Université Paris-Saclay

Share

Email destinataire :

Vous devez renseigner un email valide

Envoyer

Une erreur est survenue. Merci de réessayer ultérieurement

Le mail de partage a bien été envoyé.

Add to Compare

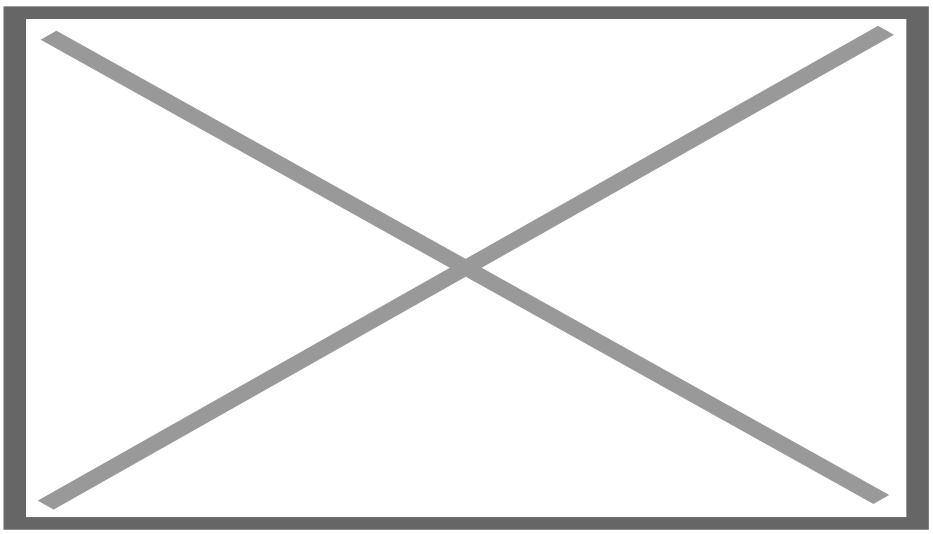
M2 Mathematics, Vision, Learning

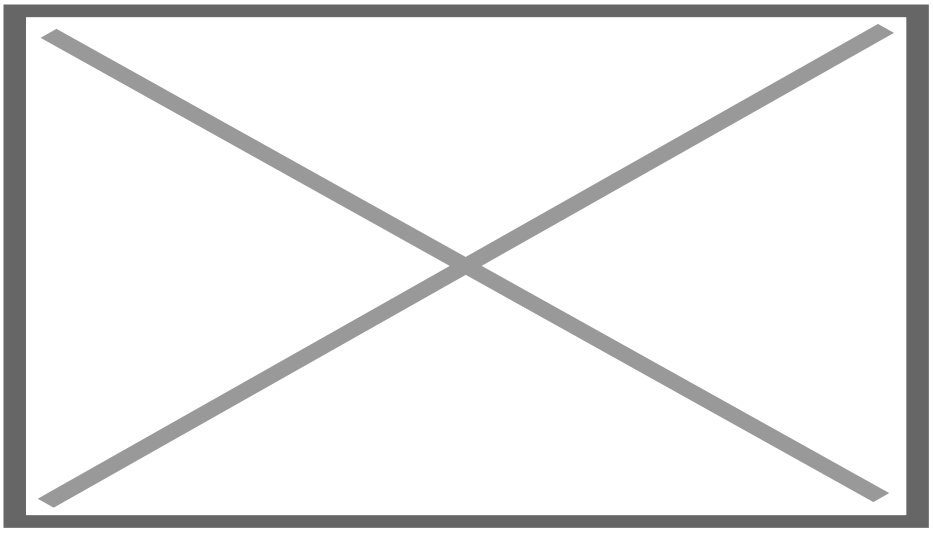
Master's degree
Specialisation Mathematics and applications
Enrolment type
Formation initiale
Language(s) of instruction
English
French

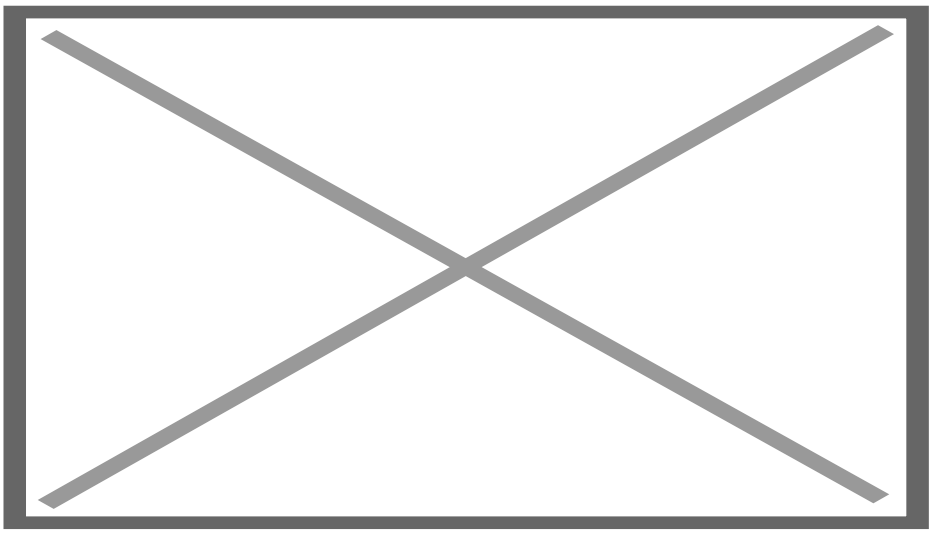
The MVA is a 2nd year Master's Research programme which started in 1996, run by the mathematics department of ENS Paris-Saclay, co-accredited with the Institut Polytechnique de Paris and shared with Université Paris Cité. The Master's in MVA is unique in France for its scientific focus on mathematical interfaces and its openness to an innovation ecosystem that brings together academic laboratories, research organisations and companies in France and abroad.

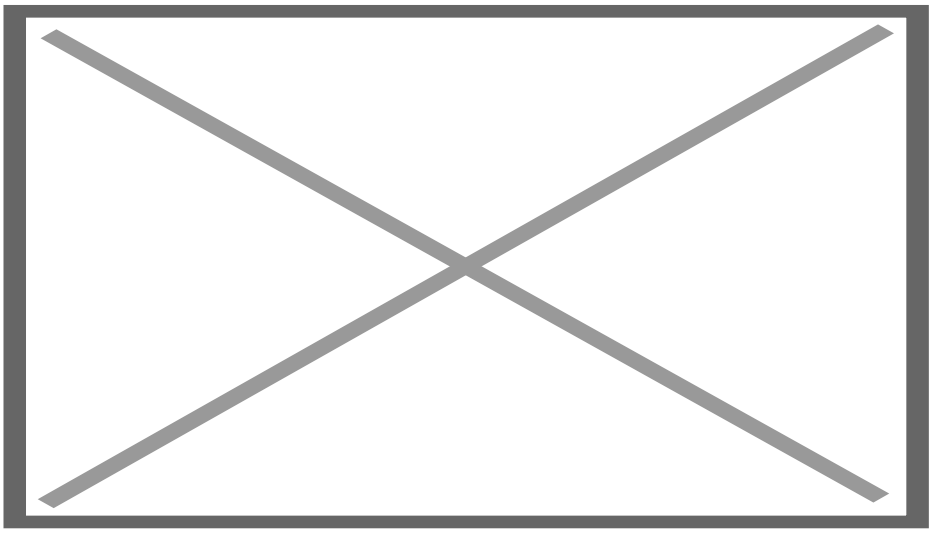
Courses from mid-September to mid-April Internship from mid-April for 4 to 6 months

Télécharger la fiche détaillée
Apply Now









Information

- Overview
- Application requirements
- Schedule

Présentation

Skills

Master and apply cutting edge mathematical tools and methods.

Objectives

The Master 2 MVA (Mathematics, Vision, Learning), created by the mathematics department of the ENS Paris-Saclay, is a unique master in France since its creation in 1996. In cooperation with several academic partners, it trains a large number of university and "grandes ecoles" students each year in Research, Development and Innovation for public and private organizations and companies in the field of mathematics applied to data, image and signal processing.The huge growth in the use of digital data in all fields of science, technology and society requires the training of high-level mathematical researchers mastering the acquisition and processing of digital data on the one hand, and their automatic interpretation on the other. These two aspects are strictly complementary and are reflected in the three terms characterizing the MVA program.

Calendar

Start of programme (indicative date)
21/09/2026
Admission

Capacity

Available Places

180

Target Audience and Entry Requirements

Admission: On a case-by-case basis, for holders of an M1 in mathematics, informatics or physics, or for 3rd-year engineering school students (potentially admitted for dual programmes, according to agreements).

Période(s) de candidature

Inception Platform

From 01/05/2026 to 30/06/2026

Supporting documents

Compulsory supporting documents

Copy of the last diploma.

Copy of identity document.

Motivation letter.

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

Curriculum Vitae.

Certificate of English level (compulsory for non-English speakers) or GMAT / GRE test results.

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

Additional supporting documents

Letter of recommendation or internship evaluation.

Certificate of English level (compulsory for non-English speakers).

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

Document indicating the list of local M2 choices available here : https://urlz.fr/i3Lo.

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/practic class
Deep Learning	5	Semester 1	24					

Charger le détail

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practic class
Fondements Théoriques du deep learning	5	Semestre 1	25		5			
Charger le détail								
Audio Signal Processing - Time-Frequency Analysis	5	Semester 2	21					
Charger le détail								
Graphical models : Discrete inference and learning	5	Semester 2	24					
Charger le détail								
Deformable Models and Geodesic Methods for Image Analysis	5	Semester 2	21		9			
Charger le détail								
Deep Learning in Practice	5	Semester 2	12	12				
Charger le détail								
Point clouds and 3D modelling	5	Semester 2	16		16			
Charger le détail								
Optimal transport for machine learning	5	Semester 1	18					
Charger le détail								
Algorithms and learning for protein science	5	Semester 2	18		3			
Charger le détail								

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed	Lecture/practical	directed study/practic class
Algorithms for speech and natural language processing Charger le détail	5	Semestre 2	21					
Machine learning for time series Charger le détail	5	Semestre 1	27	0	9			
Séminaire Turing - Sûreté et interprétabilité des IA à usage général Charger le détail	2.5	Semestre 1	12					
Bayesian machine learning Charger le détail	5	Semestre 2	16		12			
Geometry processing and geometric deep learning Charger le détail	5	Semestre 1	12		14			
Audio signal Analysis, Indexing and Transformations Charger le détail	5	Semestre 2	14		10			
Deep Learning for Image Restoration and Synthesis Charger le détail	5	Semestre 2	24		12			
3D Computer Vision Charger le détail	5	Semestre 1	18	3				

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practic class
Interactions (Complexity, Stochasticity, Extrema & Rare events)	5	Semester 1	24					
Charger le détail Biostatistics	5	Semester 2	24					
Charger le détail Inverse problems and imaging: statistical and stochastic approaches	5	Semester 2	27					
Charger le détail Responsible machine learning	2.5	Semestre 1	10					
Charger le détail Geometric Data analysis	5	Semester 1	14		7			
Charger le détail Fundamentals of reproducible research and free software	5	Semester 1	12	3	9			
Charger le détail Statistical learning with extreme values	5	Semester 1	15	6	4			
Charger le détail Apprentissage profond et traitement du signal, introduction et applications industrielles	5	Semestre 1	12		18			
Charger le détail								

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practic class
The machine intelligence of images	5	Semester 1	12		18			
Charger le détail								
Introduction à l'apprentissage statistique pour les géosciences	5	Semestre 2	12		18			
Charger le détail								
Algorithmes pour l'optimisation et la gestion des réseaux	5	Semestre 2	12		18			
Charger le détail								
Stopping times and online algorithms	5	Semester 1	24					
Charger le détail								
Immersion en hôpital - collaboration en binôme avec un médecin	5	Semestre 1						
Charger le détail								
Robotics	5	Semester 1	19	9				
Charger le détail								
Regulating AI	2.5	Semestre 2	12					
Charger le détail								
Modèles génératifs pour l'image	5	Semestre 2	18	9				
Charger le détail								
Intelligence artificielle et environnement	2.5	Semestre 2	9		9			
Charger le détail								

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practic class
Convex optimization and applications in machine learning Charger le détail	5	Semester 1	21					
Functional Brain Imaging and Brain Computer Interfaces Charger le détail	5	Semester 2	24					
Geometry and Shape Spaces Charger le détail	5	Semester 2	21		9			
Reproducible research project Charger le détail	5	Semester 2		9	12			
Deep learning for medical imaging Charger le détail	5	Semestre 2	27					
Topological data analysis for imaging and machine learning Charger le détail	5	Semester 1	12		12			
Sub-pixel Image Processing Charger le détail	5	Semester 1	20		16			
Remote sensing data: from sensor to large-scale geospatial data exploitation Charger le détail	5	Semester 2	31.5					

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed	Lecture/practical	directed study/practic class
Introduction to Probabilistic graphical models and deep generative models	5	Semester 1	30					
Charger le détail								
Sequential learning	5	Semester 2	18					
Charger le détail								
Some Mathematical methods for neurosciences	5	Semester 1	24	16				
Charger le détail								
Kernel Methods for machine learning	5	Semester 2	23					
Charger le détail								
Introduction à l'imagerie numérique	5	Semestre 1	21		6			
Charger le détail								
Théorie de la détection et ses applications industrielles	5	Semestre 2	24					
Charger le détail								
Random matrix theory	5	Semester 2	24		6			
Charger le détail								
Object Recognition and Computer Vision	5	Semester 1	30					
Charger le détail								
Introduction to statistical learning	5	Semester 1	16	8				

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practic class
Charger le détail Medical Image Analysis based on generative, geometric and biophysical models	5	Semester 1	24					
Charger le détail Computational statistics	5	Semester 1	20		20			
Charger le détail Advanced learning for text and graph data ALTEGRAD	5	Semester 1	14		14			
Charger le détail Deep reinforcement learning	5	Semester 1						
Charger le détail Image denoising : the human machine competition	5	Semester 1	20	10				
Charger le détail Graphs in Machine Learning	5	Semester 2	16	12				
Charger le détail Foundations of distributed and large scale computing optimization	5	Semester 1	24					
Charger le détail Large Language Models for code and proof	5	Semester 2	12	12				
Charger le détail								

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practic class
Génération de données en IA par transport et débruitage	5	Semestre 2	27					
Charger le détail								
AI and Computer vision for cultural heritage	2.5	Semester 2	12					
Charger le détail								
Representation learning for computer vision and medical imaging	5	Semester 2	12	12				
Charger le détail								
Stochastic calculus in machine learning	5	Annualized	24					
Charger le détail								
Multimodal Explainable AI (XAI)	5	Annualized	10	17				
Charger le détail								
Training and Deploying Large-Scale models	5	Annualized	14	14				
Charger le détail								

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	distan learn cour
Internship	20	Semester 2							
Charger le détail									

Teaching Location(s)

GIF SUR YVETTE

PARIS 05
PARIS 06
PARIS 14
PALAISEAU

Contact

- **Laurent Oudre**
- **Gwladys Stouvenel**

http://www.universite-paris-saclay.fr/formation/master/mathematiques-et-applications/m2-mathematiques-vision-apprentissage