MASTER Economics
Econometrics, big data, statistics

Contact
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Description
Type of degree: Master's degree (120 ECTS)
Domain: Law, Economics, Management

Information
Registration fees: 243 €
(initial training in 2019/2020)
http://formations.univ-amu.fr
Department: Faculty of Economics and Management

AIM
The goal of this track is to train students to use methods of statistics and econometrics with a view to come up with relevant and solid answers to questions that businesses and administrations may face when making decisions. Beyond a solid knowledge of econometric methods and when they should be used, the students will be trained to apply them to real data and to present their results, in written or oral form, to various audiences. The students will be trained to use English in any professional context, i.e. to hold a conversation in English, to use technical vocabulary, to understand documents and articles, and to write in English.

PROFESSIONAL SKILLS
At the end of their second year (M2), every student will be competent in the main tools to manage and analyze the massive data and access a great part of the job offers for data analysts. Teaching is given partly in computer rooms in order to implement the tools taught. Pedagogy is based on the making of projects. The analytical mind of students is developed by an end-of-study internship involving the writing of a report. Professional skills targeted at the end of the second year:
- To determine the usefulness of statistical data in estimating the models likely to answer the question asked,
- to be able to manipulate and analyze quantitative and qualitative data whatever the size of the database,
- to choose relevant statistical and econometric tools and implement them so as to obtain reliable and robust answers likely to contribute to creating value for a business or public administration in the conduct of their actions,
- oral and written communication of the results from statistical and econometric analyses to various audiences.

FUNDAMENTAL PREREQUISITES
Two validated econometrics teachings.

RECOMMENDED PREREQUISITES
Having followed teachings in statistics (estimating, testing, and confidence intervals) and econometrics of linear and nonlinear models. Teachings in statistical and econometric softwares and programming languages. This track is particularly adapted to students who have validated the first year of the Master of Economics in the Economics Department of AMSE, in the Faculty of Economics and Management at Aix-Marseille University. Access is possible in second year (M2).

INTERNSHIPS AND SUPERVISED PROJECTS
At the end of the year, the students go through an internship and write a master's internship report. The report aims at proving the student's ability to use the conceptual tools acquired to questions pertaining to the professional world. The student must therefore identify the question, implement the tools, and be able to communicate the results to both a professional and academic audience. The internship is tutored by a scholar and an internship director (a member of the business). The report is defended in front of a jury comprised of the academic tutor, the internship direct, and two other people with the relevant skills (with at least a scholar).

LINKS WITH RESEARCH
This Master’s degree is part of the Ecole Universitaire de Recherche (EUR) AMSE, which gathers together almost a hundred researchers from AMU, CNRS, EHESS and ECM. The teachers are selected according to their expertise within those entities. The teaching staff is also supplemented with practitioners.

LABEL
An International Partnership Diploma (IPD) covers different types of collaboration between AMU and one or more foreign institutions.

TRACK EBDS (OPPT)

MASTER 1

Semester 1
- Microeconomics I and II (6 ECTS)
  - Microeconomics I
  - Microeconomics II
- Macroeconomics I and II (6 ECTS)
  - Macroeconomics I
  - Macroeconomics II
- Econometrics I and II (6 ECTS)
- Econometrics I: linear model
- Econometrics II: non linear model
- Labor economics - Risk and incentives (6 ECTS)
  - Labor economics
  - Risk and incentives
- Methodology I (6 ECTS)
  - Software for economists I
  - Mathematics for economists
- Elective course, choose one among two
  - Refresher course in economics
  - Refresher course in mathematics and statistics

Semester 2
- Microeconomics III and IV (6 ECTS)
  - Microeconomics III - Game theory
  - Microeconomics IV - Public economics
- Macroeconomics III and IV (6 ECTS)
  - Macroeconomics III
  - Macroeconomics IV
- Methodology II (10 ECTS)
  - Time series
  - Software for economists II
  - Mathematics for finance
  - Evaluation by econometric methods
- Elective teaching unit, choose 2 among 3 (8 ECTS)
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M1 Economics magistère option (SE)
- Project management - Health and environmental economics (4 ECTS)
- Project management
- Health and environmental economics
- Introduction to corporate finance - Financial econometrics (4 ECTS)
- Introduction to corporate finance
- Financial econometrics
- Software for economists III - International trade (4 ECTS)
- Software for economists III
- International trade

M2 TRACK EBDS MAGISTÈRE OPTION (AN)

Semester 3
- Advanced econometrics I: theory and applications (6 ECTS)
  - Non parametric methods in econometrics
  - Automatic model selection methods
- Advanced econometrics II: theory and applications (6 ECTS)
  - Methodology of econometrics and statistical studies
  - Advanced econometrics
- Languages, softwares and tools for Big Data (6 ECTS)
  - Programming for Big Data (Python, SQL, noSQL, etc)
  - Logiciels pour les big data
- Machine learning: theory and applications (6 ECTS)
  - Méthodes de prévision
  - Machine learning et statistical learning
- Applications for Big Data: elective teaching units, choose 2 among 4 (6 ECTS)
  - Big data and quantitative marketing (3 ECTS)
  - Big data and quantitative marketing
  - Big data and finance (3 ECTS)
  - Big data and finance
  - Big data: other applications (3 ECTS)
  - Big data: other applications
  - Big data and economics (3 ECTS)
  - Big data and economics

Semester 4
- Non linear and multivariate models: theory and applications (9 ECTS)
  - Duration and transition models
  - Truncated Data, Censored Data
  - Multivariate and nonlinear time series analysis
- End-of-study internship with report and defence (21 ECTS)

TRACK EBDS MAGISTÈRE OPTION (OPPT)

M1 ECONOMICS (MAGISTÈRE OPTION) (AN)

S1 M1 Economics magistère option (SE)
- Microeconomics I and II (6 ECTS)
  - Microeconomics I
  - Microeconomics II
- Macroeconomics I and II (6 ECTS)
  - Macroeconomics I
  - Macroeconomics II
- Econometrics I and II (6 ECTS)
  - Econometrics I: linear model
  - Econometrics II: non linear model
- Labor economics - Risk and incentives (6 ECTS)
  - Labor economics
  - Risk and incentives
- Methodology I (6 ECTS)
  - Software for economists I
  - Mathematics for economists
- Big Data (6 ECTS)
  - Big data, challenges and opportunities
  - Programming for Big Data, an introduction to Python and SQL
  - Big data softwares

S2 M1 Economics magistère option (SE)
- Microeconomics III and IV (6 ECTS)
  - Microeconomics III - Game theory
  - Microeconomics IV - Public economics
- Big Data (6 ECTS)
  - Advanced SAS
  - Introduction to machine learning
- Méthodologie (9 ECTS)
  - Software for economists II
  - Mathematics for finance
  - Evaluation by econometric methods
- Macroeconomics III and IV (6 ECTS)
  - Macroeconomics III
  - Macroeconomics IV
- Vocational courses (6 ECTS)
  - Quantitative marketing
  - Software: R
  - Economic policy II
  - Insurance mechanisms
  - Oral training on Economics topics
  - Oral training in English
- Electives courses (choose 1 among 5) (3 ECTS)
  - Introduction to corporate finance (3 ECTS)
  - Introduction to corporate finance
  - Project management (3 ECTS)
  - Project management
  - Health and environmental economics (3 ECTS)
  - Health and environmental economics
  - Financial econometrics (3 ECTS)
  - Financial econometrics
  - International trade (3 ECTS)
  - International trade

S3 M2 EBDS magistère option (SE)
- Advanced econometrics I: theory and applications (6 ECTS)
  - Non parametric methods in econometrics
  - Automatic model selection methods
- Advanced econometrics II: theory and applications (6 ECTS)
  - Methodology of econometrics and statistical studies
  - Advanced econometrics
- End-of-study project (6 ECTS)
  - Applications for Big Data: elective teaching units, choose 2 among 4 (6 ECTS)
  - Big data and quantitative marketing (3 ECTS)
  - Big data and quantitative marketing
  - Big data and finance (3 ECTS)
  - Big data and finance
  - Big data: other applications (3 ECTS)
  - Big data: other applications
  - Big data and economics (3 ECTS)
  - Big data and economics

- Non linear and multivariate models: theory and applications (9 ECTS)
  - Duration and transition models
  - Truncated Data, Censored Data
  - Multivariate and nonlinear time series analysis
  - End-of-study internship with report and defence (21 ECTS)

S4 M2 EBDS magistère option (SE)
- Big data IV (6 ECTS)
  - Managing Big Data with SAS
  - Hands-on project
- Non linear and multivariate models: theory and applications (9 ECTS)
  - Duration and transition models
  - Truncated Data, Censored Data
  - Multivariate and nonlinear time series analysis
  - End-of-study internship with report and defence (21 ECTS)