

Master in Information Technology

- “EID2” (Exploration Informatique des Données et Décisionnel IT-driven Data Mining and Decision-Making) track

Program objectives

The first year of the program is made of two core semesters of broad-spectrum IT classes. It gives students the necessary skills to tackle in-depths subjects in the second year of the program.

The goal of the “EID2” track is to provide students with a comprehensive training in two complementary, specific fields: decision-making IT and data-driven knowledge acquisition. This specialization strives to:

- Offer students who already possess good general IT skills further specialized training in data mining.
- Provide students with a high-level specialization in the field of data-driven knowledge discovery.
- Give students a broad skill set by training them in advanced technologies in artificial intelligence, algorithmics and data-mining.

Program overview

The cornerstone of this Master’s program in IT lays on a tight link bridging the university’s research and teaching vocations. This strong connection is realized through elective orientation and discovery classes allowing students to define their professional goals. In the second year of the Master’s program, part of the third semester offers several concentrations each with their specific curriculum, while still keeping a common core of foundational, discovery and cultural “TUs” (Teaching Units). The fourth semester is devoted to an internship specific to each concentration and that can focus on either research careers or engineering careers.

Performance assessment

- Year-long tests and final exams
- M1 (first year) thesis and M2 (second year) internship: written report and oral defense.

Admission requirements

- M1: students can be admitted into the first year (M1) or second year (M2) of the program. In general however, admission is granted into the first year to any student holding a Bachelor’s degree in IT.
- M2: to be admitted in the second year of the Master’s program, students must pass the first year of a Master’s degree in IT. Admission is granted by the president of the University upon the recommendation of the program’s director. The program’s director requests the opinion of a jury on each student’s ability to perform in the second year of the program. For students coming from other Master’s programs (mathematics and IT, statistics, Applied IT for Business Management...), admission may be granted upon review of the applicant’s background in IT.

Career placement

- Jobs: graduates from the Master’s degree in IT generally find employment as:
 - Data scientists
 - Data miners
 - Project Managers in decision-making IT
 - Designers of specialized software tools
 - Research and development engineers
 - Consulting experts in decision-making
 - Researcher (with a PhD) in the fields of machine learning, data mining, decision-making IT.
- Fields: in high-tech areas of Aeronautics, Automotive, Telecommunications, Automatism, Robotics, Energy, Laboratories, Banks, Insurance companies, service and applications IT, Retail and mail order.

Further education

After graduating from the Master’s program, students can get into PhD programs with research teams within the LIPN and within other partnering labs such as the LAMSADE (Université Paris 9), the LIP6 (Université Paris 6), the LRI and the LIMSI (Université Paris 11) or any other university or industry lab, as well as with the INRETS, the INRIA, the INRA, the CENAGREF, the IRD and the IGN. Funding opportunities for PhD research are available with Cifre scholarships.



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SEMESTER 1

First week: Review (10 h of Algebra and 10 h of Analysis)

FOUNDATIONAL TU 1

- Algorithmics and algorithmic complexity (5 ECTS credits)
- Database design (5 ECTS credits)
- Basics in programming (5 ECTS credits)
- Dynamic systems specification (5 ECTS credits)

2 ORIENTATION TUs

- System administration (3 ECTS credits)
- Automata and computing (3 ECTS credits)
- Matrix methods for data mining (3 ECTS credits)
- Transition systems (3 ECTS credits)
- Distribution systems (3 ECTS credits)

CULTURAL TU

- English (2 ECTS credits)
- Communication and Writing Techniques (2 ECTS credits)

SEMESTER 2

TU 1

- Project leading and managing (4 ECTS credits)
- Professional development plan (2 ECTS credits)
- Distributed Java programming (4 ECTS credits)
- Knowledge representation (4 ECTS credits)

3 DISCOVERY TU

- Algorithmics of words (4 ECTS credits)
- Cryptography (4 ECTS credits)
- Programming language implementation (4 ECTS credits)
- Constraint programming (4 ECTS credits)
- Operations research (4 ECTS credits)
- IT networks (4 ECTS credits)
- Proof theory (4 ECTS credits)

CULTURAL TU

- English (2 ECTS credits)
- Communication and Writing Techniques (2 ECTS credits)

SEMESTER 3

FOUNDATIONAL TU

- Evolved environments and languages (4 ECTS credits)
- Electronic data processing (4 ECTS credits)

SPECIALIZING TU

- Exploratory multidimensional statistics (3 ECTS credits)
- Advanced databases (3 ECTS credits)
- Data mining (3 ECTS credits)
- Data Warehouse (4 ECTS credits)
- Decision-making IT (3 ECTS credits)

CULTURAL TU

- English (2 ECTS credits)
- Intellectual property (2 ECTS credits)
- IT careers (2 ECTS credits)

SEMESTER 4

2 FINALIZING TUs

- Decision-making assistance (4 ECTS credits)
- Connectionism learning (4 ECTS credits)
- Statistical learning (4 ECTS credits)
- Symbolic learning (4 ECTS credits)

1 COMPLEMENTARY TU

- Social network analysis (4 ECTS credits)
- Visual data mining (4 ECTS credits)
- Vocal data mining (4 ECTS credits)
- Man-Machine Interface (4 ECTS credits)
- Text analysis (4 ECTS credits)

INTERNSHIP

- Industry/Laboratory internship (18 ECTS credits)

For more information

- > M1 program director: Olivier BODINI (PR)
- > M2 EID2 program director: Younès BENNANI (PR)
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