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## Introduction

### Introduction

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#### Introduction

The aim of the in-depth minor in mathematics is to offer learning that is supplementary to the discipline of the Bachelor's major. The very wide range of courses has been devised for students of the Bachelor in Mathematics

- who wish to supplement their Bachelor course with courses that remain within the field of mathematics, and/or
- who wish to supplement their Bachelor course with courses close to mathematics but who do not wish to undertake a single-topic minor (minor in computer science, in physics, in engineering science, applied mathematics, etc.).

## Teaching profile

### Learning outcomes

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The in-depth minor in mathematics contributes to the acquisition of the knowledge and skills appropriate to the Bachelor of Mathematics:

- disciplinary basics needed to pursue studies in mathematics or in closely related fields.
- capacity for abstract thought and critical spirit
- skills in scientific communication
- independent learning

These skills are detailed in the presentation of the programme for the Bachelor in Mathematics. Depending on the courses chosen, the student will have acquired supplementary training in closely related disciplines (physics, statistics and probability, economics, computing, applied mathematics). These courses help to develop the capacity for the analysis, in depth and from a variety of points of view, of a mathematical problem or a complex system belonging to scientific disciplines other than mathematics, in order to extract the essential features and to relate them to the most suitable theoretical tools.

## Detailed programme

### PROGRAMME BY SUBJECT

- Mandatory  
 △ Courses not taught during 2019-2020  
 ⊕ Periodic courses taught during 2019-2020
- ✘ Optional  
 ⊙ Periodic courses not taught during 2019-2020  
 ■ Activity with requisites

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

Year

2 3

#### o Contenu:

#### o Cours au choix (30 credits)

From the following courses, students choose 10 credits in the second year and 20 credits in the third year, in agreement with their study adviser.

✘ LMAT1235	Some notions of mathematical logic	Tim Van der Linden	30h+15h	5 Credits	2q	x	
✘ LMAT1331	Commutative algebra	Marino Gran	30h+15h	4 Credits	2q	x	x
✘ LMAT2440	Number theory	Olivier Pereira Jean-Pierre Tignol	30h+15h	5 Credits	1q		x
✘ LMAT1261	Mécanique lagrangienne et hamiltonienne	Christian Hagendorf	22.5h +30h	5 Credits	1q	x	x
✘ LMAT1322	Real and harmonic analysis	Augusto Ponce	30h+30h	5 Credits	2q	x	x
✘ LMAT1323	Topology	Pedro Dos Santos Santana Forte Vaz	30h+15h	4 Credits	1q	x	x
✘ LMAT1342	Geometry 3	Luc Haine	30h+30h	5 Credits	1q	x	x
✘ LMAT1343	Algebraic curves	Luc Haine	30h+15h	5 Credits	1q		x
✘ LMAT2450	Cryptography	Olivier Pereira	30h+15h	5 Credits	1q		x
✘ LMAT2460	Finite mathematics and combinatorial structures	Jean-Charles Delvenne Raphaël Jungers	30h	5 Credits	1q		x
✘ LMECA1120	Introduction to finite element methods.	Vincent Legat	30h+30h	5 Credits	2q △	x	x
✘ LINMA1170	Numerical analysis	François Henrotte (compensates Jean-François Remacle)	30h +22.5h	5 Credits	1q	x	x
✘ LINMA1691	Discrete mathematics - Graph theory and algorithms	Vincent Blondel Jean-Charles Delvenne	30h +22.5h	5 Credits	1q	x	x
✘ LINMA1702	Optimization models and methods I	François Glineur	30h +22.5h	5 Credits	2q	x	x
✘ LINGI1123	Computability and complexity	Yves Deville	30h+30h	5 Credits	2q	x	x
✘ LPHYS2211	Group theory	Philippe Ruelle	22.5h +22.5h	5 Credits	2q		x
✘ LPHYS2114	Nonlinear dynamics	Christian Hagendorf	22.5h +22.5h	5 Credits	1q	x	x
✘ LPHYS1241	Quantum Physics 1	Marco Drewes	30h+30h	5 Credits	2q	x	x
✘ LPHYS1342	Quantum Physics 2	Christophe Ringeval	45h +22.5h	5 Credits	1q		x
✘ LINGE1221	Econometrics	Sébastien Van Bellegem	30h+15h	5 Credits	2q		x
✘ LECGE1222	Microeconomics	Arastou Khatibi Louis Larue François Maniquet	45h+15h	5 Credits	1 ou 2q	x	x
✘ LECGE1333	Game theory and information in economics	Julio Davila Muro Pierre Dehez	30h+10h	5 Credits	2q	x	x
✘ LECGE1330	Industrial organization	Paul Belleflamme	30h+15h	5 Credits	1q	x	x

## COURSE PREREQUISITES

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A document entitled (nb: not available for this programme lmath100p) specifies the activities (course units - CU) with one or more prerequisite(s) within the study programme, that is the CU whose learning outcomes must have been certified and for which the credits must have been granted by the jury before the student is authorised to sign up for that activity.

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

As the prerequisites are a requirement of enrolment, there are none within a year of a course.

The prerequisites are defined for the CUs for different years and therefore influence the order in which the student can enrol in the programme's CUs.

In addition, when the panel validates a student's individual programme at the beginning of the year, it ensures the consistency of the individual programme:

- It can change a prerequisite into a corequisite within a single year (to allow studies to be continued with an adequate annual load);
- It can require the student to combine enrolment in two separate CUs it considers necessary for educational purposes.

For more information, please consult regulation of studies and exams (<https://uclouvain.be/fr/decouvrir/rgee.html>).

## THE PROGRAMME'S COURSES AND LEARNING OUTCOMES

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For each UCLouvain training programme, a [reference framework of learning outcomes](#) specifies the competences expected of every graduate on completion of the programme. You can see the contribution of each teaching unit to the programme's reference framework of learning outcomes in the document "*In which teaching units are the competences and learning outcomes in the programme's reference framework developed and mastered by the student?*"

## Information

### Liste des bacheliers proposant cette mineure

> [Bachelor in Mathematics](#) [en-prog-2019-math1ba]

## Admission

### Specific Admission Requirements

This minor is accessible from the second year, only to students enrolled in the Bachelor of Mathematics programme.

## Evaluation

**The evaluation methods comply with the regulations concerning studies and exams (<https://uclouvain.be/fr/decouvrir/rgee.html>). More detailed explanation of the modalities specific to each learning unit are available on their description sheets under the heading "Learning outcomes evaluation method".**

## Possible trainings at the end of the programme

The in-depth minor in mathematics supplements the training of Bachelor of Mathematics students.

The Bachelor in Mathematics has access to the following programmes:

- master 120 in mathematics, research or teaching focus;
- master 60 in mathematics;
- master in statistics, general or biostatistics;
- master in actuarial science.

## Contacts

**Attention, you are currently reading an archived page: below contact informations were for program study 2019-2020 only. To get current contact informations please got to [current program study site](#).**

## Curriculum Management

Entity	SST/SC/MATH
Structure entity	(MATH) ( <a href="https://uclouvain.be/repertoires/entites/math">https://uclouvain.be/repertoires/entites/math</a> )
Denomination	Faculty of Science (SC) ( <a href="https://uclouvain.be/repertoires/entites/sc">https://uclouvain.be/repertoires/entites/sc</a> )
Faculty	Sciences and Technology (SST) ( <a href="https://uclouvain.be/repertoires/entites/sst">https://uclouvain.be/repertoires/entites/sst</a> )
Sector	MATH
Acronym	Chemin du Cyclotron 2 - bte L7.01.02
Postal address	1348 Louvain-la-Neuve
	Tel: +32 (0) 10 47 31 52 - Fax: +32 (0) 10 47 25 30
Web site	<a href="https://uclouvain.be/fr/facultes/sc/math">https://uclouvain.be/fr/facultes/sc/math</a> ( <a href="https://uclouvain.be/fr/facultes/sc/math">https://uclouvain.be/fr/facultes/sc/math</a> )
Academic supervisor:	Pascal Lambrechts
Useful Contact(s)	

- Tim Van der Linden
- Nathalie Micha
- Julie Genbrugge

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