

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]





o Probabilités et statistiques (16 credits)

o LMAFY1101

Data exploration and introduction to statistical inference

Anouar El Ghouch



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

o 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

Students 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.

- > [Additional 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-minculsts]
- > [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 Management \(basic knowledge\)](#) [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 purposes 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](#).

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

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

o Majeure

o Methodology

○ LMAT1191	Introduction to the mathematical approach	Pierre-Emmanuel Caprace Jean Van Schaftingen	15 [q1+q2] [30h +30h] [5 Credits] 🌐
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o Analyse

o LMAT1121	Differential and integral calculus	English: reading and listening comprehension of scientific texts (compensates Tom Claeys)	[30h +30h] [5 Credits]
o LMAT1122	Mathematical analysis : differentiation	Augusto Ponce	[q2] [45h +45h] [8 Credits]

o Algèbre et géométrie

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

o Physique et physique mathématique

o LPHYS1111	Mechanics 1	Giacomo Bruno Jan Govaerts	[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	[q1] [30h +30h] [6 Credits]
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o Probabilités et statistiques

	English: reading and listening comprehension of scientific texts	Jar El Ghouch	[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.) Hila Peer Marc Piwnik	[q2] [10h] [3 Credits]
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[q2]

MATH1BA - 2ND ANNUAL UNIT

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- Activity with requisites
- 🌐 Open to incoming exchange students
- 🌐 Not open to incoming exchange students

[FR]

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
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- ⊖ 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**

○ LMAT1321	Functional analysis and partial differential equations	Jean Van Schaftingen	EN [q1] [45h +45h] [7 Credits] 🌐 > English-friendly
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o Analyse numérique et Informatique

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

○ LMAT1371	Probability Theory	Karim Barigou	EN [q2] [30h +22.5h] [5 Credits] 🌐
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o Séminaires et travaux de synthèse

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

○ LANG1863	English for Students in Sciences (Upper-Intermediate level)	Ahmed Adriouche (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] 🌐
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o Sciences humaines**o Sciences religieuses**

Students choose 2 credits from the following courses

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

⌘ LTECO2300

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.

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.

In the first year, tutorial sessions allow those students who wish to do so to take stock of topics considered in the course in a personalised way with the help of teachers. The Faculty also holds sessions on the issue of working methods as well as on ways of approaching different subjects and on time management.

For the three years, exercise sessions and laboratory sessions are held in small groups accompanied by assistants. Individual and/

Faculty	Faculty of Science (SC)
Sector	Sciences and Technology (SST)
Acronym	MATH
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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

