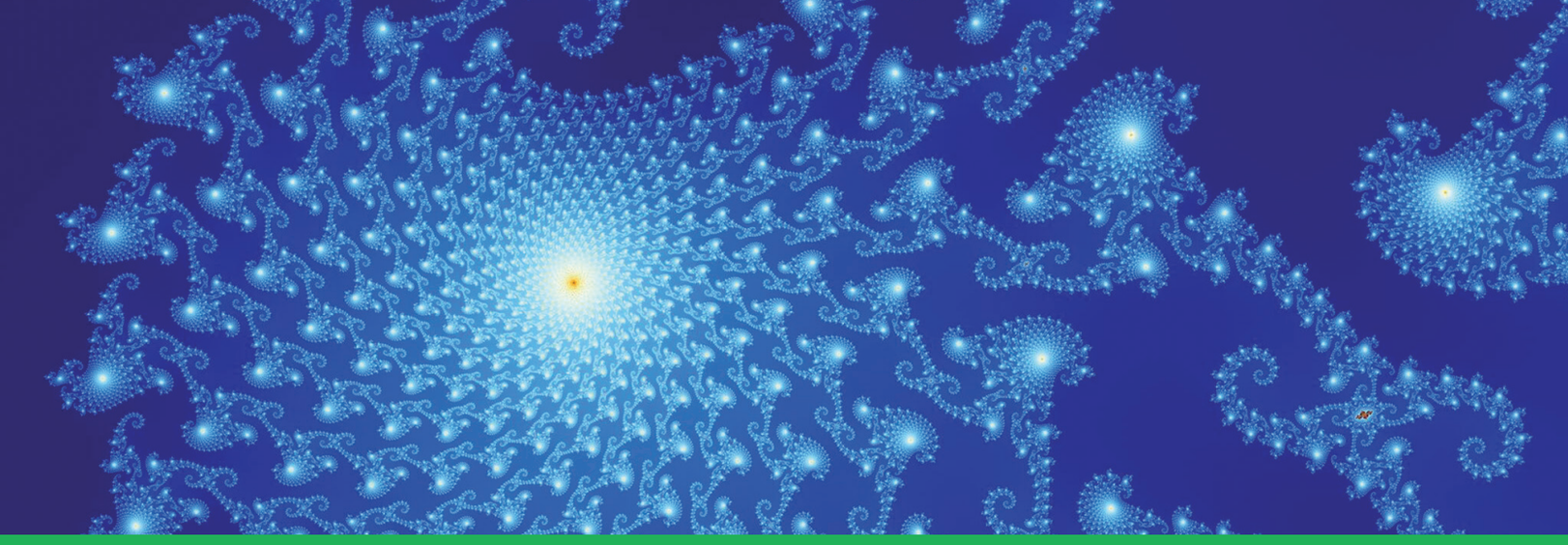

University of Camerino
School of Science
and Technology

MATHEMATICS AND APPLICATIONS

Master Degree
Second Cycle Degree
Duration 2 years
ECTS credits 120
Campus Location Camerino
web site
www.mat.unicam.it

School of Science and Technology
Mathematics Division

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Stage and Placement (Internship)
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INTRODUCING THE MASTER

The Master Degree Course in Mathematics and Applications

- strengthens knowledge of Pure Mathematics,
- proposes two different curricula introducing students to research and didactics in Mathematics, or applications to Economics and Finance, or applications to Technology and Engineering,
- through the High Apprenticeship or teaching experiences, prepares students for the world of work.

The master benefits of a longstanding and well appreciated educational expertise, a friendly and skilful teaching staff, and reliable supporting structures (such as study and work rooms, computer facilities, libraries) in addition to dedicated tutorship services. Among the research programs developed in Mathematics in Camerino and related to our Master one could mention: design of electric cars and racing cars, applications to earth and sea sciences, economics and finance, health (medical diagnostic), disability problems (exoskeleton) and much more.

ADMITTANCE REQUIREMENTS

Bachelor Degree in Mathematics or other Bachelor Degrees with at least 30 ECTS in Mathematics and adequate knowledge of Algebra, Analysis and Geometry.
Further information on admission rules, pre-admission deadline and other services for foreign students at http://international.unicam.it

CAREER OPPORTUNITIES

- Italian students can consider a teaching experience, please ask prof. Sonia L'Innocente - sonia.linnocente@unicam.it - about kit courses introducing to the Italian educational world and similar perspectives.
- Students interested in a job in industry (constructing and applying mathematical models in economical and industrial settings, in public departments or managements) are invited to visit www.unicam.it/master or ask prof. Pierluigi Maponi - pierluigi.maponi@unicam.it
- Students interested in scientific research are invited to consider the PhD programs of the International School of Advanced Studies, more info at http://isas.unicam.it

Classes will be held face to face in the University halls but it is possible to attend them also in streaming.
Practical activities and laboratories will be organized in different modalities that will be communicated at the due time.

Classes are held in English

HR EXCELLENCE IN RESEARCH

COURSE STRUCTURE

The Master Degree Course in Mathematics and Applications is organized into two different curricula: one in Theoretical and Educational Mathematics and the second in Applied and Engineering oriented Mathematics.
There are two Semesters, from mid-September to the end of January, and from March to mid-June. The Winter Exam Session is in February.

Theoretical and Educational Mathematics

	Ects
Advanced Algebra and Mathematical Logic, divided into:	
Advanced Algebra, term I	6
Advanced Mathematical Logic, term II	6
Advanced Geometry, divided into:	
Differential Geometry, term I	6
Differential Topology, term II	6
Advanced Applied Mathematics, divided into:	
Nonlinear Optimization, term I	6
Numerical Methods for Differential Equations, term II	6
Advanced Mathematical Analysis, term I	6
Advanced Probability and Stochastic Processes, divided into:	
Advanced Probability, term I	6
Stochastic Processes, term II	6

12 ECTS among the following:

- Nonlinear Analysis and Applications, term I 6
- Knots Theory, term I 6
- Lie Algebras and Lie Groups, term I 6
- Inverse Problems in Remote Sensing Applications, term II 6

12 ECTS among the following:

- Educational Mathematics, term I 6
- Educational Experiences, term I 3
- Independent study and research 3
- Advanced Mathematical Physics, term II 6
- General Relativity, term I 6
- Computational Methods for Finance, term II 6
- Machine Learning, term I 6
- Computability and Complexity, term I 6
- Quantum Computation, term I 6
- Theoretical Physics, term I 6
- Systems Analysis and Control Theory, divided into:
  - System Analysis, term I 6
  - Control Theory, term II 6
- Dynamic and Stochastic Optimization in Finance and Economics, term I 6

Optional courses chosen by the student	12
Master thesis	30

(see also section Master Thesis)

Applied and Engineering oriented Mathematics

	Ects
Advanced Algebra and Mathematical Logic, divided into:	
Advanced Algebra, term I	6
Advanced Mathematical Logic, term II	6
Advanced Mathematical Analysis, term I	6
Advanced Probability and Stochastic Processes, divided into:	
Advanced Probability, term I	6
Stochastic Processes, term II	6
Advanced Applied Mathematics, divided into:	
Nonlinear Optimization, term I	6
Numerical Methods for Differential Equations, term II	6
Systems Analysis and Control Theory, divided into:	
System Analysis, term I	6
Control Theory, term II	6

12 ECTS among the following:

- Nonlinear Analysis and Applications, term I 6
- Knots Theory, term I 6
- Lie Algebras and Lie Groups, term I 6
- Inverse Problems in Remote Sensing Applications, term II 6

12 ECTS from the following list:

- Advanced Geometry, divided into:
  - Differential Geometry, term I 6
  - Differential Topology, term II 6
- Advanced Mathematical Physics, term II, 6
- General Relativity, term I 6
- Computational Methods for Finance, term II 6
- Machine Learning, term I 6
- Computational Graphics, term I 6
- Fundamentals of robotics and industrial manipulators, term II 6
- Nonlinear Control Theory, term I 6
- Advanced Mechanical Design, term I 6
- Dynamic and Stochastic Optimization in Finance and Economics, term I 6

Optional courses chosen by the student	12
Master thesis	30

(see also section Master Thesis)

Optional courses chosen by the student

The ETCS reserved for these activities can include

- Additional courses in Mathematics,
- courses in Physics, Computer Science, and so on,
- courses of Advanced English, or other languages,
- seminars on Mathematics and its Applications (in Italian),
- High Apprenticeship (see below).

Students with an undergraduate degree not in Mathematics are strongly recommended to choose the optional courses to complete their preparation in basic Mathematics. Moreover, they are warmly invited to contact the Course Coordinator and discuss the best choice.

TUITION FEES, DISCOUNTS AND GRANTS AVAILABLE

find out at

http://www.unicam.it/studente/guida-dello-studente

and

https://international.unicam.it/services/scholarships

a.y. 2021/2022

High Apprenticeship

It is a 1 year job training experience. To this end, students may use

- the ETCS devoted to optional courses,
- the ETCS of the final thesis.

Knowledge of the Italian language is strongly recommended.
For any information please ask well in advance prof. Pierluigi Maponi (pierluigi.maponi@unicam.it), also in order to define a specific study plan.

Master thesis

The final thesis is prepared under the supervision of a professor. Students are asked to contact with due advance their advisor to define the topic. Students may choose to devote to the final thesis 24 ECTS (instead of the standard amount of 30 ECTS) by selecting optional courses for 18 ECTS (instead of the standard amount of 12 ECTS). In such a case a request has to be submitted to the Study-plan Committee.

QUALITY ASSURANCE SYSTEM

UNICAM Quality Management System Certificate ISO 9001:2015 (from AFAQ-France, a French leader and one of the first certification bodies at the global level) guarantees students the quality of services provided. The guarantee is via a rigorous analysis of internal organizational procedures and the prompt addressing of any weaknesses or shortcomings whether detected or reported by the students themselves.
The Quality Management System includes the following support services for students:
orientation and guidance, mentoring, International mobility, Internships and communication. These integrate with and support the educational activities, so as to contribute to the complete training of the student.

UNICAM giugno 2021