## MSIAM

# Master of Science in
# Industrial & Applied Mathematics

**International master's program fully taught in English.**

*This program is offered jointly by Université Grenoble Alpes (UGA) Faculty of Science, IM²AG and Grenoble INP Ensimag, UGA / France*

The Master of Science in Industrial and Applied Mathematics (MSIAM) offers a large spectrum of courses, covering areas where the research in applied math in Grenoble is at the best level.

**Our graduates are trained to become experts and leaders in scientific and technological projects where mathematical modeling and computing issues are central, in industry or research. A large and distinguished graduate faculty participates in the program, bringing their expertise in a wide range of areas of mathematics including applied analysis, numerical analysis and scientific computing, probability theory and statistics, computational graphics, image analysis and processing, and applied geometry. Currently, applied mathematics is an area that provides many job opportunities, in industry and in the academic world.**

## http://msiam.imag.fr

# Objectives

By the end of the program, students in MSIAM should be able to formulate a well posed problem in mathematical terms, carry out appropriate mathematical analysis, propose an appropriate numerical method, implement a program which provides adequate answers to the question, and present and interpret these results.

The emphasis of the Grenoble community is to create the link between the study of the mathematical problem inferred from the application and the practical resolution, ideally in a framework that allows for reproductible results.

There is a great demand for applied mathematical engineers on topics such as scientific computation, big data analysis, imaging and computer graphics, with applications in many fields such as physics, medicine, biology, engineering, finance, environment. Students following the MSIAM master program will find a position in any of these application fields.

# Academic program

The academic program is a one-year (M2) Master program. It combines **one semester of courses and laboratory work** with **a six-month individual research project.**
The students will select specific topics among a large list of elective courses offering a specialization for example in Modeling, Scientific Computing and Image analysis or Data Science.

**Some of the topics offered are :**
Differential Calculus, Wavelets and Applications / Efficient methods in optimization / Optimal transport: theory, applications and related numerical methods / Geophysical imaging / An Introduction to Shape and Topology Optimization / Fluid Mechanics and Granular Materials / Statistical learning: from parametric to nonparametric models / Handling uncertainties in (large-scale) numerical models; Computational biology / Temporal, spatial and extreme event analysis / Learning, Probabilities and Causality / From Basic Machine Learning models to Advanced Kernel Learning / GPU Computing / Quantum Computing.

**A five-month project is compulsory** (*Master thesis- 30 ECTS*).
It can be done in a R&D department of a private company or in an academic laboratory.

Légende ?

## ADMISSIONS

Anyone holding a first year of master *(60 ECTS credits)* in mathematics or applied mathematics or an equivalent degree, interested in pursuing a high-level mathematical education and motivated by the applications of mathematics. The minimum requirement is to have earned at least the equivalent of *240 ECTS credits*.

Students from related backgrounds (physics, computer science, engineering...) may also apply provided they possess outstanding mathematical qualifications and are highly motivated by applications.

### REQUIREMENT
**English language competence B2**
*(see English test scores accepted on our admission webpage)*

### APPLICATION DEADLINE
**Mid May**

Contacts
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