

Master 2 Data Science, IP Paris

Journée de pré-rentree/Kickoff meeting, Year 2026-2027

September 1, 2026, École Polytechnique



**INSTITUT
POLYTECHNIQUE
DE PARIS**



Organization of the meeting

Morning (9:30-12:40)

- 9:30** Presentation of the M2DS
- 10:10** Alumni club of M2DS
- 10:30** Courses presentations
- 11:30** Short pause (10 min)
- 11:40** Courses presentations

Lunch break (12:50-13:50)

- 13:00** Free buffet (Financed by QRT)

Afternoon (14:00-17:30)

- 14:30** Courses presentations
- 17:00** Discussions and questions + Alumni event

M2 Data Science



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Objectives

- Become expert in the field of Data Science, machine learning and artificial intelligence.
- Skills in mathematics of statistics, optimization, machine learning, computer science, big data infrastructure.
- Fast moving domain: learn to adapt.
- Multidisciplinary competency: not one good profile.

Facts

- IP Paris and Hi! Paris are major world actors in the domain.
- ≈ 130 students, 50-60% from IP paris engineer schools.
- 25% of students pursue with a PhD, the rest pursue industry.

Administrative requirement and information

Mandatory registrations:

- **Administrative registration** In your institution of origin (ENSAE, ENSTA, Telecom Paris, Telecom SudParis) or École Polytechnique for new students of IP Paris.
- **PhD Track Students** Additional registration with the lab of your supervisor (ask them directly, it depends on the lab).
- **Pedagogical registration at École Polytechnique**
 - Contact : `master-admission@ip-paris.fr`
 - Contact for international students : `internationalstudents@ip-paris.fr`
- IP Paris registration unlocks your `@ip-paris.fr/` (synapse/moodle)

Student Card/Badge

- Available only AFTER registration.
- Badge service near reception (with ID from 9:00-12:00 and 13:00-15:00)
- Access to buildings (update on terminals at Télécom/ENSAE/Magnan).

Contact : administrative questions

- Main email : `staffmasterdatascienceipparis@polytechnique.fr`
- Stéphanie Clevenot : `stephanie.clevenot@polytechnique.edu`

Pedagogical contract

Validation of the Master DS

- 42 ECTS from courses :
 - 3 ECTS Data camp (mandatory)
 - 3 ECTS : Master classes and Hackathon (mandatory, evenings +1 weekend)
 - 6 ECTS : CAPSTONE Project or ML research seminar (choice).
 - 30 ECTS from selection of courses.
- 18 ECTS internship (public or private sector).

Rules

- Pedagogical contract must be signed at the beginning of the year.
- Courses and internship are validated for a grade greater or equal to 10/20.
- You can validate two courses in other masters (max 10 ECTS) but it needs agreement from one of the M2 coordinators (and of the other institution).
- ENSAE and ENSTA student can count 10 ECTS from the engineer school.
- M2 year validated when 60 ECTS (42+18) have been validated.
- Retake-exams possible, compensations per blocs P* (60 ECTS required)
- Bonus courses (after registration) cannot be withdrawn and their grades will appear in the transcript.

Courses organization

Calendar: <https://tinyurl.com/agenda-m2ds>

The year in 4 parts (parts 1-2 $\approx$ semester 1, parts 3-4 $\approx$ semester 2))

- **Part 1:** Courses 07/09-16/10, Exams 19-23/10
- **Part 2:** Courses 09/11-18/12, Exams 04-08/01, Hi!ckathon 28-29/11, Data Camp 2-6/11
- **Part 3:** Courses 11/01-19/03, Exams 22-26/03
- **Part 4:** Internship from 01/04, Defense in August/September/October

Holidays/Vacations

- Fall : 26/10-30/10
- Winter : 21/12-01/01

M2DS Courses

Syllabus: <https://tinyurl.com/syllabus-m2ds>

Moodle: <https://moodle.ip-paris.fr/>

Part P1 & P2

Course name	Professors	Part	ECTS
Monte Carlo methods and approximate inference	DOUC Randal - SCHECHTMAN Sholom	P1	3
Practical introduction to machine learning	FLAMARY Rémi	P1	3
An Introduction to Machine Learning Theory	CLEMENCON Stephan	P1	3
Deep Learning I	PEETERS Geoffroy - LEFOLGOC Loïc	P1	3
Big Data Framework	PHAM-HI Duc	P1-2	3
Optimization Meets Generalization: Insights from Statistical and Neural Network Learning	DIEULEVEUT Aymeric - BOYER Claire	P1-2	6
Advanced AI for text and graphs	VAZIRGIANNIS Michalis	P1-2	6
Optimization for Data science	GRAMFORT Alexandre - VAITER Samuel	P1-2	6
Convex Analysis and Optimization Theory	BIANCHI Pascal - FERCOQ Olivier - DRAGOMIR Radu	P1-2	6
Online learning and aggregation	Alexandre TSYBAKOV	P1-2	3
Hidden Markov models and Sequential Monte Carlo methods	CHOPIN Nicolas	P1-2	3
Nonparametric estimation and testing	DIVOL Vincent	P1-2	3
High-dimensional statistics	BUTUCEA Cristina	P1-2	3
DATA stream processing	TOGBE Maurras - SUBLIME Jérémie - BARRY Mariam	P1-2	6
Machine Learning for Climate and Energy	DEREMBLE Bruno - PELLET Victor	P1-2	3
Masterclasses and Hilckathon		P1-3	3
Data camp (mandatory course)	Thomas MOREAU- Pedro RODRIGUES	P2	3

M2DS Courses

Syllabus: <https://tinyurl.com/syllabus-m2ds>

Moodle: <https://moodle.ip-paris.fr/>

Part P2 & P3

Course name	Professors	Part	ECTS
Reinforcement learning	Luis CHAMON	P2	3
Introduction to Generative models	DURMUS Alain- JANATI Yazid	P2	3
Kernel Machines: from shallow to deep learning	d'ALCHE-BUC Florence	P2	3
Deep learning for Computer Vision	GIRLADO Jhony	P2	3
Law and ethics of artificial intelligence	VIARD Tiphane - LE GOFF Thomas	P2	3
Introduction to Operation Research	SOUTIL Eric	P2	3
Natural Language Processing and Large language Models	ZHU Ye	P2	3
Machine Learning for Structured Data	ALAM Melwish	P2	3
AI Driven Transformation	Denis OBLIN	P3	3
Cloud data infrastructure	TRAVERS Nicolas	P3	3
Deep learning for time series	TAVENARD Roman	P3	3
Generative models for visual content prediction	PICARD David	P3	3
Introduction to eXplainable Artificial Intelligence : interpretable models, post-hoc explainability and causality	CLAUSEL Marianne	P3	3
Representation Learning for Computer Vision and Médical Imaging	GORI Pietro - LE FOLGOC Loïc	P3	3
AI for Sound : Analysis Processing and generation	PEETERS Geoffroy -RICHARD Gael	P3	6
Tail events analysis: robustness and anomaly detection	MOZHAROVSKY Pavlo	P3	3
Stochastic approximation and reinforcement learning	BIANCHI Pascal- HACHEM Walid	P3	3
Deep Learning II	PETETIN Yohan	P3	3
Recent Developments in Responsible AI	LACLAU Charlotte - D'ALCHE-BUC Florence	P3	3
Optimal Transport: Theory, Computations, Statistics, and ML Applications	CUTURI Marco	P3	3
Machine Learning with Graphs	GIRLADO Jhony	P3	3
Cooperative Optimization for Data Science	Andrea SIMONETTO	P3	3
Integer Optimization for Machine Learning	ALES Zacharie	P3	3
Capstone Project	Charles-Albert LEHALLE - Anna KORBA	P3	6
Machine Learning Research Seminar	El Madhi EL MHAMDI - Clément BONET	P3	6

Courses registration

Registration link

<https://m2ds.flamary.com/>

Limit date for submission: 03/09/2026 23:59

Requirements

- Select at least 42 ECTS, no more than 48 ECTS.
- No conflicts possible (only one course per 1/2 day).
- For course selected outside of the master: pick one from M2DS (without numerus clausus) and contact us afterward to change it.
- Use your unique email (allows update of selection).
- Select supplementary courses after 42 ECTS.

Suggestions

- Spread the courses between P1/P2/P3 (P3 has ML seminar or capstone).
- Limit the number of courses with numerus clausus.
- Be curious, have fun, you have access to materials even if not selected.
- Some suggested "tracks" in the next slides.

Track : Research in theoretical ML

Example track

P1-P2

- Deep Learning I
- An Introduction to Machine Learning Theory
- Monte Carlo Methods and approximate inference
- Kernel Machines: from shallow to deep learning
- High-dimensional statistics
- Optimization Meets Generalization: Insights from Statistical and Neural Network Learning

P3-P4

- Operator Learning, applications in dynamical systems and uncertainty quantification
- Online learning and aggregation
- Intro. to eXplainable AI: interpretable models, post-hoc explainability & causality
- Optimal Transport: Theory, Computations, Statistics, and ML Applications
- ML Research Seminar
- Internship in a research lab.

Track : Optimization for ML and data science

Example track

P1-P2

- Deep Learning I
- Convex Analysis and Optimization Theory
- Optimization for Data science
- Reinforcement learning
- Introduction to Operation Research
- Data Camp

P3-P4

- Integer Optimization for Machine Learning
- Cooperative Optimization for Data Science
- Introduction to eXplainable Artificial Intelligence : interpretable models, post-hoc explainability and causality
- Optimal Transport: Theory, Computations, Statistics, and ML Applications
- ML Research Seminar or CAPSTONE Project

Track : ML and applications

Example track

P1-P2

- Deep Learning I
- Practical introduction to machine learning
- Natural Language Processing and Sentiment Analysis
- Partially observed Markov chains in signal and image
- Data Camp

P3-P4

- Deep learning for time series
- Machine Learning for Climate and Energy
- Recent Developments in Responsible AI
- AI for Sound: Analysis Processing and generation
- Generative models for visual content prediction
- Capstone Project

Track : Data science for industry

Example track

P1-P2

- Practical introduction to machine learning
- Deep Learning I
- Natural Language Processing and Sentiment Analysis
- Big Data Framework
- Law and ethics of artificial intelligence
- DATA stream processing
- Data Camp

P3-P4

- Representation Learning for Computer Vision and Médical Imaging
- Recent Developments in Responsible AI
- Deep learning II
- Capstone Project
- Internship in a company

Internship

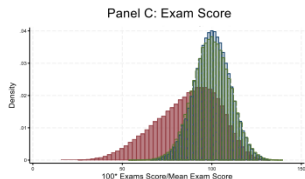
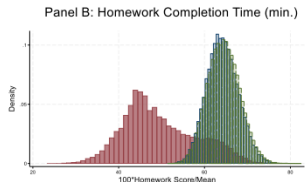
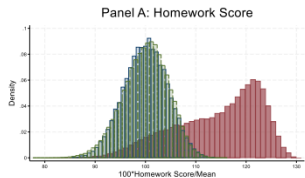
Schedule and contact

- Internship can start from April 1 2025, minimum 16 weeks.
- Start looking for internships early (December at least).
- Subject: need to have contributions in the field of data science and must be validated by an "enseignant référent".
- Contact **after** subject validation : julie.ponce@polytechnique.edu

Internship subject validation (enseignants référents)

- **X/Polytechnique** Rémi Flamary, El Mahdi El Mhamdi
- **ENSAE** Anna Korba
- **ENSTA** Zacharie Ales
- **Télécom Paris** Olivier Fercoq
- **Télécom SudParis** Randal Douc
- **ISEP** Jérémie Sublime
- **ECE** Duc Pham Hi
- **ENPC** Pascal Monasse

The LLM in the room

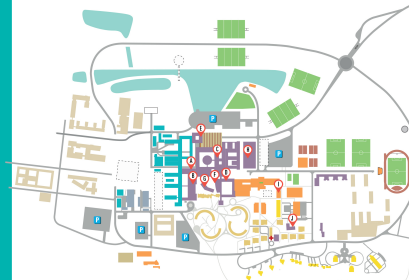


- LLM are powerful tools to help you in your work, but they are not perfect and can hallucinate.
- Use them with care, and always check the results.
- You are here to learn, friction is part of the learning process.
- Study on the use of LLM^a have shown:
 - Homework grade increased by 20%.
 - Exam grade decreased by 20%.
- Use your brain BEFORE using LLM.
- You need to know how to code to review code.

^aThe Generative AI Learning Penalty: Evidence from Chinese Secondary Education, Stromberg, Lei, Wu, 2026,
<https://dx.doi.org/10.2139/ssrn.6868618>

IP Paris Campus

Campus de l'École polytechnique - IP Paris



- A) Bâtiment S7 – Informatique
- B) Bâtiment 8 – Centre Poly-média – Langues – HSS – PC
- C) Bâtiment 13 – Ensemble Central (DRI)
- D) Bâtiment 21 – Pôle Social – Moyens Généraux – Aubaineries
- E) Bâtiment 28 – Bancourt – Présidence – Direction générale

- F) Bâtiment 69 – Bachelor – Executive Master
- G) Bâtiment 81 – Finances – Achats
- H) Bâtiment 86 – Drihi-X Navigation Center
- I) Bâtiment 409 – Bienvenue (CISEP – CSK)
- J) Bâtiment 411 – EXED

Accueil

- 2 Accueil Invision
- 3 Amphithéâtres
- 4 Bibliothèque – Mus'X
- 5 Centre aquatique et sportif
- 6 Cour des Cinémas
- 7 Cour Vaneau
- 8 Direction du Concours
- 9 Présidence & Direction générale
- 18 Direction Graduate Degree – 1^{er} étage
- Direction Bachelor – RDC
- 17 Direction Master / Doctorat – SOIE
- 12 Faculté Education
- 13 Bureaux logements

- Crous truck
- Arrêts Bus 91 06



- 14 Grand hall
- 15 Laboratoires / Départements
- 16 Drihi – X Navigation Center
- 17 LIX, Inria, MSR – Bât. Alain Turing
- 18 Laboratoire d'Optique Appliquée
- 19 Centre de secours
- 20 Restauration – Conciergerie
- 21 Magasin de produits chimiques



Other information

Access to campus

- From Paris : RER B (to Massy Palaiseau or to Lozere) or RER C (to Massy Palaiseau)
- From Massy Palaiseau: TransEssonne 91.06 ou 91.10
<http://www.albatrans.net/les-lignes-les-horaires/>
<https://me-deplacer.iledefrance-mobilites.fr/>
- IP Paris Campus smartphone App.

More information : <https://www.ip-paris.fr/acces-et-mobilite>

Restaurants and student life

- Several restaurants on the Campus
- Restaurant Magnan (polytechnique) requires to activate the Student ID card.

More information :

<https://www.ip-paris.fr/campus/vie-etudiante/vie-pratique>