



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
(undergraduate level)

La Prépa des INP (Groupe INP)
CPI (Fédération Gay-Lussac)
Prép' Isima
PeiP (réseau Polytech)

2 500 students

350 academic & administrative staff

189 international cooperation agreements

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

GRUPE INP Member of the INP Group
+35 public engineering schools 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.

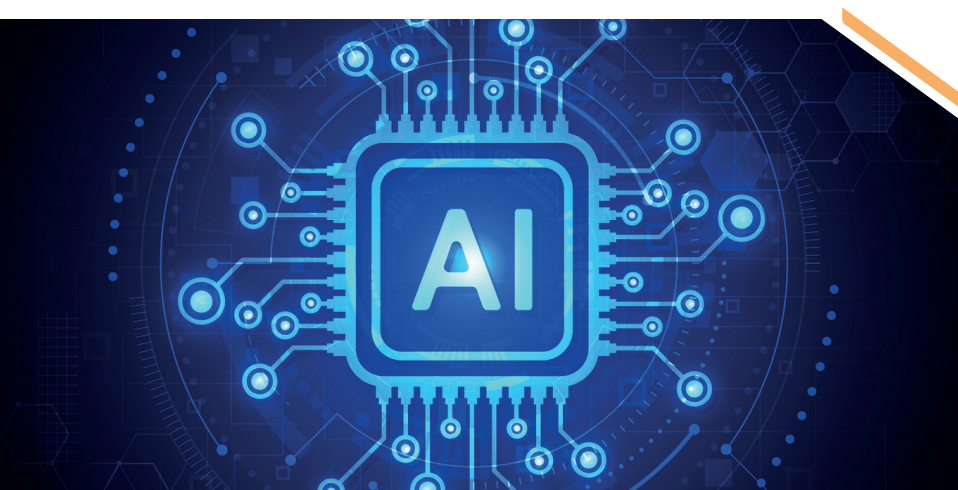


ISIMA (Institut Supérieur d'Informatique, de Modélisation et de leurs Applications) is an engineering school specialized in computer science in the Auvergne region. The school has been authorised by the French Commission for Engineering degrees (Commission des Titres d'Ingénieur: CTI), more than 30 years. 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: 4 semesters
- > Language: English
- > Starting in: September
- > ECTS: 120

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 from ISIMA as well.

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

Hosting Graduate School:



Isima



Contact: Hervé Kerivin - herve.kerivin@uca.fr

PROGRAM M1 ICS

// FIRST SEMESTER

- 1/ Database Fundamentals - **6 ECTS**
- 2/ Introduction to Artificial Intelligence - **6 ECTS**
- 3/ Problem Solving Algorithms - **3 ECTS**
- 4/ Logic - **3 ECTS**
- 5/ Graph Theory - **3 ECTS**
- 6/ French Language - **3 ECTS**

// SECOND SEMESTER

- 7/ System Modelling and Optimisation - **6 ECTS**
- 8/ Approximate Methods - **3 ECTS**
- 9/ Introduction to Research - **3 ECTS**
- 10/ Computer Science and Technology: Neural Networks - **3 ECTS**
- 11/ Research Project - **9 ECTS** - to be completed between September and March

INTERNSHIP

- **A three-to-five month internship in an academic research institute or an industrial research-and-development department anywhere in the world.**
- **Starting in April**
- **12 ECTS**

PROGRAM M2 ICS

// 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

15 ECTS 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**
- 10/ Logic in Computing – **3 ECTS**

// DATA SCIENCE

- 11/ High Performance Computing – **3 ECTS**
- 12/ Advanced Topics in Machine Learning and Data Mining – **3 ECTS**
- 13/ Knowledge Representation and Reasoning – **3 ECTS**
- 14/ Mobile Networks and Mobile Data Collection – **3 ECTS**
- 15/ Information Systems Security – **3 ECTS**

INTERNSHIP

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

PROGRAM PREREQUISITES

Possibility of entering the second year if entering students already hold or are half-way through the 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.

MIAI CLUSTER SCHOLARSHIP

Students enrolled in an L3, Master's (M1 or M2), or an integrated Master's track at Université Clermont Auvergne or Clermont Auvergne INP, whose training focuses on artificial intelligence or uses AI as a key tool, may be eligible for the MIAI Cluster Excellence Scholarships. These scholarships support outstanding French and international students with excellent academic results and strong motivation in AI. For more information on eligibility criteria and application procedures, please contact: sophie.walsh@uca.fr

CLERMONT
AUVERGNE
INP Isima
UCA



ISIMA

1 Rue de la Chebarde - 63178 Aubière

www.isima.fr



CLERMONT
AUVERGNE
INP
UCA

UCA
UNIVERSITÉ
Clermont
Auvergne

Cti
Commission des
Titres d'Ingénieur

