

Program 2019-2020

COURSE OBJECTIVES

The Master 2 in Statistics and Econometrics is open to students who have already acquired a solid grounding in economics and / or mathematical **statistics**. It consists of general classes in mathematical statistics and econometrics and specialised classes in various fields of application. The objective of the course is firstly to provide students with a solid culture in the major areas of applied statistics. Acquiring this culture clearly has to go hand-in-hand with learning how to handle various software applications, with a particular focus on SAS, R and Matlab. Students will also acquire IT skills in database management. Options are available to help them gain a further insight into applications in a number of fields, not least the tertiary sector.

This course is intended to lead to careers in statistical studies, actuarial studies, quantitative analysis and biostatistics. Graduates tend to pursue a career in the banking and insurance industries, marketing, service companies and research consultancies.

HIGHLIGHTS OF THE PROGRAMME

- One of the strengths of this course is that it has been designed to develop high level skills in both statistics and economics, thanks to TSE thematic research groups including in Mathematics of decision making and Statistics, Econometrics and Empirical Economics, etc.
- Teaching is very closely based on real business needs and students are operational immediately. Furthermore, classes in the many available options are taught by business professionals.
- Varied partnerships (for teaching, work experience and advice) have been put in place with numerous companies: Airbus, Air France, Avisia, Axa, BNP Paribas, BVA, Crédit Agricole, Inbox, L'Oréal and Micropole for example.
- The 'Statistic Consultancy' workshop (business consultancy projects carried out in small groups) helps students get ready to join the labour market.

CURRICULUM

	1 st SEMESTER	2 nd SEMESTER
Statistics – Compulsory courses	<ul style="list-style-type: none"> • Data Mining (20h + 14h) • Survey sampling (21h) • Time series (24h) • Statistical Softwares: SAS*, R, Python and Excel (43,5h) • English or French as a foreign language (FLE) (30h) • Professional development*** 	<ul style="list-style-type: none"> • Big Data (30h) • Scoring (30h) • Statistical Consulting** (30h) • Internship or master thesis • English (only for French speaking students)
Statistics – Electives	<p>Optional 2 among 4:</p> <p><u>Option 1:</u></p> <ul style="list-style-type: none"> • Lifetime data analysis • Panel data analysis <p><u>Option 2:</u></p> <ul style="list-style-type: none"> • Econometrics of qualitative variables • Econometrics of Marketing <p><u>Option 3:</u></p> <ul style="list-style-type: none"> • Non-parametric models • Outlier detection and extreme values theory <p><u>Option 4:</u></p> <ul style="list-style-type: none"> • Mathematics of machine & deep learning algorithms part 1 • Mathematics of machine & deep learning algorithms part 2 	<p>Optional 2 among 3:</p> <p><u>Option 1:</u></p> <ul style="list-style-type: none"> • Graph theory • Graph analytics <p><u>Option 2:</u></p> <ul style="list-style-type: none"> • Spatial econometrics • Geomarketing <p><u>Option 3:</u></p> <ul style="list-style-type: none"> • Data bases • Web Mining

*Shared course with 1st year Master students in Econometrics, Statistics (2 level groups)

**Groups of 4 students

*** Students who have already attended the Professionnal Development/Coaching course during the 1st Master year in 2019-2020 are exempted

**** Maths refresher courses, opened to 1st and 2nd year Master students
25 students max. per option

Non mandatory course:

- Datanomics: regulation of data spreading and data protection

In addition, students may attend at the beginning of the academic year optional refresher courses in mathematics:

- a refresher in algebra****
- a refresher course in probability****
- a refresher course in dynamic optimization****

The university year is divided into two semesters. To obtain the Master in Statistics and Econometrics, students must pass all 8 Statistics compulsory courses and 4 modules of the Statistics electives. In addition, students must undertake a compulsory internship for a period of at least 4 months, from April onwards, with a viva in September or write a master thesis. All the classes are taught in English.

ENTRY REQUIREMENTS

- A 1st year master's in economics and statistics or economics or a 1st year master's in applied mathematics.
- For overseas students, a BSc, an MA or an MSc obtained from a reputable institution, deemed compatible with the course and approved by the TSE Council. A good command of English is also required.

- Prerequisites

Subjects to be revised as a matter of priority before the start of the university year are as follows:

- Statistics: univariate and bivariate analysis, linear model and Gaussian linear model, regression and factorial plan applications and asymptotic tests (Wald, score and LR).
- Data analysis: principal component analysis
- Optimization: Lagrange multipliers
- IT: statistical software or spreadsheets

SELECTION CRITERIA

Selection is based on academic excellence and review of the full application by the Admissions Committee.

APPLICATIONS

- For students holding a French qualification:

Application forms may be collected and returned completed in May.

- Overseas students:

Application forms may be collected in November (Eiffel scholarship applicants) and in January.

FURTHER INFORMATION

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