



<b>MASTER (LM) DEGREE COURSE IN</b> <b>MATHEMATICS</b> <i>Study programme for students enrolled in the academic year 2025-2026 - entirely held in English</i>	
<b>CURRICULUM MATHEMATICS</b>	
<b>1st YEAR</b>	
<b>1 UNIT TO CHOOSE AMONG THE FOLLOWING (SSD MAT/02):</b>	<b>CREDITS</b>
RINGS AND CATEGORIES OF MODULES	8
INTRODUCTION TO GROUP THEORY	8
HOMOLOGICAL ALGEBRA	6
ALGEBRAIC GROUPS AND LIE ALGEBRAS	6
<b>1 UNIT TO CHOOSE AMONG THE FOLLOWING (SSD MAT/03):</b>	<b>CREDITS</b>
NUMBER THEORY 1	8
RIEMANN SURFACES	6
ALGEBRAIC TOPOLOGY	6
ALGEBRAIC GEOMETRY 1	8
ALGEBRAIC GEOMETRY 2	6
NUMBER THEORY 2	6
COMPLEX GEOMETRY	6
DIFFERENTIAL GEOMETRY	8
<b>2 UNITS TO CHOOSE AMONG THE FOLLOWING (SSD MAT/05):</b>	<b>CREDITS</b>
FUNCTIONAL ANALYSIS	8
FUNCTIONS THEORY	8
FUNCTIONS OF COMPLEX VARIABLES	6
HARMONIC ANALYSIS	6
NON-LINEAR ANALYSIS	8
PARTIAL DIFFERENTIAL EQUATIONS 1	8
PARTIAL DIFFERENTIAL EQUATIONS 2	6
CALCULUS OF VARIATIONS	8
<b>1 UNIT TO CHOOSE AMONG THE FOLLOWING (SSD MAT/06):</b>	<b>CREDITS</b>

STOCHASTIC ANALYSIS	7
INTRODUCTION TO STOCHASTIC PROCESSES	8
<b>1 UNIT TO CHOOSE AMONG THE FOLLOWING (SSD MAT/07):</b>	<b>CREDITS</b>
SYMPLECTIC MECHANICS	7
DYNAMICAL SYSTEMS	7
ADVANCED MATHEMATICAL PHYSICS	7
<b>2 UNITS TO CHOOSE AMONG THE FOLLOWING (SSD MAT/02/03/05/06/07/08/09):</b>	<b>CREDITS</b>
ADVANCED STOCHASTIC PROCESSES	7
NUMERICAL METHODS FOR DIFFERENTIAL EQUATIONS	7
NUMERICAL LINEAR ALGEBRA AND LEARNING FROM DATA	7
OPERATIONS RESEARCH	8
OPTIMIZATION	6
<b>2 UNITS TO CHOOSE AMONG THE FOLLOWING:</b>	<b>CREDITS</b>
MATHEMATICAL LOGIC 2	6
ELEMENTARY MATHEMATICS FROM A HIGHER STANDPOINT	6
STOCHASTIC METHODS FOR FINANCE	7
COMPLEMENTARY MATHEMATICS	6
EXPERIMENTS FOR THE TEACHING OF PHYSICS	6
DEVELOPMENT OF MATHEMATICAL THOUGHT	6
MODERN PHYSICS	8
CRYPTOGRAPHY	6
<b>2nd YEAR</b>	
<b>LANGUAGE SKILLS or SEMINAR ACTIVITIES</b>	<b>4</b>
<b>14 ADDITIONAL FREE-CHOICE CREDITS</b>	
<b>FINAL THESIS/DISSERTATION</b>	<b>36</b>

#### ANY FURTHER NOTES

- Free-choice credits can be chosen among the university's educational offer as long as they are consistent with the educational path
- Attendance is recommended but not mandatory.

### CURRICULUM ALGANT

The international ALGANT (Algebra, Geometry and Number Theory) curriculum is managed in collaboration with the following universities: Universiteit Leiden (The Netherlands), Université de Bordeaux (France), Université Paris-Sud - Paris XI (France), Università degli Studi di Milano (Italy), University of Duisburg-Essen (Germany), University of Regensburg (Germany), Concordia University (Canada), Chennai Mathematical Institute (India), Stellenbosch University (South Africa).

It is a pure mathematics curriculum, which allows selected students to obtain a double diploma, and requires them to acquire at least 60 credits from the course at another of the partner universities. More information at the page <https://www.algant.eu/>

#### 1st YEAR

UNITS HELD IN PADUA (if the students take the 1 <sup>st</sup> year here):	CREDITS
RINGS AND CATEGORIES OF MODULES	8
INTRODUCTION TO GROUP THEORY	8
HOMOLOGICAL ALGEBRA	6
ALGEBRAIC GROUPS AND LIE ALGEBRAS	6
NUMBER THEORY 1	8
RIEMANN SURFACES	6
ALGEBRAIC TOPOLOGY	6
ALGEBRAIC GEOMETRY 1	8
ALGEBRAIC GEOMETRY 2	6
COMPLEX GEOMETRY	6
NUMBER THEORY 2	6
FUNCTIONS OF COMPLEX VARIABLES	6
SYMPLECTIC MECHANICS	6
CRYPTOGRAPHY	6
SEMINAR ACTIVITIES	4

#### 2nd YEAR ( if the students take the 2<sup>nd</sup> year in Padova)

SEMINAR ACTIVITIES	4
8 ADDITIONAL FREE-CHOICE CREDITS	
FINAL THESIS/DISSERTATION	36

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### CURRICULUM MAPPA

Entirely held in English except for courses not marked with MAPPA Curriculum (Mathematical Analysis and Probability): international curriculum (Mathematical Analysis and Probability), reserved for students selected through a specific call, aimed at issuing a double degree, which involves carrying out part of the training course at the Université Paris Dauphine (PSL), in different mobility schemes and study plans: students must obtain 60 CFU in Padua and 60 CFU in Paris.

For information on the program and training courses, consult the website: <https://mappa.math.unipd.it/>

#### 1st YEAR

UNITS HELD IN PADUA (if the students take the 1 <sup>st</sup> year here):	CREDITS
DIFFERENTIAL GEOMETRY	8
FUNCTIONAL ANALYSIS	8
FUNCTIONS THEORY	8
CALCULUS OF VARIATIONS	8
NON-LINEAR ANALYSIS	8
STOCHASTIC ANALYSIS	7
DYNAMICAL SYSTEMS	7
SYMPLECTIC MECHANICS	6
NUMERICAL METHODS FOR DIFFERENTIAL EQUATIONS	7
PARTIAL DIFFERENTIAL EQUATIONS 1	6
PARTIAL DIFFERENTIAL EQUATIONS 2	6
HARMONIC ANALYSIS	6
ADVANCED STOCHASTIC PROCESSES	7
INTRODUCTION TO STOCHASTIC PROCESSES	8
STOCHASTIC METHODS FOR FINANCE	7
OPTIMIZATION FOR DATA SCIENCE	6
<b>UNITS HELD IN PARIS</b> <b>12-16 CREDITS TO TAKE IN PARIS, AMONG THE TEACHINGS IN MASTER MATH, CORRESPONDING TO SSD MAT/05/06/07/08 (FRENCH TEACHINGS WILL BE RECOGNISED IN THE FOLLOWING UNITS):</b>	<b>CREDITS</b>
ADVANCED MATHEMATICAL ANALYSIS A	6
ADVANCED MATHEMATICAL ANALYSIS B	6
ADVANCED MATHEMATICAL ANALYSIS C	6
ADVANCED MATHEMATICAL ANALYSIS D	6
ADVANCED PROBABILITY A	6

ADVANCED PROBABILITY B	6
ADVANCED PROBABILITY C	6
ADVANCED PROBABILITY D	6
ADVANCED MATHEMATICAL PHYSICS A	6
ADVANCED MATHEMATICAL PHYSICS B	6
ADVANCED NUMERICAL ANALYSIS A	6
ADVANCED NUMERICAL ANALYSIS B	6
<b>2nd YEAR</b>	
<b>SEMINAR ACTIVITIES</b>	<b>4</b>
<b>8 ADDITIONAL FREE-CHOICE CREDITS</b>	
<b>FINAL THESIS/DISSERTATION</b>	<b>36</b>

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