

# Master in Mathematics and applications

## The programme offers the following course(s) :

- › Preparation for Agregation (Algebra, Analysis, Modeling)
- › Fundamentals mathematics
- › Operations Research, Combinatorics and Optimization (ORCO)
- › Cybersecurity
- › Statistics and Data Sciences (SSD)
- › Master in Science in Industrial and Applied Mathematics (MSIAM)

## Presentation

**Here is a diagram of the structure of the Master's: on the left the first year Master's (core curriculum and first year Master's of course), on the right the second year Master's**

**Co-accredited training between the Grenoble Alpes University, the Polytechnic Institute of Grenoble, and the University of Savoie Mont-Blanc.**

This Master program offers several courses.

Programme Master's in Science in Industrial and Applied Mathematics (MSIAM)	first year Master's + second year Master's
Computational Mathematics, Erasmus Mundus BioHealth Computing (CM-BHC)	second year Master's
Algebra, Analysis, Modelling, Teacher and Aggregation Preparation	first year Master's + second year Master's
Cybersecurity (CS)	second year Master's
Fundamental Mathematics (Fundamental Mathematics)	first year Master's + second year Master's
Statistics and Data Science (1)	first year Master's + second year Master's
Operations Research, Combinatorics and Optimization (ORCO)	second year Master's*
Mathematical Modelling, Applied Analysis (MMAA) (2)	first year Master's + second year Master's

(1) delivered by the Humanities and Social Sciences Teaching and research units of Grenoble Alpes University  
(2) delivered by the University of Savoy (Chambery)

**It has 2 core curricula:**

- "General Mathematics" core curriculum in French (defined by Mathematics Teaching Units of first year Master's (S1, S2)) and core curriculum
- "Applied Mathematics" (defined by Mathematics Teaching Units of Applied Mathematics and first year Master's (S1, S2))

**Differentiation at first year Master's level:**

The optional Teaching Units proposed in S1 and S2 have as their objective to guide the students towards the various courses of the Master program. The Statistics and Data Sciences programme is independent of the core curricula. The Mathematical Modelling, Applied Analysis programme is also independent of the core curriculum, but can be accessed through it at the second year Master's level.

**Differentiation of the courses at the second year Master's level (apart from Statistics and Data Sciences and Mathematical Modelling, Applied Analysis):**

- the Master's in Science in Industrial and Applied Mathematics, based on the core curriculum "Applied Mathematics", accessible via the core curriculum "General Mathematics"; defined by specific Teaching Units of the second year Master's.
- Fundamental Mathematics, based on the core curriculum "General Mathematics", defined by specific Teaching Units of the second year Master's.
- Algebra, Analysis, Modelling, Teacher and Aggregation Preparation, based on the core curriculum "General Mathematics", defined by specific Teaching Units of the second year Master's.
- Cybersecurity, accessible via the core curricula "Applied Mathematics" and "General Mathematics", as well as via the core curriculum "Computer Science" of the Computer Science Master program. It is defined by a specific Teaching Unit of the first year Master's and specific Teaching Units of the second year Master's.
- ORCO, accessible via the core curricula "Applied Mathematics" and "General Mathematics", as well as via the core curriculum "Computer Science" of the Master program Computer Science. It is defined by specific Teaching Units of the second year Master's.

## Objectives

---

To train specialists in mathematics and computer science for engineering, teaching, and research in a wide range of fields (pure and applied maths) where the demand from the socio-economic world is strong: security and cryptology, scientific computing, operational research, analysis of large masses of data, image synthesis and processing, statistics, etc. Sectors of activity: R & D, mathematical engineering in industry, public research, and education. Several courses (Master's in Science in Industrial and Applied Mathematics, CS, ORCO, CM-BHC) provide highly sought-after math/computing skills.

The main opportunities for each standard programme are:

- **Algebra, Analysis, Modelling, Teacher and Aggregation Preparation: mathematics teacher**
- **Master's in Science in Industrial and Applied Mathematics:** researcher and teacher-researcher in applied mathematics - R&D engineer in mathematics and industrial computing - technical and commercial engineer.
- **CM-BHC:** researcher and teacher-researcher in mathematics/computing applied to biomedical research
- **Statistics and Data Sciences:** statistical engineer - data-analyst - biostatistician - statistical programmer in industry and administration - technical-commercial and statistical engineer. R&D.
- **ORCO:** Operational Research Engineer - Logistics Engineering Engineer - Optimization Development Engineer - R&D Engineer in Operations Research - Teacher-researcher in Operations Research and Combinatorics.
- **CS:** engineer in cybersecurity - engineer in security of information systems - engineer specialized in auditing security of information systems - technical engineer in computer security - R&D engineer specialized in cybersecurity.
- **Fundamental Mathematics:** researcher and teacher-researcher in Mathematics, higher education.
- **Mathematical Modelling, Applied Analysis:** Modelling, optimization, decision support. Types of employers: Large enterprises and SMEs; Research and consultancy firms; Territorial authorities.

## Registration and scholarships

---

The first year Master's is open to those who have obtained a national degree conferring the title of Bachelor in a field compatible with that of the Master's or a validation of studies or prior experience.

Admission to the second year Master's is selective. It is open to candidates who completed a first year Master's in the field.

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 \(VAPP\)](#).

## Practicals informations :

---

- > **School** : Grenoble INP, UFR IM2AG (informatique, mathématiques et mathématiques appliquées)
- > **level** : Baccalaureate +5
- > **Duration** : 2 years
- > **Credits** : 120
- > **Course type** : Initial and Continuing Education
- > **Location(s)** : Grenoble - University campus
- > **Contacts** :

### Programme director

GAUDOIN Olivier

Didier Piau

Didier.Piau@univ-grenoble-alpes.fr