Université Paris-Saclay
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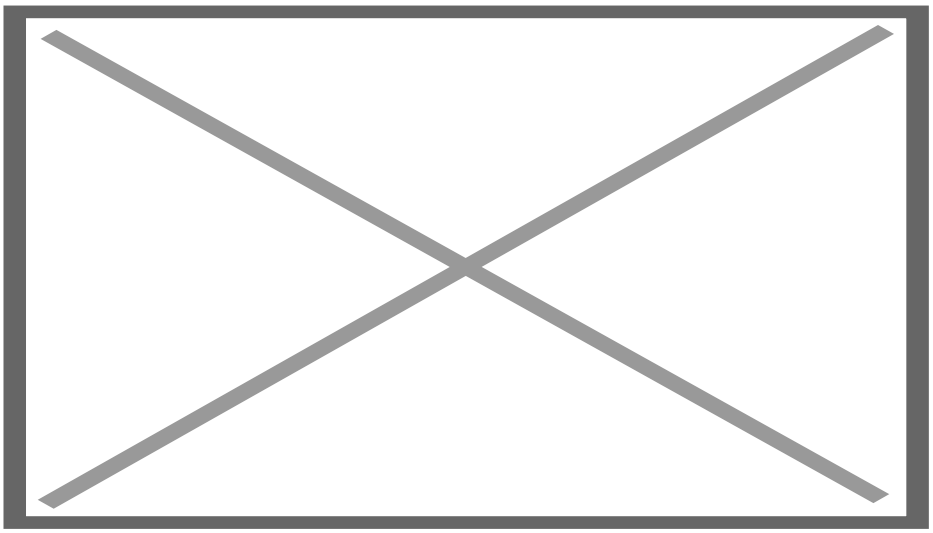
M1 Parcours Jacques Hadamard - site ENS Paris-Saclay

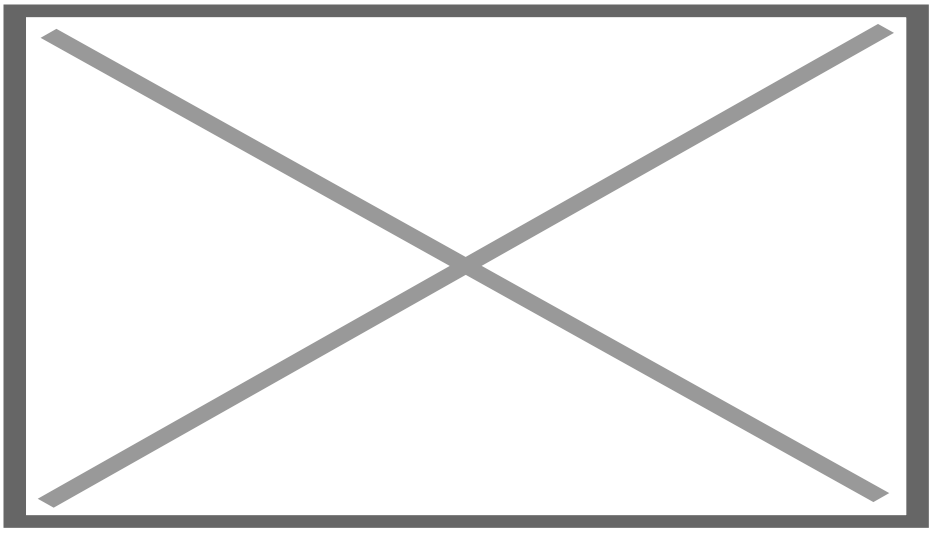
Master's degree
Specialisation Mathematics and applications
Enrolment type
Formation initiale
Language(s) of instruction
English
French

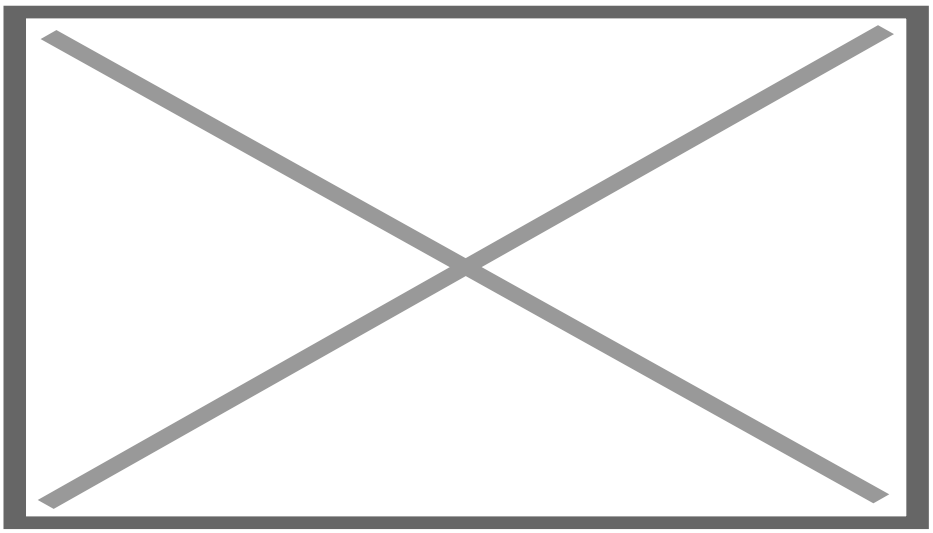
The M1 Hadamard program at ENS is an advanced master's degree program that covers a broad spectrum of mathematical skills and introduces students to research via a three-month research project.

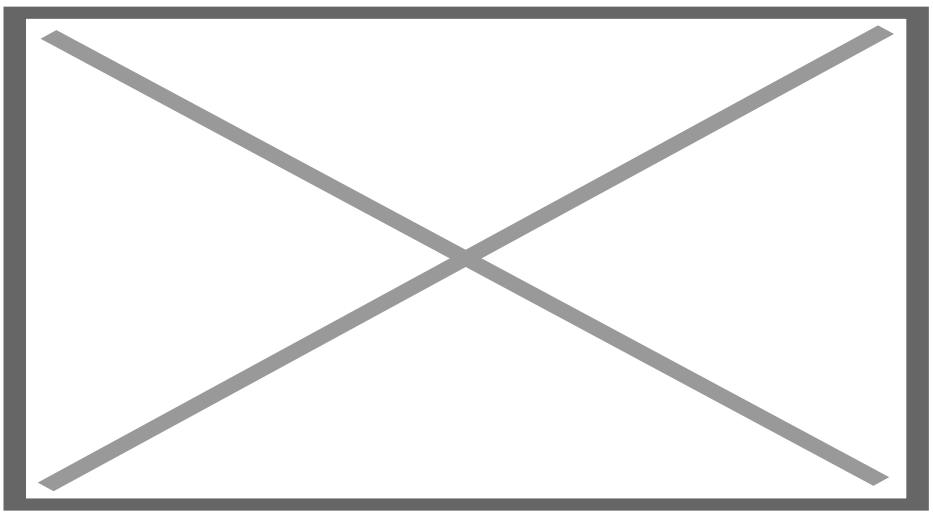
The primary target audience is second-year students at ENS Paris-Saclay. The program is designed to help students formalize a doctoral project in any branch of mathematics. The M1 Hadamard program at ENS provides students with the opportunity to gain a solid foundation in mathematics by taking in-depth, cross-disciplinary, and specialized courses at ENS, the Faculty of Sciences in Orsay, or the École Polytechnique. Students also participate in a three-month research project in an academic or non-academic laboratory in France (outside the Île-de-France region) or abroad. It provides an opportunity to learn about the various approaches to conducting research in mathematics.

Télécharger la fiche détaillée
Apply Now









Information

- Overview
- Application requirements
- Schedule

Présentation

Skills

- Master advanced mathematical concepts and theories.
- Apply mathematical calculations, tools, and methods.
- Research and summarize the current state of knowledge regarding a mathematical problem.
- Analyze a research document to summarize and exploit it in order to judge its relevance.
- Develop mathematical intuition, formulate conjectures, verify their relevance, and compare them with the current state of knowledge.
- Design and construct rigorous mathematical proofs independently.
- Master standard digital tools and programming languages.
- Communicate research results. Write a mathematical text according to the discipline's conventions. Create an oral presentation that highlights the state of the art, the original research, and the mathematical techniques used.

Objectives

- Acquérir, comprendre et maîtriser un grand nombre d'outils et de méthodes mathématiques d'un haut niveau sans aucun cloisonnement, en proposant un spectre étendu de cours classiques, mais aussi originaux dans l'ensemble des domaines des mathématiques.
- Découvrir l'activité de recherche en mathématiques en se confrontant à des problématiques ouvertes et actuelles à l'occasion des journées de rentrée et d’un projet de recherche de 3 mois.

Débouchés

Career prospects

Academic staff
Research & Development Engineer
Research Engineer

Further Study Opportunities

PhD

Calendar

Start of programme (indicative date)
31/08/2026

End of programme (indicative date)
31/07/2027
Admission

Admission Route

Mathematics

Capacity

Available Places

32

Target Audience and Entry Requirements

A very good command of the mathematical concepts covered in a bachelor's degree in mathematics

Période(s) de candidature

Inception Platform

From 01/06/2026 to 30/06/2026

Supporting documents

Compulsory supporting documents

Motivation letter.

All transcripts of the years / semesters validated since the high school diploma at the date of application.

Curriculum Vitae.

Additional supporting documents

Letter of recommendation or internship evaluation.

Students from outside Paris-Saclay University are encouraged to provide a letter of recommendation.

Certificate of French (compulsory for non-French speakers).

Detailed description and hourly volume of courses taken since the beginning of the university program.

VAP file (obligatory for all persons requesting a valuation of the assets to enter the diploma).

Recommendation letters.

Supporting documents :
- Residence permit stating the country of residence of the first country
- Or receipt of request stating the country of first asylum
- Or document from the UNHCR granting refugee status
- Or receipt of refugee status request delivered in France
- Or residence permit stating the refugee status delivered in France
- Or document stating subsidiary protection in France or abroad
- Or document stating temporary protection in France or abroad.

Programme

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	di le c
Advanced courses									
Advanced Algebra Charger le détail	7.5	Semester 1	48	60					
Advanced analysis Charger le détail	7.5	Semester 1	48	60					
Advanced Probability Theory Charger le détail	7.5	Semester 1	48	60					
Transversal skills									
Signal and information Theory Charger le détail	5	Semester 2	20	20					
Optimization and numerical optimization Charger le détail	5	Semester 2	20	14	6				
Mathematical statistics	5	Semester 2	20	14	6				

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed	Lecture/practical	directed study/practical class	di le
Charger le détail Statistical learning	5	Semester 2	20	14	6				
Charger le détail Functional Analysis	5	Semester 1	20	20					
Charger le détail Differential Geometry and the Calculus of Variations	5	Semester 2	20	14	6				
Charger le détail Discretization of PDEs	5	Semester 2	20		20				

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed	Lecture/practical	directed study/practical class
Charger le détail Scientific innovation								
English for mathematical publications	2	Semester 1		20				
Charger le détail Mathematics research project	13	Semester 2						
Charger le détail Specialization skills								
Modeling and dynamic simulation of reactive multi-scale media	5	Semester 1	18	18				
Charger le détail UE libre A	5	Annualisé						
Charger le détail								

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
Topologie générale et topologie algébrique	5	Semestre 1	40					
Charger le détail								
Signal and information Theory	5	Semester 2	20	20				
Charger le détail								
Optimization and numerical optimization	5	Semester 2	20	14	6			
Charger le détail								
UE libre B	5	Annualisé						
Charger le détail								
Algebraic topology	5	Semester 1	18	18				
Charger le détail								
Mathematical statistics	5	Semester 2	20	14	6			
Charger le détail								
Statistical learning	5	Semester 2	20	14	6			
Charger le détail								
Dynamical systems	5	Semester 1	18	18				
Charger le détail								
Social and communication networks, probabilistic models	5	Semester 2	18	18				
Charger le détail								
Algebraic number theory	5	Semester 1	18	18				
Charger le détail								

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed	Lecture/practical	directed study/practical class
Spectral theory and quantum mechanics Charger le détail	5	Semester 2	18	18				
Functional Analysis Charger le détail	5	Semester 1	20	20				
Compact and Lie Groups Charger le détail	5	Semester 2	18	18				
Uncertainty and risk analysis Charger le détail	5	Semester 2	18	18				
Differential Geometry and the Calculus of Variations Charger le détail	5	Semester 2	20	14	6			
Discretization of PDEs Charger le détail	5	Semester 2	20		20			
Optimal control and data assimilation: from theory to applications Charger le détail	5	Semester 2	18	18				
Game theory Charger le détail	5	Semester 1	18	18				
Random modeling in biology, ecology, and evolution Charger le détail	5	Semester 2	18	18				

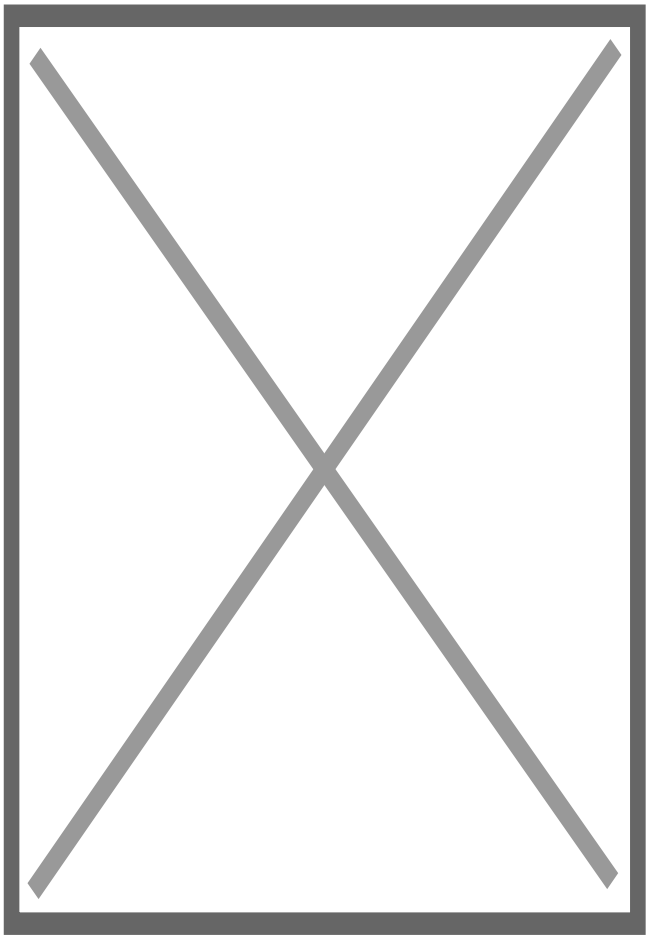
Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
Introduction to algebraic geometry and elliptic curves Charger le détail	5	Semester 2	18	18				
Geometry Charger le détail	5	Semester 2	40	50				
UE libre C Charger le détail	5	Annualisé						

Teaching Location(s)

ORSAY
GIF SUR YVETTE
PALAISEAU

Training campus

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Saclay Moulon

Saclay / Gif-sur-Yvette / Orsay
Bus 4606 / 4609 / 4611 / 5154
RER B Le guichet
Voir
Student restaurant (CROUS)
Library
Sports facilities
Student residence

Contact

- ### Frédéric PASCAL

  PR

http://www.universite-paris-saclay.fr/formation/master/mathematiques-et-applications/m1-parcours-jacques-hadamard-site-ens-paris-saclay