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M2 Data, Knowledge and Hybrid Artificial Intelligence (DKAI)

Master's degree

Specialisation Computer Science

Language(s) of instruction

English

At the heart of the digital revolution, **data science and artificial intelligence (AI)** have become key drivers of innovation. They transform massive amounts of data into strategic information and actionable knowledge. The **Data, Knowledge and Hybrid Artificial Intelligence (DKAI)** track of the **Master in Computer Science** offers a high-level program that trains specialists capable of designing **trustworthy and hybrid AI systems** combining **machine learning** and **symbolic reasoning**.

The **DKAI track** of the **Master's in Computer Science** at **Université Paris-Saclay** is a comprehensive and dynamic program, recognized for its distinctive focus. It stands out through the **advanced expertise** it provides and the **broad career prospects** it offers, spanning both **industry** and **research** in **data science** and **trustworthy artificial intelligence**.

The program follows an **integrated educational approach**, combining the **acquisition of fundamental knowledge** in **data science**, **artificial intelligence**, and **knowledge engineering** with **hands-on experience** gained through **supervised projects**, **case studies**, and **real-world applications**.

The courses are **closely connected to research activities** carried out within the **laboratories** of the **Paris-Saclay ecosystem** and are reinforced by **strong industrial relationships**. The DKAI track also features a **clear international orientation**, with **courses delivered in English**.

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Information

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Présentation

Skills

Foundations and Global Understanding

Develop a solid understanding of the **theoretical and methodological foundations** of **data science**, **knowledge engineering**, and **hybrid artificial intelligence**, covering both the **symbolic** and **connectionist** dimensions of AI.

Skills in Data Science and Hybrid Artificial Intelligence

- Analyze and model **complex problems** by leveraging methods from **data science**, **symbolic AI**, and **hybrid AI**, across diverse contexts and in connection with user needs.
- Match each problem type with appropriate approaches — **machine learning**, **deep learning**, **symbolic reasoning**, **knowledge integration**, or **hybrid methods** — and assess their relevance in terms of **performance**, **explainability**, and **robustness**.
- Identify problems that require **distributed or massively parallel architectures**, and deploy suitable **big data tools**.
- Design, manage, and operate **relational databases**, **knowledge graphs**, or **unstructured data**, and develop appropriate **visualization and interaction interfaces** for data science applications.
- Develop and deploy **reliable, explainable, and trustworthy AI solutions** that integrate **knowledge representation**, **learning**, and **reasoning**.
- Evaluate and interpret the results of **complex AI/data systems** according to criteria of **performance**, **scalability**, **robustness**, and **relevance of the knowledge used**.
- Implement **validation and testing protocols** to ensure the **reliability** and **compliance** of AI and data science solutions.
- Ensure the **maintenance, evolution, and continuous adaptation** of AI/data systems in line with technological advances and application needs.
- Model and reason under constraints, and **extract knowledge** through **declarative mining** and **graph-based reasoning** approaches.

Transversal Skills

- Mobilize **advanced knowledge** in **machine learning**, **knowledge representation**, and **hybrid AI** to develop **innovative approaches**.
- Develop a **critical understanding** of AI and data science methods, particularly regarding their **interpretation limits** and **generalization capacity**.
- Contribute to **research and innovation projects** in AI and data science within **interdisciplinary and international contexts**.
- Assume **scientific and technical responsibilities** to improve the practices and performance of **AI/data teams**.
- Communicate effectively, both **orally and in writing**, in **French and English**, to **disseminate, promote, and explain** the results of AI and data science projects.
- Integrate **ethical, reliability, and social responsibility principles** into the **design and use** of artificial intelligence and knowledge management systems.

Objectives

The **Data, Knowledge and Hybrid Artificial Intelligence (DKAI) track** of the Master's in Computer Science offers a two-year program of excellence (M1 and M2), combining data science and artificial intelligence. It brings together strong expertise in machine learning, big data, and an in-depth understanding of the different paradigms of AI—from symbolic AI to agent-based AI, including hybrid and generative AI. Throughout the curriculum, students develop their skills through numerous projects, challenges, and two internships in research laboratories or industry, preparing them for ambitious careers in both industry and research.

The **DKAI track** delivers advanced training over two years (M1 and M2) in data science and artificial intelligence. It combines advanced mastery of machine learning techniques, expertise in managing and analyzing massive datasets, and a deep understanding of the various paradigms of AI, from symbolic to

hybrid and generative approaches. Students benefit from multiple opportunities to put their academic knowledge into practice through projects, competitions, and internships in research labs or companies.

A springboard to the careers of tomorrow

This program prepares students to tackle major challenges related to transparency, ethics, and security in the development of AI-based systems. They acquire the skills required to design cutting-edge, reliable, and explainable solutions that comply with regulatory requirements and societal expectations in sensitive sectors. The DKAI track also offers strong academic prospects, equipping students with methodological rigor and scientific expertise to pursue a PhD and contribute to state-of-the-art research in data science and artificial intelligence.

An environment of excellence

Delivered in English, supported by advanced technological resources, and embedded in a stimulating learning environment, the DKAI track trains versatile and responsible experts, ready to address the challenges of data science and artificial intelligence on both a national and international scale.

Débouchés

Career prospects

After a Master's + PhD: researcher or lecturer

Data Scientist

Data Manager

Technology and Artificial Intelligence Ethics Officer

Artificial intelligence and data ethics Consultant

After a Master's degree: Data scientist

After a Master's degree: Artificial intelligence (AI) specialist

Project Manager

Consulting

Design engineer in the industrial sector

Design engineer in the research / scientific sector

Data protection Officer

Design Engineer

Research & Development Engineer

Research or Design Engineer

Digital transformation consultant

Research professions

Lecturer (after a PhD)

Design Engineer

Teacher (after the CAPES or 'agrégation' competitive exam)

Design Engineer

Technological and artificial intelligence ethicist (in digital companies and specialised start-ups)

Data scientist

Further Study Opportunities

PhD

Engineering school

Multidisciplinary Engineering School

Generalist Engineering School through Apprenticeship

train international specialists, producing competitive work within reputable teams from public scientific and technological institutions (EPST), in particular the French National Institute of Health and Medical Research (Inserm) and French National Centre

Engineering, research and development

the curriculum also enables students to enter the corporate world directly after their graduation, in positions such as Data Scientist, Data Analyst or Machine Learning Engineer.

PhD thesis

Admission

Admission Route

Computer Science

Mathematics

Engineering Sciences

Capacity

Available Places

Target Audience and Entry Requirements

Admission to the M2 DKAI program is open to students who have completed the M1 DKAI, the M1 Artificial Intelligence, or an equivalent program outside Paris-Saclay. A minimum English proficiency level of B2 (CEFR) is required.

Période(s) de candidature

Inception Platform

From 01/03/2026 to 04/04/2026

From 06/04/2026 to 15/05/2026

Supporting documents

Compulsory supporting documents

Copy diplomas.

Motivation letter.

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

Curriculum Vitae.

Selection sheet completed.

Additional supporting documents

Certificate of English level.

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

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

Block 1 – Core Disciplinary Courses

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	distance learning
[DKAI] Towards Adaptive and Agentic AI ■	3	Semestre 2	12		9				
Charger le détail [DKAI] Exploring Data Declaratively: Constraints and Patterns ■	3	Semester 1	12	3	6				
Charger le détail [DKAI] From Symbolic to Neurosymbolic AI ■	3	Semestre 1	12		9				
Charger le détail [DKAI] Graph Analytics ■	3	Semestre 2	12	9					
Charger le détail [DKAI] Knowledge Discovery in Graph Data ■	3	Semestre 1	10.5	10.5					
Charger le détail [DKAI] Towards Hybrid and Explainable Artificial Intelligence ■	3	Semestre 2	10.5	10.5					

[Charger le détail](#)

Block 4 - Long internship

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	distance learning
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[Stage long](#) 30 Semestre 2



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Block 2 – Elective Disciplinary Courses

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
[AI] Reinforcement Learning	3	Semester 1	10.5	10.5				
[AI] Deep Learning for NLP	3	Semester 1	10.5	10.5				
[AI] Frugal AI	3	Semestre 1	10.5	10.5				
[AI] Probabilistic generative models	3	Semestre 1	10.5	10.5				



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Bloc 3 - Softskills

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
1 UE Soft Skill à choisir								
Innovation et Entrepreneuriat	3	Semester 2	10.5	10.5				
Impacts Environnementaux du numérique	3	Semester 2	10.5	10.5				
CAD design for 3D printing	3	Semestre 2	10.5	10.5				
The art of fabricating tangible surfaces	3	Semestre 2	10.5	10.5				



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Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
Charger le détail History and Societal Impact of AI	3	Semestre 1	10.5	10.5				

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1 UE Soft Skill Obligatoire

[DKAI] Data and Knowledge Acquisition and Sharing	3	Semestre 2	10.5	10.5				
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Teaching Location(s)

ORSAY
GIF SUR YVETTE

Contact

- **Fatiha SAIS**

PR

<http://www.universite-paris-saclay.fr/formation/master/informatique/m2-data-knowledge-and-hybrid-artificial-intelligence-dkai>