Areas of employment

The broad-spectrum preparation on the main sectors of Engineering (Civil, Industrial, Information) and Financial Sciences makes the mathematical engineer attractive to a wide range of sectors: Engineering companies (design support and experimental activities); Software houses; Bank and Insurance institutions; Public Administrations; Public and private research institutions; PhD.

Supporting Partners

CONFINDUSTRIA PADOVA

ORDINE DEGLI INGEGNERI DELLA PROVINCIA DI PADOVA

ABI Associazione Bancaria Italiana

BANCA IMI

MONTE DEI PASCHI DI SIENA BANCA DAL 1472

Danske Bank

ANCE VENETO

CONFÉRENCE DES GRANDES ÉCOLES

SOCIETE GENERALE

BANQUE POPULAIRE BRED

BlackRidgeBANK

The Master aims at creating a professional figure expert in the use of the most up-to-date methodologies provided by Applied Mathematics and Numerical Methods to develop complex models and mathematical investigations needed to tackle not standard Engineering problems. The Mathematical Engineer is equipped with an extremely versatile basic education, independent of specific technological tools, which allows him to take advantage of an extremely rich spectrum of career prospects.

UNIVERSITÀ DEGLI STUDI DI PADOVA

ICEA

**MASTER DEGREE IN
MATHEMATICAL ENGINEERING**

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international@dicea.unipd.it
📞 +39 049 8275610
📷 f @dicea.unipd

Training activities

The teaching will be delivered in English.The training courses are divided into two curricula:
● Mathematical Models for Science and Engineering (MMSE);
● Financial Engineering (FE).
The students will acquire high-level skills in:

Applied Mathematics – aimed at deducing the mathematical model most suitable for the description of a given applied problem or a physical phenomenon and at analyzing the simulated solutions from both qualitative and quantitative points of view;

Numerical Methods – aimed at using the most advanced numerical tools for numerical approximation, integration and representation of the model solution;

Probability and Statistics – aimed at the treatment of non-deterministic problems, as well as the management and interpretation of experimental data and data from probabilistic models;

Engineering – aimed at the knowledge of relevant fields of application and problems which characterize the various sectors of Engineering.

MASTER DEGREE IN MATHEMATICAL ENGINEERING

Mathematical Modelling for Engineering and Science **Financial Engineering**

First year

Mathematical Modelling for Engineering and Science

I Semester
- Analytical and Stochastic Mathematical Methods for Engineering 12 CFU
- Introduction to Partial Differential Equations 9 CFU
- Numerical Methods for Differential Equations 6 CFU
- Dynamical systems 6 CFU

II Semester
- System identification and data analysis 9 CFU
- Statistical mechanics of complex systems 9 CFU
- Numerical Methods for Continuous Systems 6 CFU
- Continuum mechanics 6 CFU
- B2 English 3 CFU

Financial Engineering

I Semester
- Analytical and Stochastic Mathematical Methods for Engineering 12 CFU
- Introduction to Partial Differential Equations 9 CFU
- Numerical Methods for Differential Equations 6 CFU

II Semester
- System identification and data analysis 9 CFU
- Stochastic methods for finance 9 CFU
- Stochastic differential equations, with numerics 9 CFU
- Scientific Computing and Object Oriented Programming 6 CFU

Second year

Mathematical Modelling for Engineering and Science

I Semester
- Advanced Fluid Mechanics (1) 9 CFU
- Advanced Solid Mechanics (1) 9 CFU
- Electromagnetism (1) 9 CFU
- Elective Courses 6/9 CFU

II Semester
- Elective Courses 6/9 CFU
- Elective Courses 6/9 CFU
- Master Thesis 15 CFU

(1) *Two mandatory courses to be chosen among three.*

Financial Engineering

I Semester
- Mathematical Tools for Economics and Finance 9 CFU
- Risk Management 9 CFU
- Portfolio Optimization 9 CFU

II Semester
- B2 English 3 CFU
- Stage 6 CFU
- Project Erasmus 9 CFU
- Master Thesis 15 CFU

All courses and formative activities concerning the second year of the Financial Engineering Curriculum will be in Paris incollaboration with ESILV (Ecole Supérieure d'Ingénieur Léonard de Vinci).

Elective courses

Elective courses consist of 12 optional ECTS and 9 free ECTS. These courses can be selected by students in accordance with academic tutor to focus their preparation towards a specific field of study. The list of possible courses includes topics in almost engineering (Civil, Industrial, Information) and science fields.