

# Master in Applied Mathematics, Statistics

## Graduate Track for Mathematics and Physics

### Mise en avant

The goal of this Master's program is to educate professionals in the field of statistics and data analysis who can utilize their skills in a wide range of industries and services such as banks, insurance companies, service companies, industries and research organizations.

Most of graduates are able to find a job immediately after graduation, while others choose to take an extra year of study to achieve supplementary qualifications and others continue to PhD programs and research career. This program offers a distinctive and acknowledged training course that solely specializes in Statistics, Data Processing, Machine Learning toward Artificial Intelligence. This is made possible through a collaborative effort between a team of university professors-researchers and industry professionals.

The program is available through both initial and alternating/continuing education options.

 UNIVERSITÉ  
Clermont Auvergne

### L'essentiel

#### Crédits ECTS

120

#### Durée de la formation

- 2 years

#### Public

#### Niveau(x) de recrutement

- Baccalauréat +3

#### Langues d'enseignement

- French

#### Rythme

- Temps plein
- En alternance
- Contrat d'apprentissage
- Contrat de professionnalisation

### Présentation

#### Enjeux

- Acquisition of advanced skills in statistics, data processing ("big data") and business relations
- Possibility to prepare a certification for the SAS statistical software and the TOEIC (English)

#### Lieux

Campus des Cézeaux

## Laboratoires

Laboratoire de Mathématiques Blaise Pascal (LMBP)

## Entreprises

SAS Concepteur de logiciels

## Admission

### Pré-requis

#### Niveau(x) de recrutement

Baccalauréat +3

#### Formation(s) requise(s)

The Master's degree is open to students with a Mathematics or MIAHS (Mathematics and Computer Science Applied to Human and Social Sciences) degree. Students in their 4th year of engineering school are also accepted (Polytech, ISIMA etc.)

## Modalités

- Présentiel

## Lieu(x) de la formation

- Aubière

## Candidature

### Modalités de candidature

Application to the Master in Applied Mathematics, Statistics

#### Required training:

Students with a degree in Mathematics or MIAHS (Mathematics and Computer Science Applied to Human and Social Sciences) are eligible for the Master's degree program. Students in their fourth year of engineering school, such as Polytech, ISIMA and others, are also allowed to apply. Applicants must have at least three years of experience post-Bachelor's degree. Candidates' profiles are evaluated during the admissions process based on their application files.

Required recruitment level: Baccalauréat +3

An examination of the candidates' profile is carried out on the basis of their application file.

Application form: [Mon Master](#)

*\*Selection: for capacity considerations and to offer a higher quality supervision of internships at the end of each year, the program establishes a **numerus clausus** for admission to M1 (first year of the Master). The admission jury will thus make an application selection from among all students applying for the M1, regardless of their original degree.*

Merit scholarship and application

**The Graduate Track for Mathematics and Physics offers excellence grants to its students, up to 4,000 euros per academic year.**

As part of its educational development policy, the University of Clermont Auvergne has set up a financial aid scheme for students enrolled in the Graduate Track for Mathematics and Physics.

This support is awarded according to criteria of academic excellence, motivation and quality of the study project. The grants cover the first year of the Master's program as well as the first semester of the second year, until the beginning of the internship, for a total of 16 months.

#### **How to apply?**

A specific application file must be prepared, in addition to the application file for the Master, which must contain the following elements:

- **A curriculum vitae**
- **A cover letter** presenting the study or research project and the reasons for your desire to come and study at the University of Clermont Auvergne in the framework of this program
- **Transcript of your Bachelor's degree** or equivalent diploma
- **Two letters of support** from teachers or people who have worked with you in an academic and/or scientific context

#### APPLICATION LINK:

EN <https://demarches.adullact.org/commencer/merit-scholarship-gt-mathematics-and-physics>

## **Programme**

Les informations ci-dessous sont données à titre indicatif et peuvent faire l'objet de mises à jour.

## 1st year

### Semester 1

English

Communication

Introduction to data analysis

Statistics, estimation and testing

EC1: Statistics, Estimation

EC2: Statistics, Tests

Data–Science software and tools

EC1: SAS and VBA statistics software

EC2: Programming and data processing software (R and Python)

Stochastic Algorithms

Database

Calculation of probabilities

3 ECTS

3 ECTS

3 ECTS

6 ECTS

6 ECTS

3 ECTS

3 ECTS

3 ECTS

### Semester 2

Regression and Modeling

Operational Research

Financial management and marketing

Transversal Projects

## Data Analysis

### Data basis and warehouse

## Internship

6 ECTS

3 ECTS

3 ECTS

3 ECTS

3 ECTS

3 ECTS

9 ECTS

## 2nd year

### Semester 3

## English

### Complement of advanced data analysis

### Temporal data forecasting methods

### Machine Learning, Datamining

EC1: Datamining, Machine Learning

EC2: Introduction to Deep Learning

### Cross-functional projects

### Bayesian statistics and survival analysis

EC1: Bayesian statistics

EC2: Survival analysis

### Introduction to Artificial Intelligence

3 ECTS

3 ECTS

6 ECTS

6 ECTS

3 ECTS

6 ECTS

3 ECTS

Semester 4

Advanced software

Professional integration

Applied Stochastic Calculations and Modeling

Internship

6 ECTS

3 ECTS

3 ECTS

18 ECTS

## Stage(s)

### Stage(s)

Oui, obligatoires

### Informations complémentaires sur le(s) stage(s)

Internships are mandatory in a company or laboratory:

- In 1st year: 7weeks minimum
- In 2<sup>nd</sup> year: 5months minimum

There are many opportunities for projects and internships thanks to the regular involvement of several companies and organizations:



Réseau entreprises Master Maths appliquées statistiques – Réseau entreprises Master Maths appliquées statistiques

## Séjour(s) à l'étranger

### Informations complémentaires sur le(s) séjour(s) à l'étranger

Stays abroad are not mandatory but possible. Each year, several students do internships in the United Kingdom, Scotland, Luxembourg, China, on the African continent, etc.

## Et après ?

### Niveau de sortie

Année post-bac de sortie

- Bac +5

### Compétences visées

## Activités visées / compétences attestées

- Working independently (setting priorities, managing time, self-evaluation, developing a personal training project)
- Using information and communication technologies, share and organize data
- Carrying out a study (pose a problem, construct and develop an argument, interpret the results, draw up a summary, propose extensions)
- Working in a team, integrate, position oneself, supervise
- Integrating into a professional environment, identify and communicate one's skills
- Respecting scientific ethics and develop a critical argument
- Solving high-level mathematical problems and know how to translate them into a practical problem
- Adopting an interdisciplinary approach
- Knowing how to model various situations arising from practical business problems for an effective statistical approach
- Analyzing, organizing and synthesizing data for optimal statistical use
- Making optimal use of programming techniques and the main statistical and database software (SAS, R, Matlab, SQL, Python, C, etc.)

## Débouchés professionnels

### Secteurs d'activité

#### Business sectors

- Business support
- Banking – Insurance – Real Estate

#### Occupation

- Socio-economic studies and forecasts
- Financial analysis and engineering
- Actuarial studies in insurance
- Technical intervention in studies, research and development

### Insertion professionnelle

#### Survey 2021\_class of 2018: 30 months after graduation:

- 100% working

#### Survey 2021\_class of 2020: less than 1 year after graduation:

- 44% working
- 25% looking for a job
- 19% are pursuing their studies
- 12% waiting for a job / sabbatical year

## Inscriptions



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## Coût de la formation

Indicative cost of the training (the cost can vary according to the selected options), the personalized cost is the subject of an estimate.

### Continuing education (employee, job seeker, ...)

1st year : 18€/h (7 074€)

2nd year : 20€/h (8 100€)

### Professionalization contract

2nd year: 20€/h (8 100€)

### Apprenticeship contract (only open in 2nd year):

Contract cost defined by the OPCOs and CPNEs (professional activity branches) in application of the law of September 5, 2018 for the freedom to choose one's professional future.

For apprenticeship contracts in the private sector, the UFR of Mathematics will not ask companies for any remaining expenses. The contract cost defined by the OPCO will be the invoiced cost. For more information, we invite you to contact your OPCO of reference.

For apprenticeship contracts in the public sector, the rate will be equal to the average contract cost defined for companies in the private sector.