Master's degree in Artificial Intelligence

The **master's degree in Artificial Intelligence** (**master's degree website**) was created as a synergy between the doctoral programme in Artificial Intelligence (AI) at the Barcelona School of Informatics of the UPC, the School of Engineering of the Rovira i Virgili University (URV) and the Faculty of Mathematics of the University of Barcelona (UB). It guarantees an interdisciplinary education in which computer science intersects with philosophy, psychology, linguistics, engineering and other fields. It focuses on knowledge engineering, automatic learning and multi-agent systems, natural language processing, reasoning and problem-solving, soft computing and AI technologies, and the application of AI techniques to professional practice.

The doctoral degree in AI, which follows on from this master's degree, was awarded the Spanish Ministry of Education's Quality Award every year from 2003 to 2010. It is now a verified programme.

GENERAL DETAILS

Duration and start date

1.5 academic years, 90 ECTS credits. Starting September

Timetable and delivery

Mornings and afternoons. Face-to-face

Fees and grants

Approximate fees for the master's degree, **excluding other costs** (does not include non-teaching academic fees and issuing of the degree certificate):
€2,490 (€9,496 for non-EU residents).
More information about fees and payment options
More information about grants and loans

Language of instruction

English

Information on language use in the classroom and students' language rights.

Official degree

Recorded in the Ministry of Education's degree register

ADMISSION

General requirements

Academic requirements for admission to master's degrees

Places

50

Pre-enrolment

Pre-enrolment period open.
Expected deadline: 26/05/2024.

How to pre-enrol

Enrolment

How to enrol

Legalisation of foreign documents

All documents issued in non-EU countries must be legalised and bear the corresponding apostille.

DOUBLE-DEGREE AGREEMENTS

With other international universities

- Master's degree in Artificial Intelligence + *Maestría en Informática con mención en Ciencias de la Computación o en Ingeniería de Software* (Escuela de Postgrado, Pontifícia Universidad Católica de Perú (PUCP), Lima, Perú)
- Master's degree in Informatics Engineering + *Maestría en Informática con mención en Ciencias de la Computación o en Ingeniería de Software* (Escuela de Postgrado, Pontifícia Universidad Católica de Perú (PUCP), Lima, Perú)

PROFESSIONAL OPPORTUNITIES

Professional opportunities

The master's degree is addressed to students who wish to acquire advanced knowledge in AI in order to occupy positions of responsibility in industry, the public sector or academia, in Spain or abroad. The programme covers many research areas related to the design, analysis and application of AI. Students who undertake this master's degree will be equipped to:

- Deal with technically complex problems that require a degree of innovation and/or research.
- Make strategically important decisions within their professional domain.
- Pursue doctoral studies within the domain of information and communication technologies at the UPC, the URV, the UB or abroad.

Competencies

Generic competencies

Generic competencies are the skills that graduates acquire regardless of the specific course or field of study. The generic competencies established by the UPC are capacity for innovation and entrepreneurship, sustainability and social commitment, knowledge of a foreign language (preferably English), teamwork and proper use of information resources.

Specific competencies

On completion of this course, students will be able to:

- Design and implement computer-based studies, including cost analysis and execution adjusted to the available resources and the existing procedures.
- Satisfy the information-analysis needs of organisations and identify sources of uncertainty and variability.
- Solve the decision-making problems of organisations and integrate intelligent tools.
- Apply artificial intelligence techniques in technological and industrial settings in order to improve quality and productivity.
- Design, draft and present reports on computer-related projects that are specific to the field of artificial intelligence.
- Design new computer tools and artificial intelligence techniques in their professional practice.
- Assimilate and integrate changes in the economic, social and technological milieu into the goals and procedures of computer work in intelligent systems.
- Respect regulations and ethics in their professional practice.
- Respect the environment and design and develop intelligent systems that promote environmental sustainability.

ORGANISATION: ACADEMIC CALENDAR AND REGULATIONS

UPC school

Barcelona School of Informatics (FIB)

Participating institutions

Universitat Politècnica de Catalunya (UPC) - **coordinating** university
Universitat de Barcelona (UB)
Universitat Rovira i Virgili (URV)

Academic coordinator

Ulises Cortés

Academic calendar

General academic calendar for bachelor's, master's and doctoral degrees courses

Academic regulations

Academic regulations for master's degree courses at the UPC

CURRICULUM

Subjects	ECTS credits	Type
FIRST SEMESTER		
Computational Intelligence	5	Compulsory
Computational Vision	5	Compulsory
Introduction to Human Language Technology	5	Compulsory
Introduction to Machine Learning	5	Compulsory
Introduction to Multiagent Systems	5	Compulsory
Planning and Approximate Reasoning	5	Compulsory
SECOND SEMESTER		
Advanced Human Language Technologies	5	Optional
Advanced Topics in Computational Intelligence	4	Optional
Artificial Intelligence in Health Care	3	Optional
Artificial Intelligence Seminar	3	Optional
Artificial Vision & Pattern Recognition	4.5	Optional
Assistive and Health-Care Technologies	4.5	Optional
Big Data Analytics	4.5	Optional
Cognitive Robotics	4.5	Optional
Complex Networks	5	Optional
Deep Learning	4.5	Optional
Deep Learning for Medical Image Analysis	3	Optional
Human Language Engineering	4.5	Optional
Human-Computer Interaction	4.5	Optional
Intelligent Data Analysis Applications in Business	2	Optional
Logics for Artificial Intelligence	6	Optional
Minds, Brains and Machines	4	Optional
Multi-Robot Systems	4.5	Optional
Multiagent System Design	4	Optional
New Trends in Robotics	3	Optional

Subjects	ECTS credits	Type
Nlp Over Open Linked Data	3	Optional
Object Recognition	4	Optional
Personalized Multi-Criteria Decision Support Systems	4.5	Optional
Probabilistic Graphical Models	4.5	Optional
Self Organizing Multiagent Systems	4.5	Optional
Supervised and Experiential Learning	4.5	Optional
Unsupervised and Reinforcement Learning	4.5	Optional
THIRD SEMESTER		
Cognitive Interaction with Robots	4.5	Optional
Constraint Processing and Programming	4.5	Optional
Intelligent Data Analysis and Data Mining	4.5	Optional
Intelligent Decision Support Systems	4.5	Optional
Intelligent System Project	3	Optional
Machine Learning in Computer Graphics	3	Optional
Normative and Dynamic Virtual Worlds	4.5	Optional
Professional Practice in Artificial Intelligence	3	Optional
Master's Thesis	18	Project