

MASTER'S DEGREE IN ARTIFICIAL INTELLIGENCE

FIB

Barcelona School of Informatics



UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH

International Campus of Excellence

MASTER'S DEGREE IN ARTIFICIAL INTELLIGENCE

The master's degree in Artificial Intelligence is an interuniversity Universitat Politècnica de Catalunya-Universitat Rovira i Virgili-Universitat de Barcelona programme that guarantees an interdisciplinary education in which computer science intersects with philosophy, psychology, linguistics, engineering and other fields. Students will have the opportunity to access the high-performance computing resources of top research centres, such as the Barcelona Supercomputing Center-Centro Nacional de Supercomputación (BSC-CNS).

The programme covers research areas related to the design, analysis and application of artificial intelligence (AI). On one hand, it focuses on knowledge engineering, machine learning, deep learning, big data analytics, multi-agent systems, natural language processing, reasoning and problem solving, soft computing and related technologies, as well as the professional application of AI. On the other hand, it is the objective of this master's degree to promote an ethical and moral approach to the application of AI.

1st
Spanish university
in Computer Science
and Information Systems

Source: QS World University Rankings by Subject 2020

100
universities have
international mobility
programmes with the FIB

+400
educational cooperation
agreements every year

95%
of graduates in the field of
Informatics Engineering are
in employment

Source: 2n graduate employment survey of master's degree graduates of Catalan universities by the Catalan University Quality Assurance Agency (AQU Catalunya)

Why this master's degree?

The master's degree in Artificial Intelligence offers you an integrative and cutting-edge approach to the field and its application to real scenarios. Research in AI (artificial intelligence) at the consortium of Catalan universities supporting this programme spans knowledge representation and reasoning, machine learning, natural language processing, autonomous agents, computer vision robotics and visualisation. The emphasis is on practical techniques –and a solid theoretical background– for designing and constructing intelligent systems, enabling graduates of this degree to apply their skills in a variety of settings. These skills are in high demand in the market. As a graduate of this programme, you will have the skills to carry out AI research in academic and R&D environments and to identify how AI techniques can provide intelligent solutions to IT problems in companies and organisations.

Aimed at

This programme is aimed at national and international students who wish to acquire advanced knowledge in AI in order to occupy positions of responsibility in industry, the public sector and academia in Catalonia, Spain or abroad. The programme covers many research areas related to the design, analysis and application of AI.

Admission

The master's degree is open to holders of a bachelor's degree who are interested in building on their knowledge of artificial intelligence and who meet the general and specific access requirements. Candidates must

certify at least Level B2 in the Common European Framework of Reference for Languages (or equivalent), since the language of instruction is English.

Double degrees and mobility

You will have access to international double degrees taught in conjunction with top-level institutions, from which you graduate with a master's degree in Artificial Intelligence from the Barcelona School of Informatics and a master's degree from the partner institution. Thus, you may take the double-degree pathway that includes the master's degree in Artificial Intelligence and the master's degree in Informatics, with specialisations in Computer Science and Software Engineering, at the Pontificia Universidad Católica del Perú. In addition, you can make the most of the mobility programmes that the Barcelona School of Informatics participates in around the world.

Structure

The programme consists of 90 ECTS credits distributed over three semesters, starting in September. Delivery is face-to-face and classes are taught in the morning. Compulsory subjects are the foundations of the degree and they provide a solid grounding in artificial intelligence. The programme includes 42 ECTS credits for optional subjects grouped into areas: Multi-Agent Systems; Human-Computer Interaction; Data Science and Computational Intelligence; Knowledge Engineering and Machine Learning; Modelling, Reasoning and Problem Solving; Vision, Perception and Robotics - Assistive Technologies; and Hot Topics in AI and Professional Practice. The master's thesis can be carried out within a research group or

project at the University or at a research centre or a company.

Professional opportunities

Artificial intelligence plays an increasingly important role in running the world around us, and the possibilities for its use continue to grow. It exists in many forms and technologies, including video games, robotics, search engines, face and/or voice recognition software, medical and banking applications, etc. Industry requires professionals who can make strategic decisions and have a capacity for analysis and resolution of complex problems in these areas, as well as professionals who are able to create and transfer research-based knowledge in the professional world. With so many career options available in the field, the graduate employment rate is close to 100%, and earnings are among the highest for university graduates. In addition, graduates become members of FIB Alumni, the FIB's association of former students. It is the network with the greatest number of professionals in the sector.

A world of opportunities

The master's degree in Artificial Intelligence will allow you to:

- Acquire a solid background and advanced knowledge of artificial intelligence.
- Carry out paid work placement in companies.
- Broaden your education by taking a master's degree.
- Collaborate with the many research centres and research groups linked to the UPC, the URV and the UB.
- Participate in sports, cultural, development cooperation and leisure activities organised by student associations.

Curriculum

This information may be subject to change.
Up-to-date information is available at upc.edu

**90 ECTS
credits**

1st year

1st semester

Computational Intelligence	5
Computer Vision	5
Introduction to Human Language Technologies	5
Introduction to Machine Learning	5
Introduction to Multi-Agent Systems	5
Planning and Approximate Reasoning	5

2nd semester

Optional Subjects	30
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3rd semester

Optional Subjects	12
Master's Thesis	18

MASTER'S DEGREE IN ARTIFICIAL INTELLIGENCE

Double-degree pathways with foreign universities

- Master's degree in Artificial Intelligence + Master's degree in Informatics- specialisation in Computer Science or specialisation in Software Engineering (Pontificia Universidad Católica del Perú, Perú)



FIB There's much more to IT

Further information:

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