

## Master in Mathematics and applications

# Fundamentals mathematics

### Presentation

---

This is a high-level training in fundamental mathematics research. This course is the gateway to contemporary research in fundamental mathematics, in Grenoble. The master 2nd year honors in Mathematics and mathematical applications pathways of the Fourier institute is part of the Graduate school of mathematics, Information sciences and technologies, Computer science and depends on the University Grenoble Alpes. This course is recommended to students from the 1st year of general mathematics, and candidates to the agregation of mathematics, before they perform their tenure.

The objectives are to have an introduction to fundamental mathematics research. Preparation for a PhD thesis.

### Registration and scholarships

---

#### Access conditions

The first year master's is accessible to candidates according to their transcripts (and/or interview) :

- Proof of a national degree conferring the degree of bachelor in a field compatible with that of the master's degree
- Or by validation of studies or acquired experience according to the conditions determined by the university or the training

The second year master's is accessible to candidates according to their transcripts (and/or interview) :

- Having validated the first year of a compatible course - or by validating studies or acquired experience according to the conditions determined by the university or the training

Public continuing education : You are in charge of continuing education :

- if you resume your studies after 2 years of interruption of studies
- or if you followed a formation under the regime formation continues one of the 2 preceding years
- or if you are an employee, job seeker, self-employed

If you do not have the diploma required to integrate the training, you can undertake a [validation of personal and professional achievements \(VAPP\)](#)

[skin.odf-uga:SKIN\\_ODF\\_CONTENT\\_PROGRAM\\_CANDIDATURE\\_LABEL](#)

Do you want to apply and register? Note that the procedure differs depending on the degree considered, the degree obtained, or the place of residence for foreign students.

[Find out which procedure applies to me and apply](#)

### Further studies

---

Doctorate

## Practicals informations :

---

- > Component : UFR IM2AG (informatique, mathématiques et mathématiques appliquées)
- > level : Baccalaureate +5
- > Duration : 2 years
- > Course type : Initial and Continuing Education
- > Location(s) : Grenoble - University campus

## Contacts

---

### Program director

Piau Didier  
didier.piau@univ-grenoble-alpes.fr

Maclean Catriona

Hafner Dietrich  
Dietrich.Hafner@univ-grenoble-alpes.fr

### Program administration

Hamed Abdelouahab Latifa  
latifa.hamed-abdelouahab@univ-grenoble-alpes.fr  
Phone 04.76.51.47.95

## Program

---

Program under construction - awaiting CFVU vote

### Master in general mathematics 1st year

#### Semester 7

UE Algebra	9 ECTS
UE Holomorphic functions	6 ECTS
UE Probabilities	9 ECTS
UE Analysis	9 ECTS

#### Semester 8

UE Study and research work	6 ECTS
6 Option	
UE Effective algebra and cryptographie	6 ECTS
UE Compléments sur les EDP	6 ECTS
UE Differential geometry	6 ECTS
UE Markov process	6 ECTS

UE Galois theory	6 ECTS
UE Operations Research (AM)	6 ECTS
- UE Operations Research	3 ECTS
- Operations Research Complementary	
1 option(s) to choose from 1	
UE English S8	3 ECTS
UE Opening UE (only if C1 level in English reached)	3 ECTS

### Master 2nd year

#### Semester 9

2 option(s) to choose from 2	
UE Morse theory in geometry and topology	12 ECTS
UE Random models on lattices	12 ECTS
UE Analysis and probability on manifolds	12 ECTS
1 option(s) to choose from 1	

**UE Topology of random  
hypersurfaces** 6 ECTS

---

**UE Probabilistic and geometric  
techniques in high dimension** 6 ECTS

---

## Semester 10

**UE Research internship** 27 ECTS

---

**UE English**

---