SCIENCES, TECHNOLOGIES AND HEALTH

Master of Science in Informatics at Grenoble (MoSIG)

Master in Computer science

Target level
Baccalaureate +5

ECTS
120 credits

Duration
2 years

Component
UFR IM2AG (informatique, mathématiques et mathématiques appliquées), Grenoble INP - Ensimag (Informatique, mathématiques appliquées et télécommunications), UGA

Language(s) of instruction
English, French

Presentation

The training covers a wide spectrum at the level of the first year master's trains graduates with a general education and foundation solid in computer science (in terms of programming languages, databases, networks, software engineering, object-oriented design/programming, complexity, and interactive software) ; the second year of the master's allows students to acquire organizational skills related to research work and to become specialized in a field of computer science in connection with the numerous options offered (Information systems and advanced software engineering, Human-centred computer science - design of highly reliable embedded and cyberphysical systems, artificial Intelligence and web - graphics, vision, and robotics, interactive and ubiquitous systems, and embedded, parallel, and distributed systems). The objective is to give the necessary foundations for a job in research and development as well as to undertake a thesis in Computer science in the fields covered by academic and industrial laboratories.

The aim of the course is to carry out high-level training in computer science for teaching, research, engineering, and development.

The initial semester (Master1 - S7) is composed of foundational courseware

The second semester (Master1 - S8) combines core foundational courseware with optional specialization courses.

For the semester S9 of 30 ECTS, students need to select courses worth 24 ECTS in their chosen theme (according to their initial training) and 6 ECTS of courses from a different theme,
if timetables are consistent and enrollment restrictions apply.

The final semester (Master2 - S10) is dedicated to an end of studies research (or professionnal) project.

The course is labelled "Core AI" by ☑ MIAI.

☑ Mosig master website

Skills

The teaching units of semester 8 (first year of master's) are for the most part introductions to the different specialties of the second year of the master's. In this sense, they constitute training for research. The second year master's allows students to acquire organizational skills and skills related to researcher work
- Formulate a research problem and propose a solution
- Locate a research problem in the scientific literature
- Evaluate and validate a solution to a research problem
- Write a scientific publication
- Communicating the results of research work
- Develop and use mathematical and computer tools
- Communicate in English and French
- Become a specialist in a field of computer science related to computer research on the site: information systems and advanced software engineering - human-centred computer science - foundations of Computer science : design and validation - artificial intelligence and web - graphics, vision and robotics - interactive and ubiquitous systems - embedded, parallel and distributed systems

International education : Internationally-oriented programmes

International dimension

Possibility of doing a ⬀ double degree with the ⬀ University of Swansea.

Organisation

Abroad intership : In France or abroad

Admission

Access conditions

The first year of master's degree is accessible on file (and / or interview) to candidates with a national diploma conferring the degree of license in a field compatible with that of the master or via a validation of studies or acquired according to the conditions determined by the university or training. The second year master's is accessible to candidates according to their transcripts (and/or interview) :

- Having validated the first year of a compatible course
- Or by validating studies or acquired experience according to the conditions determined by the university or the training.

Public continuing education : You are in charge of continuing education :

- if you resume your studies after 2 years of interruption of studies
- or if you followed a formation under the regime formation continues one of the 2 preceding years
- or if you are an employee, job seeker, self-employed

If you do not have the diploma required to integrate the training, ⬀ you can undertake a validation of personal and professional achievements (VAPP)

Candidature / Application

Do you want to apply and register? Note that the procedure differs depending on the degree considered, the degree obtained, or the place of residence for foreign students.

⬀ Find out which procedure applies to me and apply

Prerequisites

Language requirements :

- Students are required to provide evidence of Competence in English.
  English scores required for the MSIAM, programs: TOEFL IBT 78, CBT 210, Paper 547 / TOEIC 700 / Cambridge FCE / IELTS 6.0 min.
  This is equivalent to CEFR level B2.

If you have successfully completed a degree (or equivalent) course at a University in one of the following countries then you meet the English requirement automatically: Australia, Canada, Guyana, Ireland, New Zealand, South Africa, United Kingdom, United States of America, West Indies.

And after

Further studies

Ph.D.

Sector(s)

Research and higher education, research and development

Useful info

Contacts

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Course location(s) - City

📍 Grenoble

Campus

🏢 Grenoble - University campus

Program

Specifics of the program

Program under construction - awaiting vote CFVU

Master 1st year

Semester 7

	Nature	CM	TD	TP	Crédits
UE Programming language and compiler design	Teaching Unit (UE)	33h	33h		6 credits
UE Software engineering	Teaching Unit (UE)				3 credits
UE Principles of operating systems	Teaching Unit (UE)	37h	37h		6 credits
UE Algorithms Problem Solving	Teaching Unit (UE)		9h	6h	3 credits
UE Mathematics for computer science	Teaching Unit (UE)	21,5h	23h		3 credits
UE Introduction to visual computing	Teaching Unit (UE)	18h		15h	3 credits
UE Introduction to Artificial Intelligence	Teaching Unit (UE)	19,5h		13,5h	3 credits
UE Programming project (OS)	Teaching Unit (UE)				3 credits
UE Programming project (Compiler design)	Teaching Unit (UE)				3 credits

Semester 8

	Nature	CM	TD	TP	Crédits
UE Research project	Teaching Unit (UE)				3 credits
UE Research methodology	Teaching Unit (UE)	3h	4,5h		3 credits

	Nature	CM	TD	TP	Crédits
UE Introduction to modeling and verification of digital systems	Teaching Unit (UE)	18h		15h	3 credits
UE Operations Research	Teaching Unit (UE)	16,5h	16,5h		3 credits
UE Data base foundations	Teaching Unit (UE)				3 credits
UE Introduction to distributed systems	Teaching Unit (UE)	15h	18h		3 crédits
UE Human computer interaction	Teaching Unit (UE)	12h	21h		3 credits
UE Computer networks principles	Teaching Unit (UE)	10,5h	10,5h	12h	3 credits
UE 3D graphics	Teaching Unit (UE)	16,5h	16,5h		3 credits
UE Introduction to mobile robotics	Teaching Unit (UE)	6h		27h	3 credits
UE Introduction to cryptology	Teaching Unit (UE)	16,5h	13,5h	3h	3 credits
UE Parallel algorithms and programming	Teaching Unit (UE)	15h	6h	12h	3 credits
UE Fundamental Computer Science	Teaching Unit (UE)	16,5h	16,5h		3 credits
UE Foundations of Data Science	Teaching Unit (UE)			12h	3 credits
UE Embodying the shift: digital in the age of low-tech	Teaching Unit (UE)	15h		18h	3 credits
UE Algebraic Algorithms for Cryptology	Teaching Unit (UE)				3 credits

Master 1st year Graduate School program

Semester 7

	Nature	CM	TD	TP	Crédits
UE Programming language and compiler design	Teaching Unit (UE)	33h	33h		6 credits
UE Software engineering	Teaching Unit (UE)				3 credits

	Nature	CM	TD	TP	Crédits
UE Principles of operating systems	Teaching Unit (UE)	37h	37h		6 credits
UE Algorithms Problem Solving	Teaching Unit (UE)		9h	6h	3 credits
UE Mathematics for computer science	Teaching Unit (UE)	21,5h	23h		3 credits
UE Introduction to visual computing	Teaching Unit (UE)	18h		15h	3 credits
UE Introduction to Artificial Intelligence	Teaching Unit (UE)	19,5h		13,5h	3 credits
UE Programming project (OS)	Teaching Unit (UE)				3 credits
UE Programming project (Compiler design)	Teaching Unit (UE)				3 credits

Semester 8

	Nature	CM	TD	TP	Crédits
UE GS_MSTIC_Scientific approach	Teaching Unit (UE)				6 credits
UE Technical writing and speaking	Teaching Unit (UE)		33h		3 credits
UE Introduction to modeling and verification of digital systems	Teaching Unit (UE)	18h		15h	3 credits
UE Operations Research	Teaching Unit (UE)	16,5h	16,5h		3 credits
UE Data base foundations	Teaching Unit (UE)				3 credits
UE Introduction to distributed systems	Teaching Unit (UE)	15h	18h		3 credits
UE Human computer interaction	Teaching Unit (UE)	12h	21h		3 credits
UE Computer networks principles	Teaching Unit (UE)	10,5h	10,5h	12h	3 credits
UE 3D graphics	Teaching Unit (UE)	16,5h	16,5h		3 credits
UE Introduction to mobile robotics	Teaching Unit (UE)	6h		27h	3 credits

	Nature	CM	TD	TP	Crédits
UE Introduction to cryptology	Teaching Unit (UE)	16,5h	13,5h	3h	3 credits
UE Parallel algorithms and programming	Teaching Unit (UE)	15h	6h	12h	3 credits
UE Fundamental Computer Science	Teaching Unit (UE)	16,5h	16,5h		3 credits
UE Foundations of Data Science	Teaching Unit (UE)			12h	3 credits
UE Embodying the shift: digital in the age of low-tech	Teaching Unit (UE)	15h		18h	3 credits
UE Algebraic Algorithms for Cryptology	Teaching Unit (UE)				3 credits

Master 2nd classic program

Semester 9

	Nature	CM	TD	TP	Crédits
UE Process engineering	Teaching Unit (UE)	36h			6 credits
UE Advanced networking	Teaching Unit (UE)	36h		18h	6 credits
UE Advanced parallel system	Teaching Unit (UE)	36h			6 credits
UE Fundamentals of Data Processing and Distributed Knowledge	Teaching Unit (UE)	36h			6 credits
UE Scientific Methodology, Regulatory and ethical data usage	Teaching Unit (UE)	36h			6 credits
UE Robotics	Teaching Unit (UE)	36h			6 credits
UE Computer Graphics	Teaching Unit (UE)	36h			6 credits
UE Multi-agent systems	Teaching Unit (UE)	18h			3 credits
UE Information visualization	Teaching Unit (UE)	18h			3 credits
UE Computer vision	Teaching Unit (UE)	36h			6 credits

Non-contractual information.
Last update on 02 October 2024

	Nature	CM	TD	TP	Crédits
UE Cloud Computing, from infrastructure to applications	Teaching Unit (UE)	36h			6 credits
UE Large scale Data Management and Distributed Systems	Teaching Unit (UE)	30h		6h	6 crédits
UE GPU Computing	Teaching Unit (UE)	18h		18h	6 credits
UE From Basic Machine Learning models to Advanced Kernel Learning	Teaching Unit (UE)	36h			6 credits
UE Advanced Machine Learning: Applications to Vision, Audio and Text	Teaching Unit (UE)	36h			6 credits
UE Natural Language Processing & Information Retrieval	Teaching Unit (UE)	36h			6 credits
UE Information Security	Teaching Unit (UE)	36h			6 credits
UE Mathematical Foundations of Machine Learning	Teaching Unit (UE)	36h			3 credits
UE Statistical learning: from parametric to nonparametric models	Teaching Unit (UE)	36h			6 credits
UE Refresh courses	Teaching Unit (UE)	6h	6h	6h	0 credits
UE Human Computer Interaction	Teaching Unit (UE)	36h			6 credits
UE Next Generation Software Development	Teaching Unit (UE)	36h			6 credits
UE Safety Critical Systems: from design to verification	Teaching Unit (UE)	36h			6 credits

Semester 10

	Nature	CM	TD	TP	Crédits
UE Research project	Teaching Unit (UE)				30 credits

Master 2nd Graduate School program

Semester 9

	Nature	CM	TD	TP	Crédits

UE GS_MSTIC_Research ethics	Teaching Unit (UE)			6 credits
UE Process engineering	Teaching Unit (UE)	36h		6 credits
UE Advanced networking	Teaching Unit (UE)	36h	18h	6 credits
UE Advanced parallel system	Teaching Unit (UE)	36h		6 credits
UE Fundamentals of Data Processing and Distributed Knowledge	Teaching Unit (UE)	36h		6 credits
UE Scientific Methodology, Regulatory and ethical data usage	Teaching Unit (UE)	36h		6 credits
UE Robotics	Teaching Unit (UE)	36h		6 credits
UE Computer Graphics	Teaching Unit (UE)	36h		6 credits
UE Multi-agent systems	Teaching Unit (UE)	18h		3 credits
UE Information visualization	Teaching Unit (UE)	18h		3 credits
UE Computer vision	Teaching Unit (UE)	36h		6 credits
UE Cloud Computing, from infrastructure to applications	Teaching Unit (UE)	36h		6 credits
UE Large scale Data Management and Distributed Systems	Teaching Unit (UE)	30h	6h	6 credits
UE GPU Computing	Teaching Unit (UE)	18h	18h	6 credits
UE From Basic Machine Learning models to Advanced Kernel Learning	Teaching Unit (UE)	36h		6 credits
UE Advanced Machine Learning: Applications to Vision, Audio and Text	Teaching Unit (UE)	36h		6 credits
UE Natural Language Processing & Information Retrieval	Teaching Unit (UE)	36h		6 credits
UE Information Security	Teaching Unit (UE)	36h		6 credits

	Nature	CM	TD	TP	Crédits
UE Mathematical Foundations of Machine Learning	Teaching Unit (UE)	36h			3 credits
UE Statistical learning: from parametric to nonparametric models	Teaching Unit (UE)	36h			6 credits
UE Refresh courses	Teaching Unit (UE)	6h	6h	6h	0 credits
UE Human Computer Interaction	Teaching Unit (UE)	36h			6 credits
UE Next Generation Software Development	Teaching Unit (UE)	36h			6 credits
UE Safety Critical Systems: from design to verification	Teaching Unit (UE)	36h			6 credits

Semester 10

	Nature	CM	TD	TP	Crédits
UE Research project	Teaching Unit (UE)				30 credits