



## Master in Statistics : General

### Programme mnemonic

MA-STAT

> Focus *Research General* : M-STATA

### Studies level

Master 120 credits

### Learning language

english and french

### Schedule

office hours

### Studies category / subcategory

Sciences and technics / Sciences

### Campus

Plaine and Solbosch

## Programme objectives

The Master in Statistics teaches students the difficult art of transforming data into information and helping decision-makers and researchers in other fields analyze this information most efficiently. The programme offers three tracks, with specific learning outcomes and objectives:

- > Theoretical statistics
- > Applied statistics
- > Economics and statistics
- > The track in theoretical statistics provides students with the methodological knowledge required to design new statistical procedures and pursue doctoral studies in probability or statistics;
- > The track in applied statistics prepares students for a career in statistics (in experimental sciences, human sciences, or in the industry) or for doctoral studies in applied statistics;
- > The track in economics and statistics offers first-class education in statistics, quantitative economics, and econometrics. This programme is unique in French-speaking Belgium and is taught in English, attracting foreign students from all around the world.

## Programme's added value

Statistics finds its origin both in mathematics and in applications, and is virtually present in all branches of human activity. This explains that statistics courses are found in the curricula of all faculties—hard sciences, human sciences, medicine, engineering. This diversity, which is expressed in the curriculum of the Master in Statistics, is one of the most attractive characteristics of careers in statistics.

The track in economics and statistics is organized in collaboration with ECARES (European Center for Advanced Research in Economics and Statistics – [www.ecares.org](http://www.ecares.org)). It offers first-class education in statistics, quantitative economics, and econometrics.

## Teaching methods

Most courses are offered as lecture classes. The small number of students in the programme, however, eliminates the usual drawbacks of this teaching method and makes interactivity possible.

Of course, the curriculum also involves courses with homework and reports.

Finally, computers play an important role in the programme, not only in courses dedicated to statistical software applications or computational statistics, but also in other courses where computers are used to illustrate theories and to put into practice the methods taught.

## Succeed in your studies

### Choose

The information and guidance counsellors at the InfOR-études [<https://www.ulb.be/en/studies-info-desk-1>] service will help you choose your studies throughout the year.

### Succeed

Take part in preparatory courses [<https://www.ulb.be/en/studies-info-desk-1>] or get help to succeed [<https://www.ulb.be/en/studies-info-desk-1>], before or during your studies.

### Get help

Apply for financial aid, look for accommodation or a student job, get support [<https://www.ulb.be/fr/aides-services-et-accompagnement/aid-services-and-support-1>] for your specific needs.



## International/Openness

In addition to traditional exchanges programmes that allow students to spend the first or second block in a foreign university, strong relationships exist with the Université Pierre-et-Marie Curie (Paris 6), which has one of the best statistics programmes in France.

## Job opportunities

Statisticians are found in all industries.

Many jobs involving statistics are available in the pharmaceutical industry, clinical trials, and agribusiness, but also in banks, insurance companies, and official statistics institutes.

There are also many opportunities in research (both theoretical and applied) in statistics, especially in the academic sector.

### Contacts

 [ma-stat@ulb.be](mailto:ma-stat@ulb.be)

 +32 2 650 58 64

 <https://sciences.ulb.be/departement-mathematique>

### Jury President

Maarten JANSEN

### Jury Secretary

Thomas VERDEBOUT



# Master in Statistics : General

## Focus Research General

The Master in Statistics is a two-year programme organised into two 'blocks'. The first block includes (i) required courses, (ii) courses specific to each specialisation (theoretical statistics, applied statistics, or economics and statistics; see above), and (iii) possibly elective courses. The second block is more flexible, and includes the Master's dissertation (which may involve a work placement), participation to seminars, a course on statistical software applications, and several elective courses.

### Bloc 1 | M-STATA | MA-STAT

## Cours obligatoires

Remarque : en fonction du dossier de l'étudiant, le jury pourra être amené à remplacer certains cours ci-dessous par d'autres cours du programme

STAT-F404 **Graduate statistics** | Thomas VERDEBOUT (Coordinator) and Davy PAINDAVEINE  
 ⌚ 5 credits [lecture: 24h] 📅 first term 🗨 English

STAT-F405 **Time series analysis** | Yves-Caoimhin SWAN (Coordinator)  
 ⌚ 5 credits [lecture: 24h, tutorial classes: 12h] 📅 first term 🗨 English

STAT-F407 **Stochastic models** | Maarten JANSEN (Coordinator) and Jennifer ALONSO GARCIA  
 ⌚ 5 credits [lecture: 36h, tutorial classes: 12h] 📅 first term 🗨 English

*A total of 15 credits chosen from the following*

### Module 1

MATH-F309 (optional) **Statistique mathématique II** | Thomas VERDEBOUT (Coordinator) and Sophie Niang  
 ⌚ 5 credits [lecture: 24h, tutorial classes: 24h] 📅 first term 🗨 French

STAT-F406 (optional) **Modèles de régression** | Davy PAINDAVEINE (Coordinator)  
 ⌚ 5 credits [lecture: 24h, tutorial classes: 12h] 📅 second term 🗨 French

STAT-F408 (optional) **Computational statistics** | Maarten JANSEN (Coordinator)  
 ⌚ 5 credits [lecture: 24h, tutorial classes: 12h, project: 100h] 📅 second term 🗨 English

### Module 2

ECON-S428 (optional) **Graduate econometrics I** | Germain VAN BEVER (Coordinator)  
 ⌚ 10 credits [lecture: 24h, tutorial classes: 24h] 📅 first term 🗨 English

ECON-S429 (optional) **Graduate econometrics II** | Paula Eugenia GOBBI (Coordinator) and Alejandra Ramos  
 ⌚ 5 credits [lecture: 24h, tutorial classes: 24h] 📅 second term 🗨 English

*An alternative chosen from the two following*

## Statistique

INFO-F422 (optional) **Statistical foundations of machine learning** | Gianluca BONTEMPI (Coordinator)  
 ⌚ 5 credits [lecture: 24h, tutorial classes: 12h, project: 60h] 📅 second term 🗨 English

STAT-F410 (optional) **Inférence robuste** | Catherine DEHON (Coordinator)  
 ⌚ 5 credits [lecture: 24h, tutorial classes: 12h] 📅 second term 🗨 French

STAT-F414 (optional) **Méthodes de sondage** | Catherine VERMANDELE (Coordinator)  
 ⌚ 5 credits [lecture: 24h, tutorial classes: 12h] 📅 first term 🗨 French

STAT-F427 (optional) **Méthodes non paramétriques** | Catherine VERMANDELE (Coordinator)  
5 credits [lecture: 24h, tutorial classes: 12h] second term French

STAT-S401 (optional) **Analyse statistique multivariée** | Catherine DEHON (Coordinator)  
5 credits [lecture: 24h, tutorial classes: 12h] second term French

or

## Economie et statistique

ECON-S427 (optional) **Graduate macroeconomics I** | Fabio Blasutto (Coordinator)  
10 credits [lecture: 24h, tutorial classes: 24h] first term English

ECON-S430 (optional) **Graduate macroeconomics II** | Robert KOLLMANN (Coordinator)  
5 credits [lecture: 24h, tutorial classes: 24h] second term English

ECON-S431 (optional) **Graduate microeconomics II** | Luca Paolo Merlino (Coordinator)  
5 credits [lecture: 24h, tutorial classes: 24h] second term English

ECON-S510 (optional) **Graduate microeconomics I** | Georg KIRCHSTEIGER (Coordinator)  
10 credits [lecture: 24h, tutorial classes: 24h] first term English

## Cours optionnels

Au besoin, choisir un ou des cours dans la liste suivante afin d'arriver à un total de 60 crédits

MATH-F425 **Ondelettes et applications**  
5 credits [lecture: 24h, tutorial classes: 12h] second term French

STAT-F412 **Plans expérimentaux** | Marie-Pierre MALICE (Coordinator)  
5 credits [lecture: 24h, tutorial classes: 24h] first term French

STAT-F418 **Topics in nonparametric smoothing** | Maarten JANSEN (Coordinator)  
5 credits [lecture: 24h, tutorial classes: 12h] first term English  
Ce cours n'est pas donné en 2023-24, 2025-26 etc.

STAT-F420 **Topics in mathematical statistics** | Thomas VERDEBOUT (Coordinator)  
5 credits [lecture: 24h, tutorial classes: 12h] first term English

STAT-F421 **Topics in probability theory** | Yves-Caoimhin SWAN (Coordinator)  
5 credits [lecture: 24h, tutorial classes: 12h] second term English  
Ce cours n'est pas donné en 2024-2025, 2026-2027 etc.

STAT-F426 **Participation aux séminaires** | Maarten JANSEN (Coordinator)  
5 credits [project: 60h] first and second terms French

STAT-F600 **Multivariate and high-dimensional statistics** | Thomas VERDEBOUT (Coordinator)  
5 credits [lecture: 24h, practical work: 12h] first term English

TEMP-0000 **Cours extérieurs au programme**  
5 credits academic year French

# Master in Statistics : General

## Focus Research General

### Bloc 2 | M-STATA | MA-STAT

## Cours obligatoires

- MEMO-F521 **Mémoire** | Maarten JANSEN (Coordinator)  
 ⌚ 25 credits [mfe/tfe: 300h] 📅 first and second terms
- STAT-F413 **Statistical softwares** | Maarten JANSEN (Coordinator) and Toufik ZAHAF  
 ⌚ 10 credits [lecture: 24h, tutorial classes: 24h, project: 200h] 📅 second term 🗨 English
- STAT-F509 **Participation aux séminaires** | Maarten JANSEN (Coordinator)  
 ⌚ 5 credits [project: 60h] 📅 first and second terms 🗨 French

## Cours optionnels

Compléter votre programme de façon à arriver à un total de 60 crédits en choisissant un ou plusieurs cours dans les listes du bloc 1 ou dans la liste suivante:

- ACTU-F401 **Modèles financiers I** | Griselda DEELSTRA (Coordinator)  
 ⌚ 5 credits [lecture: 36h, tutorial classes: 12h] 📅 first term 🗨 French
- ACTU-F403 **Assurance non vie I** | Julien TRUFIN (Coordinator)  
 ⌚ 5 credits [lecture: 36h, tutorial classes: 12h] 📅 first term 🗨 French
- ECON-S432 **Advanced international trade** | Paola CONCONI (Coordinator), Filippo Biondi and Mathieu PARENTI  
 ⌚ 5 credits [lecture: 24h] 📅 second term 🗨 English
- ECON-S513 **Behavioral economics** | Georg KIRCHSTEIGER (Coordinator)  
 ⌚ 5 credits [lecture: 24h] 📅 second term 🗨 English
- ECON-S519 **Graduate microeconomics III** | Georg KIRCHSTEIGER (Coordinator)  
 ⌚ 5 credits [lecture: 24h] 📅 first term 🗨 English
- ECON-S520 **Graduate macroeconomics III**  
 ⌚ 5 credits [lecture: 36h] 📅 first term 🗨 English
- ECON-S521 **Graduate econometrics III** | David PREINERSTORFER (Coordinator)  
 ⌚ 5 credits [lecture: 24h] 📅 second term 🗨 English  
 Ce cours ne sera pas donné en 2022-2023.
- MATH-F502 **Imagerie et problèmes inverses** | Ignace LORIS (Coordinator)  
 ⌚ 5 credits [lecture: 24h, tutorial classes: 12h] 📅 second term 🗨 French
- MATH-H401 **Numerical methods** | Artem NAPOV (Coordinator)  
 ⌚ 4 credits [lecture: 24h, practical work: 24h] 📅 first term 🗨 English
- STAT-F415 **Calcul stochastique** | Griselda DEELSTRA (Coordinator)  
 ⌚ 5 credits [lecture: 24h] 📅 second term 🗨 French
- STAT-F428 **Bayesian Statistics**  
 ⌚ 5 credits [lecture: 24h] 📅 first term
- STAT-F430 **Longitudinal data analysis**  
 ⌚ 5 credits [lecture: 24h] 📅 first term
- STAT-F507 **Sequential analysis**  
 ⌚ 5 credits [lecture: 24h] 📅 second term 🗨 English

STAT-Y002

📅 unknown term

## Autres cours

Outre les cours ci-dessus, l'étudiant peut également choisir parmi les cours non pris en Bloc 1. Des cours d'autres masters de l'ULB ou de masters d'autres universités peuvent également être choisis (sous réserve d'approbation par le Jury), pour un maximum de 60 crédits annuels.

### *An alternative chosen from the three following*

HULB-0000 **Cours externe à l'Université**  
(optional) ⌚ 5 credits 📅 academic year

*or*

HULB-0000 **Cours externe à l'Université**  
(optional) ⌚ 10 credits 📅 academic year

*or*

### *One course chosen from the following*

TEMP-0000 **Cours extérieurs au programme**  
(optional) ⌚ 5 credits 📅 academic year 🗨️ French

TEMP-0000 **Cours extérieurs au programme**  
(optional) ⌚ 10 credits 📅 academic year 🗨️ French

