UNIVERSITA' DEGLI STUDI DI MILANO
PROGRAMME DESCRIPTION - ACADEMIC YEAR 2026/27
BACHELOR
MATHEMATICS (Classe L-35 R)
Enrolled in the y.a. 2026/2027

HEADING

Degree classification - Denomination and code:	L-35 R
Degree title:	Dottore
Curricula currently available:	GENERAL / APPLICATIONS
Length of course:	3 years
Total number of credits required to complete programme:	180
Years of course currently available:	1st
Access procedures:	Open, subject to completion of self-assessment test prior to enrolment
Course code:	FAM

PERSONS/ROLES

Head of Study Programme

Prof. Ghilardi Silvio

Tutors - Faculty

ALZATI Alberto, CALANCHI Marta, CAMPI Luciano, CAVATERRA Cecilia, CIRAOLO Giulio, FUHRMAN Marco, GARBAGNATI Alice, GORI Anna, LUPERI BAGLINI Lorenzo, MAGGIS Marco, MASTROLIA Paolo, MATESSI Diego, MOLTENI Giuseppe, MONTALTO Riccardo, MONTOLI Andrea, MORALE Daniela, PAYNE Kevin, PENATI Tiziano, PIZZOCCHERO Livio, RIZZO Ottavio, SCACCHI Simone, STELLARI Paolo, SVALDI Roberto, TARSI Cristina, TASIN Luca, TERRANEO Elide, TORTORA Alfonso, UGOLINI Stefania, VEESER Andreas, VESELY Libor, ZAMPIERI Elena.

Degree Course website

https://matematica.cdl.unimi.it/it

"Piano Lauree Scientifiche" academic tutor

CAUSIN Paola

Admission Test Organization Board

TERRANEO Elide (Presidente), RIZZO Ottavio

Bachelor's Degree Study Plan Board

BERTOLINI Marina (Presidente), SALVATORI Maura, CAUSIN Paola

Degree programme administration

via Celoria, 20 Phone 0250316122 su appuntamento https://informastudenti.unimi.it/saw/ess?AUTH=SAML

Disability academic tutor

SCACCHI Simone

Homework academic tutor

MAZZA Carlo

Internship academic tutors

BRANCHETTI Laura, RIZZO Ottavio

Mathematics Final Exam Board

TARSI Cristina (Pres)-MONTALTO Riccardo-MORALE Daniela-VENERUCCI Rodolfo-TERRANEO Elide-ALZATI Alberto-FIERRO Francesca

Mathematics Final Exam Organization Board

CALANCHI Marta (Presidente), PELOSO Marco, GHILARDI Silvio, VIGNATI Marco

Orientation and Internship Board

TORTORA Alfonso (Presidente), NALDI Giovanni, MICHELETTI Alessandra, MAGGIS Marco, COZZI Matteo, BRANCHETTI Laura

Other Activities and Credit Award Board

SCACCHI Simone (Presidente), MOLTENI Giuseppe, TORTORA Alfonso

Programme Transfer and International Qualifications Recognition Board

ZAMPIERI Elena (Presidente), REGGIO Luca

Socrates-Erasmus Board

GAETA Giuseppe (Presidente), GORI Anna, MATESSI Diego, SCACCHI Simone, PAYNE Kevin

Student registrar

CONTATTI, SEDI E ORARI https://www.unimi.it/it/node/359 https://www.unimi.it/it/node/360

Timetables Board

LOVADINA Carlo (Presidente), ZAMPIERI Elena, ZANOTTI Pietro

Web pages and website academic tutors

PALEARI Simone

CHARACTERISTICS OF DEGREE PROGRAMME

General and specific learning objectives

The Bachelor's degree in Mathematics aims to provide a solid grounding in mathematical sciences by introducing students to the modern formulation of these subjects, and exploring general, methodological as well as application aspects. The programme also covers the essentials of physics and computer science, which are a prerequisite for an adequate understanding of mathematical applications.

Expected learning outcomes

A - KNOWLEDGE AND UNDERSTANDING

Upon completion of the degree, graduates will have:
- a robust knowledge and understanding of differential and integral calculus (both single-variable and multi-variable), core algebraic structures, linear algebra and the basic concepts of geometry and topology;
- a robust knowledge and understanding of the basic concepts of probability and statistics, mathematical physics and numerical analysis;
- a robust knowledge and understanding of the essentials of classical physics and computer science;
- additional knowledge in some of the above-mentioned fields, depending on the chosen curriculum.

The acquisition of this knowledge and understanding is tested by oral and written exams and achieved primarily through all the proposed learning activities, for which attendance is highly recommended. These learning activities include classes, exercises, laboratories and tutoring sessions.

B - APPLYING KNOWLEDGE AND UNDERSTANDING

Bachelor's graduates in Mathematics will be able to:
- properly use the foundational tools of algebra, mathematical analysis and geometry;
- deduce qualitative information from quantitative data and formulate application problems of moderate difficulty in the language of mathematics, in order to understand them and solve them;
- leverage their computer skills to solve specific problems, by applying programming techniques and using appropriate software applications.

The acquisition of the above-mentioned application abilities is achieved primarily through the proposed learning activities (classes, exercises, laboratories and tutoring sessions) and tested mostly by written and oral exams.

C - MAKING JUDGEMENTS

Bachelor's graduates in Mathematics:
- will be able to build and develop logical arguments by clearly identifying assumptions and conclusions;
- will be able to identify correct proofs and detect fallacious reasoning;
- will be able to analyse some mathematical models of real-world situations pertaining to natural sciences, social economics and other subjects, as well as to use these models to facilitate the study of those situations;
- will have experience of team working, but will also be able to work independently.

All proposed activities contribute to the development of the first two abilities listed above, which are tested primarily by written and oral exams. Mathematical models of different nature are explored during some of the compulsory courses

included in all curricula.
Although most of the work required of students is individual, in-class collaboration allows them to develop team working skills, as instructors regularly encourage students to work together on the solution of exercises.

D - COMMUNICATION SKILLS

Bachelor's graduates in Mathematics will be able to:
- communicate mathematical problems, ideas and solutions ? devised by themselves or others ? to a specialist or generalist audience, both orally and in writing;
- interact with experts in other fields, by recognising the possibility of mathematically formalising practical situations, also in industry and finance, and identifying suitable mathematical models to support activities in different domains.
These skills are part of a general set of skills that every graduate is expected to have, and students develop them independently of the chosen curriculum, one course after the other. Communication skills are tested most of all during the final exam.

E - LEARNING SKILLS

Bachelor's graduates in Mathematics:
- will be able to continue their studies, whether in mathematics or another field, with a good degree of autonomy;
- will have a flexible and problem-solving mindset allowing them to quickly fit into a new workplace and to adjust to new problems.
These skills are tested by exams and fostered throughout the degree programme, with no particular difference between one course and the other. Traditionally, learning skills are the core strength of graduates in Mathematics when entering the job market.

Professional profile and employment opportunities

Mathematician
Job function
Typical job functions include: the modelling and analysis of any phenomena (in the field of physics, biology, medicine, etc.) whose understanding requires a high degree of abstraction; data analysis; use of specific business software; personnel training; dissemination of knowledge pertaining to scientific disciplines.
To achieve higher responsibilities in their careers, graduates will need to further refine their education by completing a Master's degree, a first-level vocational master or a specialised professional course.

Professional skills
Mathematics graduates stand out for their aptitude for abstract reasoning and the formalisation or modelling of practical problems, as well as for their ability to solve these problems by using mathematical methods. This translates into strong problem-solving skills applicable to a wide range of scientific as well as socio-cultural situations.

Career opportunities
Bachelor's graduates in Mathematics usually continue their studies with a master's degree, but may also enter the job market directly. Potential employers include:
- banks and insurance companies
- survey institutes
- consulting firms
- software design and development companies
- research and development centres and laboratories.

Initial knowledge required

Qualifications and knowledge required for admission
To be eligible for admission to the Bachelor's degree in Mathematics, applicants must have an Italian upper-secondary school diploma or an equivalent qualification obtained abroad. Moreover, they should have a grounding in basic mathematics and an understanding of elementary logic.

Admission assessment
Admission to the Bachelor's degree programme in Mathematics is open, subject to a mandatory but non-selective assessment test before enrolment. This test is called TOLC (Test Online CISIA) and applicants can take it with the University of Milan or with any other member university of CISIA (Consortium of Inter-University Integrated Access Systems). Applicants must register for the TOLC test on the CISIA website (www.cisiaonline.it).
The following types of TOLC are accepted for admission to the Bachelor's degree in Mathematics: TOLC-S and TOLC-I.
Applicants can matriculate only after taking one of these tests, WHATEVER THE RESULT.
Other equivalent tests may be accepted, subject to the approval of the Academic Board.
For further information, please contact the Academic Office of the Department of Mathematics at segrccd.mat@unimi.it
The structure, topics and other useful details of the TOLC-S test are available at https://www.cisiaonline.it/en/tolc/tolc-s/structure-and-syllabus

The structure, topics and other useful details of the TOLC-I test are available at https://www.cisiaonline.it/en/tolc/tolc-i/structure-and-syllabus
Application deadlines and instructions will be specified in the call for applications, which will be published at https://matematica.cdl.unimi.it/it/iscriversi

Admission of transfer students and students already holding a degree
Students transferring from another degree programme of the University of Milan or another university will not be required to take the TOLC test, provided that they are admitted to years subsequent to Year I. The same applies to applicants who already hold a university degree.
Applicants falling into these categories must submit a specific request for recognition of prior academic learning, using the dedicated online service indicated in the call for applications.
The request must include a full transcript of records (listing all exams and the respective scientific-disciplinary sectors, credits and grades) along with the course syllabi. For more details on this procedure and the relevant timeframe, please refer to the call for applications.
Transfer students and degree-holders who are admitted to Year I will have to take the test (TOLC-S, TOLC-I or other equivalent tests approved by the Academic Board).

Additional learning requirements (OFA) and remedial activities
Students who do not score at least 10 points in the Mathematics module of the TOLC test will have to fulfil additional learning requirements (OFA).
These requirements can be met by passing part A (Syllabus) of the Elements of Basic Mathematics exam by December 2026.
Students who do not fulfil their OFA may not take any second-year exams before passing one of the following exams: Algebra 1, Mathematical Analysis 1, Geometry 1.
For further information, please visit https://matematica.cdl.unimi.it/it/studiare/le-matricole

Compulsory attendance
Attendance is strongly recommended for each course.

Internship criteria
There are two types of internship: industrial and educational. Details are available at: https://www.unimi.it/en/education/degree-programme-courses/2026/internship-industry and https://www.unimi.it/en/education/degree-programme-courses/2026/educational-training
For further information on how to undertake internships, contact the Mathematics Academic Office (segrccd.mat@unimi.it).

Degree programme final exams
Upcoming graduates must pass a final exam, which is worth 3 credits (CFU).
The final exam of the Bachelor's degree in Mathematics consists of two stages: firstly, the student presents and discusses a mathematics-related topic in front of an ad-hoc board (seminar stage); secondly, an ad-hoc board assigns the graduation mark and confers the Bachelor's degree in Mathematics (graduation stage). To access the seminar stage, students must have earned at least 150 credits, whereas to access the graduation stage, they must have earned 177 credits, including the credits required for proficiency in a foreign language.
The final exam regulations, including all practical instructions in this regard, can be downloaded at: https://matematica.cdl.unimi.it/it/studiare/laurearsi
For information on the learning objectives and expected learning outcomes of the final exam, please visit https://matematica.cdl.unimi.it/it/insegnamenti

Campus
via Celoria 2
via Celoria 10
via Celoria 18
via Celoria 20
via Colombo 62
via Golgi 19
via Mangiagalli 25
via Mangiagalli 31
via Mangiagalli 32
via Valvassori Peroni 21
via Venezian 15

Laboratories
via Celoria 20

Notes
In order to obtain their degree, students are required to have a B1 level of proficiency according to the Common European Framework of Reference for Languages (CEFR). This level of proficiency can be certified as follows:
- by submitting an official language certificate at B1 level or higher, issued no more than three years before the submission date. The list of language certificates recognized by the University is available at https://www.unimi.it/en/node/39322.

The certificate must be uploaded during enrolment or later through the portal http://studente.unimi.it/uploadCertificazioniLingue.
- by taking a placement test administered by the University Language Centre (SLAM) between October and December (January for Master's degree courses) of the first year. Students who do not pass the test will be required to attend a language course offered by SLAM.
The placement test is compulsory for all students who do not already hold a valid certificate.
Students who do not take the placement test by the end of December (by the end of January for Master's degree courses), or who fail the end-of-course test after six attempts, must obtain a language certificate privately before graduating.

EXPERIENCE OF STUDY ABROAD AS PART OF THE TRAINING PROGRAM

The University of Milan supports international mobility by providing its students with the opportunity to spend study and internship periods abroad. It is a unique chance to enrich your educational path in a new exciting environment. The agreements entered into by the University with over 300 universities from the 27 EU member countries under the European Erasmus+ programme allow regularly enrolled students to carry out part of their studies at one of the partner universities or to undertake internships at companies, training and research centres and other organisations.

Similar international mobility opportunities are provided outside Europe, through agreements with a number of prestigious institutions.

The University of Milan is a member of the 4EU+ European University Alliance that brings together eight public multidisciplinary universities: University of Milan, Charles University of Prague, Heidelberg University, Paris-Panthéon-Assas University, Sorbonne University of Paris, University of Copenhagen, University of Geneva, and University of Warsaw. The 4EU+ Alliance offers integrated educational pathways and programmes to promote the international mobility of students (physical, blended and virtual).

Study and internships abroad

The Bachelor of Science in Mathematics has long been committed to characterize its educational activities in an international framework under the Erasmus program. We activated several agreements with other universities in Europe. In particular, we have exchange agreements within the disciplines of both curricula: with Austria, Spain, Portugal, France, Germany, Holland, Denmark, Poland, Czech Republic, Slovenia, Sweden, Norway and Finland.

See the website http://users.unimi.it/erasmusmat/ for collected information on locations and how to recognize the activities carried out abroad.

How to participate in Erasmus mobility programs

How to participate in Erasmus+ mobility programmes

The students of the University of Milan can participate in mobility programmes, through a public selection procedure.

Ad hoc commissions will evaluate:

· Academic career

· the candidate's proposed study programme abroad

· his/her foreign language proficiency

· the reasons behind his/her application

Call for applications and informative meetings

The public selection for Erasmus+ mobility for study generally begins around February each year with the publication of a call for applications specifying destinations and requirements. Regarding the Erasmus+ Mobility for Traineeship, the University of Milan usually publishes two calls a year enabling students to choose a destination defined by an inter-institutional agreement or to find a traineeship position on their own.

The University organises informative meetings to illustrate mobility opportunities and rules for participation.

Erasmus+ scholarship

The European Union grants the winners of the Erasmus+ programme selection a scholarship to contribute to their mobility costs, which may be supplemented by the University funding for disadvantaged students.

Language courses

Students who pass the selections for mobility programmes can benefit from intensive foreign language courses offered each year by the University Language Centre (SLAM). https://www.unimi.it/en/node/8/

Learn more at https://www.unimi.it/en/node/274/

For assistance, please contact:

International Mobility Office

Via Santa Sofia 9 (second floor)

Tel. 02 503 13501-12589-13495-13502

Contacts: InformaStudenti;

Student Desk booking through InformaStudenti

1st COURSE YEAR Core/compulsory courses/activities common to all curricula

Learning activity		Ects	Sector
Algebra 1		9	MATH-02/A
Elements of Basic Mathematics		3	(1) MATH-01/A, (1) MATH-02/B, (1) MATH-02/A
English assessment B1 (3 ECTS)		3	NN
General Physics 1		9	(4) PHYS-03/A, (5) PHYS-01/A
Geometry 1		6	MATH-02/B
Geometry 2		9	MATH-02/B
Mathematical Analysis 1		9	MATH-03/A
Mathematical Analysis 2		6	MATH-03/A
Programming 1		6	INFO-01/A
	Total compulsory credits	60	

2nd COURSE YEAR (available as of academic year 2027/28) Core/compulsory courses/activities common to all curricula

Learning activity		Ects	Sector
Algebra 2		6	MATH-02/A
Geometry 3		9	MATH-02/B
Mathematical Analysis 3		9	MATH-03/A
Mathematical Analysis 4		6	MATH-03/A
Mathematical Physics 1		6	MATH-04/A
Numerical Analysis 1		9	MATH-05/A
Probability		9	MATH-03/B
	Total compulsory credits	54	

3rd COURSE YEAR (available as of academic year 2028/29) Core/compulsory courses/activities common to all curricula

Learning activity		Ects	Sector
General Physics 2		9	(4) PHYS-03/A, (5) PHYS-01/A
Mathematical Physics 2		6	MATH-04/A
	Total compulsory credits	15	

Elective courses common to all curricula		
Algorithms and data structures	9	INFO-01/A
General Physics 3	9	(4) PHYS-02/A, (5) PHYS-04/A

Further elective courses common to all curricula		
Advanced Numerical Analysis 2	3	MATH-05/A
Advanced topics in Mathematical Physics 2	3	MATH-04/A
Algebra 4	9	MATH-02/A
Algebra 4	6	MATH-02/A
Constructive Approximation	6	MATH-05/A
Geometry 5	9	MATH-02/B
Geometry 5	6	MATH-02/B
Introduction to Image Processing	6	(3) MATH-05/A, (3) MATH-02/B
Mathematical Analysis 5	6	MATH-03/A
Mathematical methods and models for applications	6	MATH-04/A
Numerical Linear Algebra	6	MATH-05/A
Programming 2	6	INFO-01/A
Scientific Computing	6	MATH-05/A

End of course requirements common to all curricula			
Final Exam		3	NN
	Total compulsory credits	3	

ACTIVE CURRICULA LIST

GENERAL Course years currently available: 1°
APPLICATIONS Course years currently available: 1°

Procedure for choosing a curriculum

Students choose one of the available curricula during the second year.

CURRICULUM: [FAM-A] GENERAL

Qualifying Training Objectives

The specific objective of this curriculum is to provide an in-depth understanding of the different branches of mathematics. A significant number of courses require a high degree of logical rigour and abstraction.

The curriculum offers exchange opportunities with other European universities, including in the framework of international agreements.

In relation to particular learning goals, students may also be required to undertake activities outside the University, for example internships at public administrations.

2nd COURSE YEAR (available as of academic year 2027/28) Core/compulsory courses/activities Curriculum-specific features GENERAL			
Learning activity		**Ects**	**Sector**
Geometry 4		6	MATH-02/B
	Total compulsory credits	6	

3rd COURSE YEAR (available as of academic year 2028/29) Elective courses Curriculum-specific elective courses for GENERAL		
Algebra 3	9	MATH-02/A
Mathematical Physics 3	9	MATH-04/A

Further elective courses Curriculum-specific features GENERAL		
Educational Training	3	NN
Elements of Basic Mathematics 2	3	MATH-01/A
Essay Written under the Direction of a Staff Member	3	NN
Laboratory of Mathematical Physics	3	MATH-04/A
Laboratory of Mathematical Statistics	3	MATH-03/B
Mathematical Methods and Models for the Applications	6	MATH-04/A
Numerical Analysis Laboratory	3	MATH-05/A
PROBABILITY LAB	3	MATH-03/B
Topics in Scientific Computing	6	MATH-05/A

CURRICULUM: [FAM-B] APPLICATIONS

Qualifying Training Objectives

The specific objective of this curriculum is to provide an in-depth understanding of the computational aspects of mathematics, statistics and finance. A significant number of courses focus on the modelling of natural, social and economic phenomena and technological problems. The curriculum offers exchange opportunities with other European universities,

including in the framework of international agreements.
In relation to particular learning goals, students may also be required to undertake activities outside the University, for example internships at public administrations, companies and laboratories.

2nd COURSE YEAR (available as of academic year 2027/28) Core/compulsory courses/activities Curriculum-specific features APPLICATIONS			
Learning activity		**Ects**	**Sector**
Numerical Analysis 2		6	MATH-05/A
	Total compulsory credits	6	

3rd COURSE YEAR (available as of academic year 2028/29) Core/compulsory courses/activities Curriculum-specific features APPLICATIONS			
Learning activity		**Ects**	**Sector**
Mathematical Statistics		9	MATH-03/B
	Total compulsory credits	9	

Further elective courses Curriculum-specific features APPLICATIONS		
Educational Training	3	NN
Elements of Basic Mathematics 2	3	MATH-01/A
Essay Written under the Direction of a Staff Member	3	NN
Internship in Industry	3	NN
PROBABILITY LAB	3	MATH-03/B
Laboratory of Mathematical Physics	3	MATH-04/A
Laboratory of Mathematical Statistics	3	MATH-03/B
Numerical Analysis Laboratory	3	MATH-05/A

COURSE PROGRESSION REQUIREMENTS

The exam in Elements of Basic Mathematics is a prerequisite for all second- and third-year courses of the bachelor's degree.

Learning activity	**Prescribed foundation courses**	**O/S**
Geometry 5	Elements of Basic Mathematics	Core/compulsory
Numerical Analysis 2	Elements of Basic Mathematics	Core/compulsory
Geometry 5	Elements of Basic Mathematics	Core/compulsory
Algebra 4	Elements of Basic Mathematics	Core/compulsory
Mathematical Physics 2	Elements of Basic Mathematics	Core/compulsory
Advanced topics in Mathematical Physics 2	Elements of Basic Mathematics	Core/compulsory
Advanced Numerical Analysis 2	Elements of Basic Mathematics	Core/compulsory
Internship in Industry	Elements of Basic Mathematics	Core/compulsory
Educational Training	Elements of Basic Mathematics	Core/compulsory
Essay Written under the Direction of a Staff Member	Elements of Basic Mathematics	Core/compulsory
Mathematical Analysis 4	Elements of Basic Mathematics	Core/compulsory
Mathematical Analysis 3	Elements of Basic Mathematics	Core/compulsory
Algorithms and data structures	Elements of Basic Mathematics	Core/compulsory
Numerical Linear Algebra	Elements of Basic Mathematics	Core/compulsory
Algebra 3	Elements of Basic Mathematics	Core/compulsory
Algebra 2	Elements of Basic Mathematics	Core/compulsory
Elements of Basic Mathematics 2	Elements of Basic Mathematics	Core/compulsory
Introduction to Image Processing	Elements of Basic Mathematics	Core/compulsory
Scientific Computing	Elements of Basic Mathematics	Core/compulsory
Numerical Analysis 1	Elements of Basic Mathematics	Core/compulsory
Mathematical Methods and Models for the Applications	Elements of Basic Mathematics	Core/compulsory
Topics in Scientific Computing	Elements of Basic Mathematics	Core/compulsory
Constructive Approximation	Elements of Basic Mathematics	Core/compulsory
Mathematical Analysis 5	Elements of Basic Mathematics	Core/compulsory
Geometry 4	Elements of Basic Mathematics	Core/compulsory
Geometry 3	Elements of Basic Mathematics	Core/compulsory
Mathematical Physics 3	Elements of Basic Mathematics	Core/compulsory
Mathematical Physics 1	Elements of Basic Mathematics	Core/compulsory
General Physics 3	Elements of Basic Mathematics	Core/compulsory
General Physics 2	Elements of Basic Mathematics	Core/compulsory
Programming 2	Elements of Basic Mathematics	Core/compulsory
Probability	Elements of Basic Mathematics	Core/compulsory
Mathematical methods and models for applications	Elements of Basic Mathematics	Core/compulsory
Laboratory of Mathematical Statistics	Elements of Basic Mathematics	Core/compulsory
PROBABILITY LAB	Elements of Basic Mathematics	Core/compulsory
Laboratory of Mathematical Physics	Elements of Basic Mathematics	Core/compulsory
Numerical Analysis Laboratory	Elements of Basic Mathematics	Core/compulsory

Mathematical Statistics	Elements of Basic Mathematics	Core/compulsory
Algebra 4	Elements of Basic Mathematics	Core/compulsory