Eppur si muove !

Institut Galilée

UNIVERSITÉ PARIS 13

Master of Science in Informatics

• "EID2" (Exploration Informatique des Données et Décisionnel Data Mining, Analytics, and Knowledge Discovery) Speciality

Program objectives

The first year of the program is made of two core semesters of broad-spectrum Informatics classes. It gives students the necessary skills to tackle in-depths subjects in the second year of the program.
The specialty EID2 (Exploration Informatique des Données et Décisionnel - Data Mining, Analytics, and Knowledge Discovery) MSc focuses on data mining, business analytics, and knowledge discovery.

The program is particularly suited for students who have completed a Bachelor's degree (or equivalent) in one of the fields of computer science, mathematics or statistics, and wish to pursue a career in data science and analytics.

The EID2 MSc is designed to produce graduates with the knowledge and skills to:

• Select, apply and evaluate business analytics and data mining techniques which are focused on discovering knowledge that can be acted on to add value to a company.

• Bring both an in-depth theoretical understanding, and the practical hands-on experience, to a data science project including implementing novel and emerging techniques.

• Keep abreast of current research and business analytics related topics.

Program overview

The cornerstone of this Master's program in Informatics 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 speciality 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 speciality and that can focus on either research careers or engineering careers. The program for the EID2 MSc is built on a foundation of core and elective courses. This program joins courses with a Computer Science main theme, those with a Statistical data analysis, Advanced Databases, Data Mining, Business Analytics, and Data Warehousing main theme, and those with cultural courses. The electives courses may be chosen, in consultation with the student's advisor,to meet the interdisciplinary and the speciality distribution requirements.

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 informatics.

• 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 informatics. 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 informatics, statistics, Applied informatics for Business Management...), admission may be granted upon review of the applicant's background in Informatics.

Career placement

• Graduates from the Master's degree in Informatics generally find employment as:
- Data scientists
- Data miners
- Project Managers in business analytics
- Designers of specialized software tools
- Research and development engineers
- Consulting experts in business intelligence (BI)
- Researcher (with a PhD) in the fields of machine learning, data science, decision-making.
• Fields: in high-tech areas of Aeronautics, Automotive, Telecommunications, Automatisms, Robotics, Energy, Laboratories, Banks, Insurance companies, service and applications IT, Retail.

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 IFSTTAR, the INRIA, the INRA, the CENAGREF, the IRD and the IGN. Funding opportunities for PhD research are available with Cifre scholarships.

L'Université Paris 13 est membre de :
USPC Université Sorbonne Paris Cité
CAMPUS CONDORCET Paris-Aubervilliers

Master in Information Technology

• "EID2" (Exploration Informatique des Données et Décisionnel – IT-driven Data Mining and Decision-Making) track

SEMESTER 1

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

FUNDAMENTAL TUs (1)
• Algorithmics and 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)
• Automatons and computing (3 ECTS credits)
• Matrix factorization 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

FUNDAMENTAL TUs (2)
• Project leading and managing (4 ECTS credits)
• Professional development plan (2 ECTS credits)
• Distributed Java programing (4 ECTS credits)
• Knowledge representation (4 ECTS credits)

3 DISCOVERY TUs
• Algorithmics on words (4 ECTS credits)
• Cryptography (4 ECTS credits)
• Programming language implementation (4 ECTS credits)
• Constraint programming (4 ECTS credits)
• Operational research (4 ECTS credits)
• IT networks (4 ECTS credits)
• Proof theory (4 ECTS credits)

CULTURAL TUs
• English (2 ECTS credits)
• Communication and Writing Techniques (2 ECTS credits)

SEMESTER 3

FUNDAMENTAL TUs
• Programming Languages and Integrated Development Environment (4 ECTS)
• Numerical Methods for Data Analysis (4 ECTS)

SPECIALIZING TUs
• Statistical multidimensional data analysis (3 ECTS)
• Advanced Databases (3 ECTS)
• Data Mining (3 ECTS)
• Data Warehousing (3 ECTS)
• Business Analytics (3 ECTS)

CULTURAL TU
• English (2 ECTS credits)
• Intellectual property (2 ECTS credits)
• Jobs in computer science (2 ECTS)

SEMESTER 4

2 DEEPENING TUs
• Decision-making support (4 ECTS)
• Neural Networks learning (4 ECTS)
• Statistical learning (4 ECTS)
• Machine learning (4 ECTS)

1 COMPLEMENTARY TU
• Social network analysis (4 ECTS credits)
• Visual data mining (4 ECTS credits)
• Speech analytics (4 ECTS credits)
• Human-machine interaction (4 ECTS credits)
• Text analytics (4 ECTS credits)
• Time series analysis (4 ECTS)
• Knowledge management (4 ECTS
• Bioinformatics (4 ECTS)

INTERNSHIP
The fourth semester is targeted to the writing of a dissertation during an internship in either a laboratory or a company.

• Industry/Laboratory internship (18 ECTS credits)

For more information

> M1 program director: Olivier BODINI (Professor)
> M2 EID2 specialty program director : Younès BENNANI (Professor)
> Secretariat : Séverine GIROD/Michèle FOURTIER-ADBELLAOUI – Ph.: 33. (0)1.49.40.44.58 – Email: info.master.galilee@univ-paris13.fr

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