

MASTER'S DEGREE IN ADVANCED MATHEMATICS AND MATHEMATICAL ENGINEERING

This master's degree

has a dual academic and professional orientation. It provides the skills and techniques needed for scientific and mathematical research and the capacity to work in interdisciplinary teams.

The MAMME gives access to the doctoral

programme in Applied Mathematics and provides a solid grounding in science and engineering.

More information:

<http://mamme.masters.upc.edu/>
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UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH
School of Mathematics and Statistics

FME

School of Mathematics and Statistics



UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH

International Campus of Excellence

MASTER'S DEGREE IN ADVANCED MATHEMATICS AND MATHEMATICAL ENGINEERING

The master's degree in Advanced Mathematics and Mathematical Engineering (MAMME) has a dual academic and professional orientation. On the academic side, it provides the skills and techniques needed for scientific research in general and, more specifically, for mathematical research. On the professional side, it enables students to enter any interdisciplinary team alongside, engineers, physicists, biologists and economists, for example.

The master's degree is organised by the School of Mathematics and Statistics (FME), a school belonging to the Universitat Politècnica de Catalunya · BarcelonaTech (UPC), so it benefits from the cutting-edge mathematical research and technological environment of the UPC.

- **Language of instruction:** English
- **Delivery:** Face-to-face
- **Course directors:** Jaume Franch and Sonia Fernández

60
ECTS

What subjects to choose

The curriculum comprises a total of 60 ECTS that are taken over two semesters (one academic year): 45 ECTS for courses and 15 ECTS for the master's thesis.

The first semester of the master's degree starts in September and ends in January and the second semester starts in February and ends in June.

All classes are taught in the afternoon, from 3 p.m. to 7.30 p.m. Courses are offered in five broad fields:

- Algebra and Geometry
- Discrete Mathematics and Algorithmics
- Modelling in Engineering and Biomedical Sciences
- Differential Equations
- Scientific Computing

Students may choose to take courses from other master's degrees, up to a maximum of 22.5. The courses may be from the master's degree in Advanced Mathematics taught at the Universitat de Barcelona, the master's degree in Modelling for Science and Engineering taught at Universitat Autònoma de Barcelona and the master's degree in Statistics and Operations Research (MESIO) taught at the UPC. Courses from other UPC master's degrees may also be taken subject to the approval of the MAMME course director.

Check mamme.masters.upc.edu for the complete list of courses and detailed timetables.

7
research groups
recognised by the
Catalan government (SGR)

Requirements

The master's degree is intended for students with good abstract reasoning skills, an interest in problem solving, strong work habits and a liking for mathematics.

A scientific background in mathematics are required. For this reason, a bachelor's degree in Mathematics, Statistics, Physics or Engineering is recommended, although this list is not exclusive and all applications will be reviewed on an individual basis. Candidates whose mathematical background is insufficient can be accepted provided they take additional courses to reach the required level.

Admission criteria

The following will be taken into consideration during the admission process: academic record, curriculum vitae, statement of purpose and, if necessary, a personal interview and letters of recommendation.

Scholarships

In addition to grants of a more general nature, the MAMME offers the scholarships listed below. Catalunya-La Pedrera Foundation sponsors a scholarship worth 5,000 euros that is offered to students enrolled in the master's degree.

AGAUR teaching support scholarships aim to support the academic activities of teaching staff under the Catalan government's AAD programme. Master Student Excellence IMP Awards recognise the academic excellence of the students with the best academic records during the first and second semesters.

>40%
international students

Double degrees

The FME offers a double master's degree with the Illinois Institute of Technology (IIT), USA. Students who complete the double degree, which lasts one and a half years, are awarded the MAMME by the FME and a master's degree in Applied Mathematics by IIT. Applications must be submitted before 1 November in the first semester of the master's degree. Students also have the option to carry out their master's theses at IIT under the supervision of one of the Institute's lecturers.

Work placements

Students enrolled in the master's degree can gain work experience at a company, although this is not part of the curriculum.

Master's thesis

All students are required to write and defend a master's thesis during the second semester. The master's thesis can be oriented towards research. You will have the option to carry it out at a department, a laboratory, a research group of the School, of another university, a company, or within the framework of a mobility programme.

International recognition

- In the 2014 edition of the CWTS Leiden Ranking, the UPC was ranked first in Spain and 23rd in the world for scientific output in the field of Mathematics, Computer Science and Engineering.
- The master's degree was awarded the International Master's Programme distinction by the Government of Catalonia's Agency for the Management of University and Research Grants (AGAUR) in the 2013 call.

100%
graduate employment rate

- The UPC occupies significant positions in international rankings such as the Shanghai Ranking, in which it is ranked among the top 200 universities in the world in the field of Mathematics.

Mobility programmes

The master's degree promotes the mobility of its students through agreements with other universities in Europe, Latin America and the rest of the world, within the framework of international mobility programmes such as Erasmus+ and UPC Europe. Needless to say, students from other universities are welcome.

Professional opportunities

Graduates may find employment in academic research (by pursuing a doctoral degree, mathematical modelling in industry, finance, statistics, biomedics, computer vision or other fields).

Access to doctoral studies

The master's degree gives access to the doctoral degree in Applied Mathematics and provides a solid background to any doctoral degree in science or engineering.