MASTER 2 ECONOMETRICS, STATISTICS

International track

DATA SCIENCE FOR SOCIAL SCIENCES

EXECUTIVE EDUCATION AND DIGITAL UNIVERSITY

Toulouse School of Economics

WORK-STUDY PROGRAM

APPRENTICESHIP OR PROFESSIONALIZATION CONTRACT

DEGREE

Master - (Level 7 of the European Nomenclature)

RNCP Code : 39013

PEDAGOGICAL MANAGERS

Anne Ruiz-Gazen, University Professor, TSE
Abdelaati Daouia, Associate Professor, TSE

PEDAGOGICAL TEAM

University Professors and Senior Researchers (indicative list) **:**
Jérôme Bolte, Sébastien Gadat, Eric Gautier, Anne Ruiz-Gazen, Gilles Stupfler, Lynda Tamine Lechani, Christine Thomas-Agnan.

Associate professors and junior chair (indicative list) **:**
Ondine Aza, Abdelaati Daouia, Sylvie Doutre, Marion Hoffman.

Professionals (indicative list) **:**
Sylvia Gil-Casals, Alejandro Lara, Louis Olive.

Other faculty staff (indicative list) **:**
Colombe Becquart, Jennifer Harpur, Isabelle Kawa Topor, Thibault Laurent, Camille Mondon, Rémi Perrichon, Adil Zoutine.

TEACHING METHODS AND RESOURCES

The training sessions take place in a dedicated classroom equipped with a video projector and internet connection. A computer room is reserved for training as needed. Possible access to various University resources: access to computer rooms, documentation centers, University libraries, Learning Center …

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PARTAGEONS nos TALENTS

OBJECTIVES

The second year of this master emphasizes advanced and applied techniques in data science, statistics and econometrics. It offers deeper courses in data science, particularly in mathematics of machine and deep learning algorithms, data mining, big data, regulation of data spreading and data protection, as well as specialized courses in different fields of application of statistics to social sciences, such as spatial statistics and econometrics, graph analysis, geomarketing, scoring, and web mining. Moreover, this second year of the program offers higher-level courses of statistical software, namely R, Python and SAS, and of massive databases management. The different courses allow students to acquire versatile skills in the processing of complex data (panel, survey, survival, graph, spatial) with modern parametric, non-parametric, and learning statistical methods. For prospective students interested in more on-the-job experience, the program is adapted to allow following an apprenticeship alongside the master's degree. From September to March, apprentices spend 3 days at the university (M-T-W) and 2 days in the company (Th-F). From April to August, they mainly work in the company. This international track aims to train "data scientists", "data analysts", "project managers", "engineers" and/or "consultants" in statistics with backgrounds in economics and econometrics. The graduates benefit from direct professional integration not only in the tertiary sector (e.g. quantitative marketing, banking, insurance), but also in industry and academic research.

TARGET AUDIENCE AND ADMISSION CRITERIA

Limited enrolment training *(20 work-study trainees maximum)*

Acceptance criteria and enrollment

• Students majored in the M1 program "Data Science for Social Sciences" are eligible to enroll in the M2 program.

• Or by application review:

➢ Holders of a master's degree in an economics or mathematics field;

➢ Students holding diplomas or credits, French or foreign, deemed equivalent, and able to certify a good English level (TOEFL, IELTS or Cambridge English Advanced Certificate C1 level required) as well as a good Mathematics Level (GRE required for foreign students).

Selection

Admission to this program is selective on the basis of the excellence of the applicant's academic and/or professional record. Admission may be subject to the acquisition of certain prerequisites.

DIPLÔME NATIONAL DE MASTER CONTRÔLÉ PAR L'ÉTAT

MASTER 2 ECONOMETRICS, STATISTICS

International track DATA SCIENCE FOR SOCIAL SCIENCES

SKILLS

The international track Data Science for Social Sciences allows students to acquire versatile skills in the processing of complex data (panel, survey, survival, graph, spatial) with modern parametric, non-parametric, and statistical learning methods. Another objective of this program is to provide students with a solid background knowledge of the cultural aspects and the available methods in data science, statistics, and econometrics, as well as a deep understanding of theoretical foundations and hypotheses paired with the ability to interpret complex statistical results. In particular, consulting abilities, teamwork, communication and business skills are to be acquired in conjunction with the computing and databases management skills.

PROGRAM

M2 Data Science for Social Sciences	
UE 1 Mathematics of Machine and Deep Learning Algorithms – 36h CM ***UE 2 Data Mining***– 30h CM ***UE 3 Scoring***– 36h CM ***UE 4 Advanced Software for Data science* – 43h TD** Julia : 23h TD R : 10h TD Python : 10h TD ***UE 5 Non Parametric Models***– 26h CM ***UE 6 Survey Sampling***– 26h CM ***UE 7 Datanomics : regulation of data spreading and data protection (optional)*** – 15h CM ***UE 8 Professional Development (optional)*** – 12h CM ***UE 9 Communication of French as a Foreign Language (FLE)*** – 30h TD	***UE 10 Algebra refresher (optional)*** – 15h CM ***UE 11 Probability refresher (optional)*** – 15h CM ***UE 12 Dynamic Optimization refresher (optional)*** – 15h CM ***UE 13 Big Data***– 36h CM ***UE 14 Spatial Econometrics***– 18h CM ***UE 15 Optimization for deep learning*** – 18h CM ***UE 16 Data bases***– 26h CM ***UE 17 Web mining*** – 26h CM ***UE 18 Graph analysis*** – 18h CM ***UE 19 Extreme Risk Analysis***– 18h CM
Total time: 464 hours, including 387 hours of courses + 47 hours of project + 30 hours for exams	

ORGANISATION

The program represents a volume of **464 hours** (including exams and support) spread over 12 months from September n to September n+1.

The timetable of the apprentice students is arranged as follows: From September to March, apprentices spend 3 days at the university (M-T-W) and 2 days in the company (Th-F). From April to August, they mainly work in the company.

The UT Handicap service is there to welcome you, advise you and support you throughout your university studies. https://www.ut-capitole.fr/campus/practical-information/ut1-disabled-student-service/

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International track DATA SCIENCE FOR SOCIAL SCIENCES

CAREER OPPORTUNITIES

The program of the international track Data Science for Social Sciences yields diverse career opportunities including "data scientists", "data analysts", "data miners", "project managers", "research engineers", and "consultants" in statistics. The graduates benefit from direct professional integration not only into the tertiary sector, but also into industry and academic research. Key sectors of activity are banking, insurance, marketing departments, service companies, startups, GAFA, consulting firms, research laboratories, government statistical services (ministries, hospitals....), and pharmaceuticals, to cite a few. Based on a study conducted on professional integration, here is a non-exhaustive list of jobs held by graduates of the last two years of the M2 Statistics & Econometrics:

- Data Scientist, at BNP Paribas, Crédit Agricole, Saint-Gaubin, Continental, and Quantmetry
- Inspector, for the Société Générale
- Data Mining researcher, for GALEC
- Statistical economist, for the French Airports Association
- Junior Consultant, for the ESTIA group

ASSESSMENT AND EVALUATION PROCEDURES

The Terms of knowledge control are given at the beginning of the session and they mention the evaluation methods for obtaining the National Diploma: Master mention Econometrics, Statistics, Data Science for Social Sciences.
The training is punctuated by continuous controls but also by final exams followed by a report defense.

CONTACTS

Work-linked training (apprenticeship and professionalization) and continuous training:
SERVICE DE L'EXECUTIVE EDUCATION AND DIGITAL UNIVERSITY (EEDU)
Site de la Manufacture des Tabacs - Bâtiment Q - 1er étage - 21, allée de Brienne - Toulouse
Work-study service - 05 61 12 87 12 – alternance.eedu@ut-capitole.fr

Student information:
SCOLARITÉ MASTERS 2, TOULOUSE SCHOOL OF ECONOMICS (TSE), UT CAPITOLE
1, Esplanade de l'Université - Toulouse
Tél : 05 61 12 85 05 - office T013 - scoltsem2@ut-capitole.fr

RATES – ACADEMIC YEAR 2024 / 2025

Midisup' is our partner for the deployment of apprenticeship, for The Master 2 Econometrics, Statistics international track Data Science for Social Sciences.

Work-study rates:
Apprenticeship contract: 10 000€ - private sector / public sector
Professionalization contract: Please contact us.
Coverage by the company and its OPCO for the private sector

FRANCE compétences
CERTIFICATION
enregistrée au RNCP