

## Contacts

### Location

UNIVERSITÉ DE PAU  
ET DES PAYS DE L'ADOUR

College of Sciences and Technology  
for Energy and Environment

Pau Campus - France

### Coordinator

jacques.giacomoni@univ-pau.fr

### More information

[http://formation.univ-pau.fr/  
m-mathematics-mms](http://formation.univ-pau.fr/m-mathematics-mms)

### Admission Office

master.programs@univ-pau.fr

### How to apply

The application documents must  
be uploaded on the website:

<https://ri.univ-pau.fr/m-programs>



## Admission requirements

### Academic requirements

All students who have completed four years in a higher education institution in mathematics can apply.

Sufficient skills in mathematics are needed (mathematical and numerical analysis). Limited number of students: 30 per year.

### English Language Requirements

CECRL B2 level in English, or CECRL B1 level in English (for second year level) and CECRL B2 level in French (for first year Level).

Students are allowed to use English or French during exams.

## Detailed Program Facts

**Academic Year:** Our full academic year runs from September to June

**Application:** Applications are open from November to March 31<sup>st</sup>

**Program intensity:** Full-time

**Duration:** 1 year

**Credits:** 60 ECTS

**Language:** Fully taught in English

**Level:** Master's degree

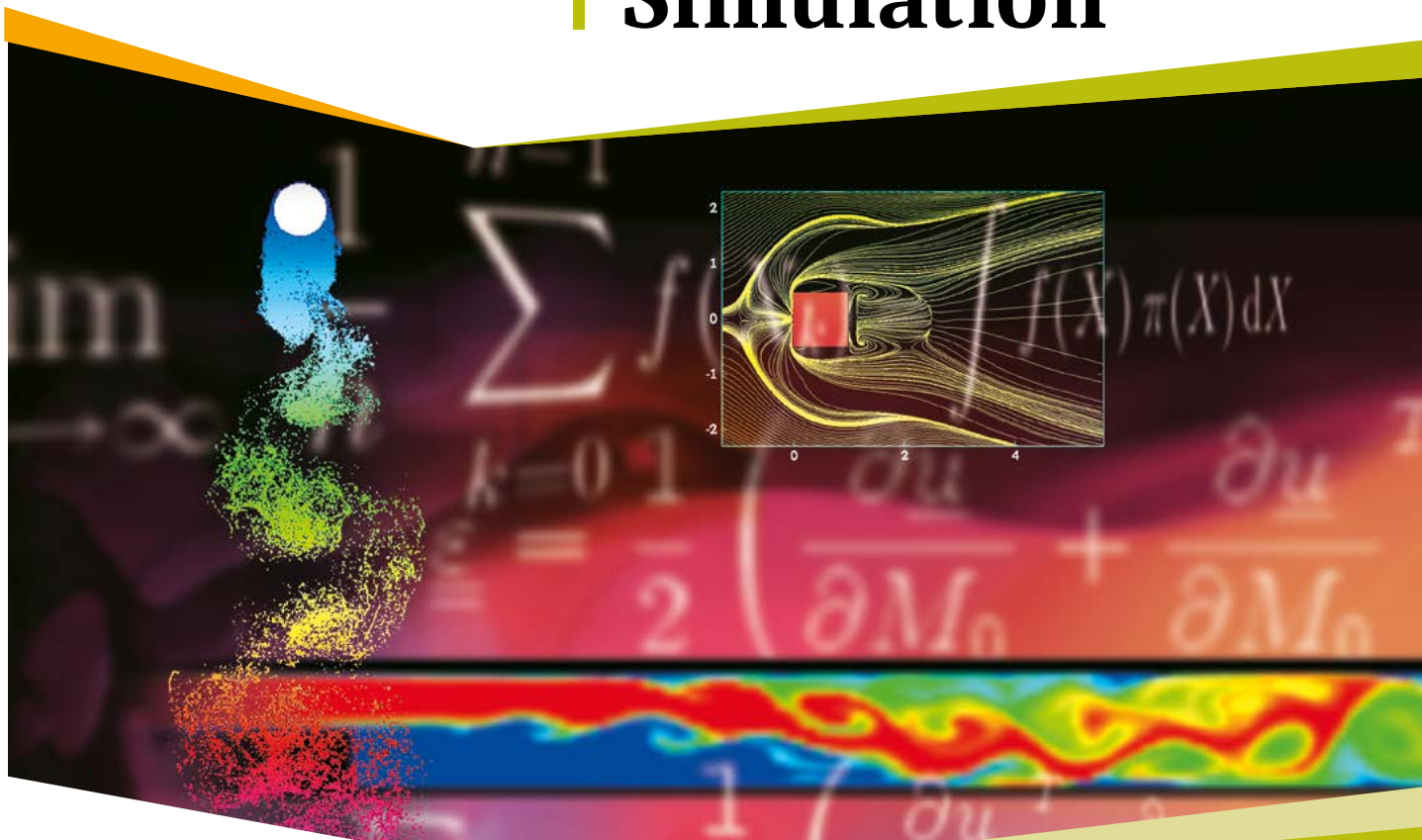


## Master's degree

MATHEMATICS  
AND APPLICATIONS

# Mathematics, Modeling and Simulation

Conception : Direction de la communication - Impression : Centre de reprographie - LUPPA - janvier 2023



## Overview

This degree is delivered after 12 months.

The program provides excellent training in many different areas of applied mathematics related to modelling and simulation with partial differential equations, with applications in fluid mechanics, waves propagation, porous media, etc.

This program provides access to doctoral studies, either in an academic context or in an industrial context (collaboration between industry and UPPA).

The master is fully taught in English and is hosted at the College of Sciences and Technologies for Energy and Environment (STEE) of the Université de Pau et des Pays de l'Adour (UPPA) in France.

The STEE College has been founded within the framework of the prestigious French Initiative of Excellence label I-SITE (Initiatives Sciences, Innovation, Territories and Economy), obtained by our E2S-UPPA project.

## Student Learning Outcomes

At the end of this program, the students in MMS will be able to:

- Elaborate and analyze mathematical models arising from physics, biology, geology, industry, etc.
- Elaborate and analyze numerical schemes
- Develop, adapt and use industrial or research softwares of numerical simulation

## Opportunities

### Sectors

- Industry
- Academic

### Fields

- Scientific computing
- Mathematical and numerical analysis
- Modelling

### Positions

- Engineer
- Researcher
- Phd Student

**80%** are pursuing their studies with a PhD  
*30 months after graduation (class of 2019)*

The program is carried out in close collaboration with the LMAP research laboratory where scientific and experimental practicals will be performed. Students will also benefit from the global research environment and administrative support of the University and of the E2S I-site program.

## Program objectives

- This programme aims at providing strong skills in applied mathematics (partial differential equations analysis, numerical analysis, scientific computing and high performance computing, optimization).
- Courses are focusing on applications in industrial problems, fluid mechanics, waves propagation, optimal design...
- This programme prepares students for leading positions in private and public organisations in research and development departments.

## M2 - Semester

### Course Title

- Analysis of PDE
- Numerical Analysis of PDEs

### Electives 1

- Finite Volume Methods for Hyperbolic Systems
- Scientific computing
- Scientific computation with Python (M1 course, specific to the ENS KOUBA dual-degree)
- High-Performance Computing
- Reservoir simulation
- Industrial Software
- Mesh and applications
- Stochastic PDE
- Inverse problems
- Asymptotic analysis
- Mathematical modeling and numerical analysis for Hyperbolic problems
- Advanced Analysis
- Mathematical Engineering of deep learning

### Electives 2

- French or English as a foreign language

## M2 - Semester 2

- Integrator project
- Internship from 5 to 6 months