personal project and seminary	Marino Gran Augusto Ponce	EN [q2] [30h] [6 Credits] > English-friendly

Anglais

LANG1863	English for Students in Sciences (Upper-Intermediate level)	Ahmed Adrioueche (coord.) Catherine Avery (coord.) Amandine Dumont (coord.) Sandrine Jacob (coord.) Adrien Kefer (compensates Amandine Dumont) Nevin Serbest Florence Simon (coord.) Françoise Stas Marine Volpe	EN [q1 or q2] [30h] [3 Credits]

Sciences humaines

Sciences religieuses

Students choose 2 credits from the following courses

LTECO2100	Sociétés, cultures, religions : Biblical readings	Hans Ausloos	FR [q1] [15h] [2 Credits]
LTECO2200	Societies-cultures-religions : Human Questions	Pedro Dusabamahoro Valinho Gomes	EN [q1] [15h] [2 Credits]

⊠ LTECO2300	

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 element(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

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.

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. All 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 the third-year review work.

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: Pierre Bieliavsky

Useful Contact(s)

- Administrative manager for the student's annual program: Nathalie Micha