



MASTER OF SCIENCE IN COMPUTER SCIENCE

Graduate Track For Intelligent & Innovative Mobility



Institute of Technology

3 graduate schools of Engineering in Clermont-Ferrand

Clermont Auvergne University

Computer science • Biological Engineering • Mechanical Engineering • Civil Engineering • Electrical Engineering • Mathematical Engineering & Data Science • Engineering Physics • Production Systems Engineering • Chemistry & Chemical Engineering

3 engineering graduate schools
Clermont Auvergne INP - ISIMA
Clermont Auvergne INP - SIGMA Clermont
Clermont Auvergne INP - Polytech Clermont

4 engineering preparatory classes
(at undergraduate level)
La Prépa des INP (Groupe INP)
CPI (Fédération Gay-Lussac)
Prép' Isima
PeiP (réseau Polytech)

2 500 students

189 international cooperation agreements

350 academic & administrative staff

3 Main research centers affiliated to the French National Research Centre (CNRS)

INP Member of the INP Group
+35 public engineering school in France

1 professional training department



EDUCATION



RESEARCH



PROMOTION OF RESEARCH



Université Clermont Auvergne : A major teaching and research university

The new Clermont Auvergne University aims to be a major player in development, a major university of education and research with an international dimension. Strongly connected to its territorial environment and to the socio-economic world, it intends to rank among the best French universities in the Shanghai ranking. In a changing world whose references evolve regularly, a university must prepare its students to participate in the construction of the society in which they will evolve. Designing sustainable models of life and production is the unifying theme that UCA wanted to develop, a theme that is based on university research activities that have reached a level of excellence recognized beyond our borders and that responds to society's expectations (how to eat better, move better, live in good health, how to protect populations from the risks of natural disasters). It is a unifying theme that does not exclude any of the university's disciplinary fields and makes it possible to combine academic training with civic education. Finally, it facilitates the integration of students into the world of tomorrow and into companies that are increasingly attentive to the issue of social responsibility.

A label of excellence

In 2017, UCA received the I-Site label. This makes it one of the few universities selected to implement a long-term policy of excellence, develop interactions with their economic environment and attract internationally renowned research teams. The university is also involved in the organization of summer schools and international conferences.



ISIMA (Institut Supérieur d'Informatique, de Modélisation et de leurs Applications) is an engineering school specialized in computer science in the Auvergne region. The school has been authorised by the French Commission for Engineering degrees (Commission des Titres d'Ingénieur: CTI), for 20 years. Each year it allows 120 new students to attain a Master's Degree in Engineering. ISIMA is awarded the ISO 9001 certification since february 2014. It covers the quality of the training offered to engineers in the field of computer science and modelling.

ISIMA is a member of Clermont Auvergne INP.

MASTER OF SCIENCE IN COMPUTER SCIENCE

The mission of the international track of our master of science in computer science is to prepare and train the next generation of decision and data scientists. M.S. International-Track students will familiarize themselves with a broad range of theoretical and computational techniques from many areas of the mathematical and computational sciences.



In short :

- > Training period : 2 semesters
- > Language : English
- > Starting in : September 2022
- > ECTS : 60

The students will develop **an expertise in cutting-edge techniques for decision and data sciences** through courses taught by distinguished researchers and significant involvement in research activities. Upon receiving the M.S. degree, these students will be competent not only in **designing effective and innovative methodologies for decision making and data management**, but also in **identifying and implementing the most pertinent software**.

The graduating students will be well-prepared to pursue **a Doctor of Philosophy degree and hence excel in academic or industrial research-and-development jobs**. The M.S. International Track is entirely taught and managed in English to make it accessible to international students who do not speak French. Its program is structured to introduce the students to **the foundations of decision and data sciences** and make them develop deep knowledge in their chosen area of specialization. M.S. International-Track students enrolled through an exchange agreement with Clermont Auvergne INP might be eligible for a diplôme d'ingénieur ISIMA as well.

Industrial Partners : Michelin, Dassault, Almerys, Braincube, Orange Labs, Coffreo, EDF, Limagrain, DeltaMu, Perfect Memory, Lojelis...

Hosting Graduate School :



Contact : herve.kerivin@uca.fr

PROGRAM

// CORE COURSES

- 1/ Fundamentals of Optimization - 3 ECTS
- 2/ Algorithms and Complexity - 3 ECTS
- 3/ Machine Learning and Data Mining - 3 ECTS
- 4/ Seminar Series - 3 ECTS

+ Master's thesis at Research Laboratory LIMOS - 9 ECTS

One specialization to choose between :

// DECISION SCIENCE

- 5/ Combinatorial Optimization at Work - 3 ECTS
- 6/ Approximation Algorithms - 3 ECTS
- 7/ Decision and Learning under Uncertainty - 3 ECTS
- 8/ Graphs and Algorithms - 3 ECTS
- 9/ Advanced Topics in Optimization - 3 ECTS

// DATA SCIENCE

- 10/ High Performance Computing - 3 ECTS
- 11/ Advanced topics in machine learning and datamining - 3 ECTS
- 12/ Knowledge representation and reasoning - 3 ECTS
- 13/ Mobile networks and Mobile Data Collection - 3 ECTS
- 14/ Information System Security - 3 ECTS

PROGRAM PREREQUISITES

Entering students are expected to either already hold or be half-way through completion of a master's degree in mathematical sciences, computer science, or related fields.

University Clermont Auvergne offers several merit-based scholarships for high-caliber students enrolled in the M.S. International Track, with a preference given to students interested in pursuing a Doctor of Philosophy degree.

INTERNSHIP

- A five-to-six month internship in an academic research institute or an industrial research-and-development department anywhere in the world.

- Starting after March 1st

- 21 ECTS



ISIMA

1 Rue de la Chebarde 63178 Aubière

www.isima.fr

