DESCRIPTION OF THE CURRICULUM
(TEACHING REGULATIONS OF THE COURSE)

BACHELOR'S DEGREE COURSE IN MATHEMATICS (L-35R)

academic year 2025/26

Outline

Art. 1 - General characteristics and organization

The Bachelor's Degree Course in Mathematics, class L-35R is activated according to the educational regulations of the academic year 2025/2026.

The course in brief

The program is characterized by a very close relationship between students and faculty members in an informal and enthusiastic environment. The primary educational goal of the program is to ensure a balanced understanding of mathematical tools and methods, along with an overview of their applications in several fields. This will enable graduate students to both continue their studies with a master's degree and enter the job market in public and private research institutions, in industry, banking, insurance, and finance, and generally in any high-tech service sector, where there is a growing demand for personnel with adequate and solid mathematical knowledge. The Bachelor's Degree in Mathematics (L-35R) aims at providing a solid preparation in classical mathematical disciplines while also providing essential computer science skills. The program continues with the introduction of additional disciplines (physics, numerical analysis, statistics, economics, etc.), which allow for both a broadening of knowledge and concrete applications of the acquired methodologies. The program includes mandatory courses in the main areas of pure and applied mathematics (analysis, algebra, geometry, probability, mathematical physics and numerical analysis), General Physics, and Computer Science and Programming. Communication skills are developed through seminars and collaboration on career guidance and outreach projects.

The possibility to choose exams allows for the customization of the study path. Teaching methods are predominantly traditional, with lectures and exercises. The expected learning outcomes are assessed through written and oral exams, as well as reports on the undertaken activities. Admission to the program is open to all students, but a non-selective test to assess the initial knowledge (TOLC@Casa) is required. Students who fail or fail the test are conditionally admitted to the program and are assigned additional learning obligations (OFA).

Considering the progressive internationalization of the program, some elective courses are taught in English to facilitate the acquisition of a technical terminology. Furthermore, the curriculum includes a mandatory English language course.

The program provides access to the Master's Degree in Mathematics (LM40).

The structure responsible for the course is the Department of Science and High Technology. The Program Coordinator is Prof. Giovanni Bazzoni.

The Didactic Secretariat receives by appointment in via Valleggio 11 (4th floor) and replies to emails through INFOSTUDENTI. More information about this can be found at the following link: INFOSTUDENTI

Art. 2 - Teaching calendar of the course

Educational activities take place in Como. The internet address of the course is the following: https://www.uninsubria.it/formazione/offerta-formativa/corsi-di-laurea/matematica

The lesson calendar is published under the page **LESSON TIMETABLE:** https://www.uninsubria.it/formazione/offerta-formativa/corsi-di-laurea/matematica

The teaching calendar is divided into semesters:
I semester from **22 September 2025 to 16 January 2025**
II semester from **23 February 2026 to 12 June 2026**

Exams

There are at least 6 sessions for each course during the period of lessons suspension. The calendar of the exams is published on the page: https://uninsubria.esse3.cineca.it/ListaAppelliOfferta.do

Art. 3 - Education goals, expected learning outcomes and career opportunities

The primary educational goal of the Degree Program in Mathematics is to provide a broad and balanced knowledge of mathematical tools and methods, along with a comprehensive overview of their applications in several fields. This will allow graduate students to both continue their studies with a master's degree and enter professional careers.
The degree program in mathematics aims at:

- providing a solid preparation in the classical disciplines of pure and applied mathematics;
- providing a preparation in physics and its mathematical formalization;
- developing the ability to analyze and model problems in various fields in mathematical terms;
- providing the necessary computer skills.

The structure of the degree program is entirely aimed at enabling students to fully achieve their educational goals, considering that all the courses are part of an essentially homogeneous learning area and contribute, albeit to varying degrees, to the achievement of the proposed educational goals.
However, two sub-areas with large overlaps can be identified:

AREA OF THEORETICAL MATHEMATICAL EDUCATION

The courses in this area provide skills in basic and advanced pure mathematics.

Knowledge and understanding

Graduate students in Mathematics:

1. understand the fundamentals of analysis (differential and integral calculus in one and more variables), algebra (fundamental algebraic structures and linear algebra), geometry (topology, and geometry of curves and surfaces), and probability. They also possess adequate knowledge of ordinary differential equations and partial differential equations
2. are able to read and understand advanced mathematics texts, also written in English.

Ability to apply knowledge and understanding

Graduate students in Mathematics:

1. are able to produce rigorous proofs of mathematical results that are not identical to those already known but are easily related to them;
2. are able to solve problems of moderate difficulty in various fields of mathematics.

The knowledge and skills listed above are acquired within the individual courses, many of which include exercise classes in which students independently address problems of increasing difficulty. Reading and

comprehension skills for scientific texts are initially developed through the study of the reference texts for the individual courses, including those in English, and are further developed during the preparation period for the final exam.

The listed skills are assessed through course exams, which often consist of a written and oral test, allowing students to assess their level of autonomy. This assessment also includes seminars performed by students within the individual courses under the supervision of instructors.

MODELING-APPLICATION TRAINING AREA

The courses in this area provide the skills for analyzing and modeling problems arising from several scientific and applied fields, and the computer science and numerical tools for their solution.

Knowledge and understanding

Graduate students in Mathematics:

1. know and understand the basic applications of mathematics to physics and computer science;
2. have adequate computational and IT skills, including knowledge of programming languages and specific software.

Ability to apply knowledge and understanding

Graduate students in Mathematics:

1. are able to mathematically formalize problems of moderate difficulty that originate from various scientific and applied fields and to profit from this formulation to clarify or solve them;
2. are able to extract qualitative information from quantitative data;
3. are able to use computer and computational tools to support mathematical processes and to acquire further information.

The skills listed above are developed within individual courses, many of which include exercises in which students independently address increasingly difficult problems. The ability to extract qualitative information from quantitative data is acquired through courses in physics or modeling/applications. These courses may include the use of specific IT tools and software.

The listed skills are assessed through course exams, which often consist of a written and oral test, allowing students to assess their level of autonomy. This assessment also includes seminars performed by students within individual courses under the supervision of instructors.

JOB OPPORTUNITIES

Due to their solid basic training and aptitude for rigorous reasoning, graduates in Mathematics find employment in public or private institutions in mathematical/modeling support roles, particularly in the economic, banking, insurance, IT, statistical, technological, and scientific culture communication fields.

Graduate students in mathematics can become:

- researchers in the Research and Development divisions of industries with a technological impact, including in the fields of electronics, telecommunications, and logistics;
- operators in the field of scientific culture dissemination for topics concerning the various theoretical and applied aspects of classical and modern mathematics;
- operators in the development of mathematical and financial models at banks, financial or insurance

companies.

A further career opportunity is to continue one's studies with a master's degree, especially the Master's Degree in Mathematics LM-40.

Art. 4 - Admission to the course

Given the current legislation, admission to the degree program requires a high school diploma or other equivalent qualification obtained abroad. The program is open to all.

Initial preparation verification methods

The Ministerial Decree 270/2004 requires a mandatory assessment of the initial preparation of students enrolling in a L-35 degree program. For enrollment in the open-access degree program in Mathematics, the test is not selective but must be taken, even if unsuccessful, by November 27, 2025.

The Degree Program in Mathematics adheres to the Coordination of Knowledge Assessment Tests for Science Degree Programs, managed by the National Conference of Presidents and Directors of University Structures of Science and Technology (con.Scienze) in collaboration with the National Plan for Scientific Degrees (PLS) of the Ministry of University and Research and the Inter-university Consortium of Integrated Access Systems (CISIA). Therefore, the Degree Program adopts the TOLC-S (CISIA Online Test, in TOLC@Casa mode) as a test to assess the initial preparation. Students can take the test to assess their initial preparation even before enrolling and/or at another university in Italy. In this case, the test result will be credited after completing the enrollment, upon presentation of the relevant certification issued by CISIA.

The following rules hold:

- The students who, upon enrollment, have taken and passed the TOLC@Casa test are admitted to the program. The test is passed if at least 10 questions in the Basic Mathematics module are answered correctly. The TOLC@Casa test can also be taken at another location.
- Students who, at the time of enrollment, have taken but failed the TOLC@Casa test are conditionally admitted to the course and are assigned additional learning obligations (OFA).
- Students who have not taken the TOLC@Casa test at the time of enrollment are conditionally admitted and are assigned additional learning obligations (OFA).

OFA recovery procedures for students who, at the time of enrollment, took but failed the TOLC@Casa test

To recover OFA, students who took but failed the TOLC@Casa test at the time of enrollment have three options:

- Take and pass the TOLC@Casa test by November 27, 2025
- Attend the "Math Tutoring" and successfully pass the final exam
- Pass, by 30 September 2026, a course between
    - Algebra I
    - Linear algebra linear and geometry
    - Mathematical analysis I

OFA recovery procedures for students who, at the time of enrollment, did not take the TOLC@Casa

To recover the OFA, students who did not take the TOLC@Casa at the time of enrollment have two options:

- Take and pass the TOLC@Casa test by November 27, 2025
- Attend the "Math Tutoring" and successfully pass the final exam

Structure of the Math Tutoring

The math tutoring:

- consists of 5 meetings of 2 hours each, held by a disciplinary tutor;
- is held in two editions, one between September and October, and one at the beginning of December;
- is considered attended if the student has participated in at least 4 out of 5 meetings;
- is intended attended with a positive result if the student has correctly answered at least 10 questions in the final exam.

Effects of failure to comply with OFAs

Students who have not completed their OFA by September 30 of the year following their enrollment year will not be able to enroll in the second year of their course, regardless of whether they passed their first-year exams.

Preparatory training activities for the verification of the initial preparation

In the first half of September, math lessons will be provided. All information, including dates, will be published on the following website page:
https://www.uninsubria.it/formazione/consigli-e-risorse-utili/orientamento-e-placement/orientamento-prima-delliscrizione-9

Information on the Math lessons for the Scientific Area are available at this link:
https://www.uninsubria.it/formazione/consigli-e-risorse-utili/orientamento/orientamento-ingresso/preparati-alluniversita-5

Exemptions

You do not need to take the test if:

- you are transferring from another degree program at the University of Insubria (internal transfer), provided you have taken and passed an initial assessment test similar to that required for your degree program
- you are transferring from another university where you have already taken and passed an initial assessment test similar to that required for your degree program
- you are enrolling with a degree that includes a mathematics exam in the curriculum
- you have already successfully taken a similar test at another university.

If you are interested in obtaining an exemption, you must send the Student Secretariat, upon enrollment, a certification attesting to having passed the test (at least 10 correct answers in the Basic Mathematics module).

Art. 5 - Education Path

The program does not include curricula, and enrolled students are allowed a certain degree of flexibility in developing their study plans. The following rules hold:

- at least 15 credits in elective subjects have to be acquired;
- it is possible to acquire 1 credit in "Other Knowledge For Entering The Job Market" participating to career guidance activities or to an in-depth seminar.

Teaching is performed in a conventional way. Attendance is not compulsory.
Upon presentation of proven documentation, students with disabilities and students with a job may request that teachers provide lesson recordings and dedicated teaching materials.

Students in the Bachelor's Degree Program in Mathematics may apply to participate in the "Path of Excellence," organized jointly with the Bachelor's Degree Program in Physics. For admission procedures and how the Path of Excellence works, please refer to the relevant regulations.

CFU/hours correspondance for each type of activity
University Educational Credits (CFU) are a measurement of the amount of learning, including individual study, required to a student with an adequate initial preparation to acquire knowledge and skills in the educational activities required by the degree program.
Any educational activity (teaching, laboratory, internship, thesis, etc.) within the degree program corresponds to a specific number of educational credits (CFU).
Each CFU corresponds to 25 hours of commitment, given by the hours of lectures and laboratory and the ones of independent study necessary to complete the student's preparation.
The CFU number corresponding to each educational activity is acquired by the student upon passing the exam or any other form of assessment defined in the degree program rules.
Educational Activities / CFU:
- 8 hours of lectures with 17 hours of individual study;
- 12 hours of practical exercises with 13 hours of individual study;
- 16 hours of laboratory work with 9 hours of individual study;
- 20 hours for seminars;
- 25 hours for internship;
- 25 hours the thesis.

Assessment Methods for Educational Activities
There are several assessment methods:

- written exams;
- oral exams (interview, seminar presentation, thesis presentation, etc.)

Students register for the assessment of learning activities through the ESSE3 platform. Some courses may include partial exams. The assessment and evaluation methods are detailed in the course syllabi.
Most learning activities are assigned a grade (out of 30). Some learning activities are assessed as suitable.
Students can only take the exam for a course after completing the attendance.

Possible Prerequisites and/or Exclusions
There are no prerequisites.

Art. 6 - Rules for submitting study plans

Students must submit their Study Plan in their third year, with the possibility of modifying it in the following years, according to the deadlines set annually and reported on the Student Secretariat web pages: https://www.uninsubria.it/servizi/presentazione-piano-di-studio

To submit the study plan, students have to access their personal area in ESSE3 and indicate:

- the courses that have to be chosen among a list;
- related/complementary courses (TAF C), which are worth 16 credits;
- elective courses (TAF D), which are worth 15 credits.

It is possible to submit the study plan in paper format.

Student Elective Courses (letter D)

As part of the "Student Elective Courses" program, students may choose, in their third year, from:

- the courses offered in the Degree Course in Mathematics (undergraduate and graduate), where not already chosen;
- courses from other degree programs offered by the Department or University, provided they are consistent with the curriculum and subject to approval by the Degree Program Council. In this case, the study plan must be submitted in paper format by requesting the form from the Student Secretariat via INFOSTUDENTI;

Courses offered by limited access University degree programs cannot be chosen.

Other Knowledge For Entering The Job Market (TAF F)

1 CFU for Other Knowledge For Entering The Job Market can be acquired in the following way:

- the presentation of language certificates (English, French, German, Russian, Spanish, Portuguese) of recognised international validity of at least the C1 (English) and B2 levels (remaining languages);
- the presentation of internationally recognized IT skills certificates;
- the participation in career guidance activities, recognized by a professor within the course of study;
- by presenting a seminar on a topic agreed upon with a professor within the course of study;
- through an internship/traineeship; activities relating to internships/traineeships must be approved by the Degree Course before they begin and must include the presence of an internal supervisor.

Art. 7 - Opportunities offered during the training path

The program promotes several initiatives that complement and enrich the academic experience. In particular, it is possible to participate in mobility and internationalization programs:

- **Mobility abroad – Erasmus and other opportunities**
  https://www.uninsubria.it/internazionale/mobilita-allestero/programma-erasmus

University	Country	Maximum number of places	Maximum period (in months)
Université d'Orléans	France	3	6
Friedrich Schiller Universität Jena	Germany	2	6

Universitatea Babes Bolyai	Romania	2	6
Universidad UNIE S.L.	Spain	1	6
Kafkas Universitesi	Turkey	1	6

- **Tutoring service** (https://www.uninsubria.it/servizi/tutti-i-servizi/tutorato)
  It consists of a series of activities aimed at orienting, assisting, advising, and informing students. In addition to the university information service, the program annually identifies:
  - disciplinary tutors, i.e. teachers that can be contacted by students on topics regarding international mobility, compiling study plans, etc.
  - for first-year students, "mentors" i.e. students in subsequent years that can be contacted to help in the study method, teaching, exam procedures, etc.

Contacting the "Diritto allo Studio" office, it is possible to apply for student collaborations: https://www.uninsubria.it/servizi/tutti-i-servizi/collaborazioni-studentesche-200-ore

Art. 8 - Graduation

The final exam, worth 5 credits (CFU), consists of the presentation and discussion of a thesis on a monographic topic before a degree committee. In this thesis, the student must demonstrate his/her independent comprehension and synthesis skills. The thesis, which may concern a section of an advanced book or a short scientific article, will be written under the supervision of a supervisor and will require a commitment of one to two months.
The final exam will be attributed a number of points ranging from 0 to 4, depending on the quality of the thesis and its presentation.

The following procedure is adopted to determine the degree grade:

- x = score attributed in the final exam
- y = 1 for those who graduate on time (the March session), 0 otherwise
- w = 1 if the average of the exams is higher than 26, 0 otherwise
- z = 1 if there are at least three honors in the first two-year exams, or if no grade is lower than 22, 0 otherwise

It is then computed
V=x+y+w+z
and
M = weighted average of the grades obtained in the profit exams expressed in 110ths

The final score is given by: min{110, M+V}.
If the score achieved is 110, the President must discuss the possibility of awarding honors, for which the unanimous approval of the committee members is required.

Upon graduation, a **Diploma Supplement** is issued. The Diploma Supplement is an informative report accompanying the official qualification awarded at the end of the study program. It describes the nature, level, context, content, and status of the studies undertaken and completed by the student. It is issued in both Italian and English. The purpose of the document is to provide independent data for the international transparency of qualifications (diplomas, degrees, certificates, etc.) and to enable equitable academic and professional recognition, promoting student mobility. The Diploma Supplement complies with the Europass standard.

Appendix 1 - Study plan

*** Activity (TAF)**

A Basic mathematics/physics/computer science training
B Characterizing activity
C Related or complementary activity
D Elective activity
E Final exam and foreign language
F other activities (letter D)

**** hours and activity type**

L Lesson
ESE Exercise
LAB Laboratory

YEAR I - Compulsory courses						
SEM	**Name**	**Module**	**S.S.D**	**TAF***	**CFU**	**Hours/type (**)**
I	Basic Mathematics		MAT/03	F	3	L: 16; ESE: 12
I	Algebra I		MAT/02	A	9	L: 44; ESE: 42
I	Mathematical Analysis I		MAT/05	A	9	L: 56; ESE: 24
I+II	Algorithms and data structures		INF/01	A	8	L: 48; ESE: 24
I	Physics I	Kinematics and mechanics of the point	FIS/03	A	7	L: 56
II		Thermodynamics	FIS/03	A	3	L: 16; LAB: 16
II	Linear algebra and geometry		MAT/03	A	8	L: 56; ESE: 12
II	English language		L-LIN/12	E	2	LAB: 32
II	Computational mathematics		MAT/08	A	6	L: 40; LAB: 16

YEAR II - Compulsory courses						
SEM	**Name**	**Module**	**S.S.D**	**TAF***	**CFU**	**Hours/type (**)**
I	Algebra II		MAT/02	B	8	L: 56; ESE: 12
I	Mathematical analysis II		MAT/05	A	8	L: 56; ESE: 12
I	Physics II		FIS/03	C	6	L: 48
I	Geometry I		MAT/03	B	8	L: 48; ESE: 24
II	Mathematical analysis III		MAT/05	B	8	L: 48; ESE: 24
II	Numerical analysis		MAT/08	B	8	L: 56; ESE: 12
II	Geometry II		MAT/03	B	8	L: 64

II	Probability and statistics		MAT/06	B	8	L: 56; ESE: 12

YEAR III						
SEM	**Name**	**Module**	**S.S.D**	**TAF***	**CFU**	**Hours/type (**)**
I	Mathematical physics		MAT/07	B	8	L: 48; ESE: 24

YEAR III - One course among the following						
SEM	**Name**	**Module**	**S.S.D**	**TAF***	**CFU**	**Hours/type (**)**
II	Fundamentals of Advanced Algebra		MAT/02	B	9	L: 72
I	Fundamentals of Advanced Geometry		MAT/03	B	9	L: 72
II	Fundamentals of Advanced Analysis		MAT/05	B	9	L: 72

YEAR III - One course among the following						
SEM	**Name**	**Module**	**S.S.D**	**TAF***	**CFU**	**Hours/type (**)**
I	Fundamentals of Advanced Mathematical Physics		MAT/07	B	9	L: 72
I	Fundamentals of Advanced Probability		MAT/07	B	9	L: 72
II	Fundamentals of Advanced Numerical Analysis		MAT/08	B	9	L: 72

YEAR III - Two courses among the following						
SEM	**Name**	**Module**	**S.S.D**	**TAF***	**CFU**	**Hours/type (**)**
I	Cryptography	Security Fundamentals	INF/01	C	6	L: 48
I		Complements	INF/01	C	2	L: 16
II	Mathematical Methods for Economics and Finance	module I	SECS-S/06	C	5	L: 40
II		module II	SECS-S/06	C	3	L: 24
I	Analytical mechanics		MAT/07	C	8	L: 64
II	Mathematical methods of physics		FIS/02	C	8	L: 64
I	Statistics		SECS-S/01	C	8	L: 36; ESE: 42

YEAR III - Other compulsory activities						
SEM	**Name**	**Module**	**S.S.D**	**TAF***	**CFU**	**Hours/type (**)**
NN	Elective courses		NN	D	15	
NN	Other Knowledge for Entering The Job Market		NN	F	1	
NN	Final exam		NN	E	5	