MASTER'S DEGREE IN INNOVATION AND RESEARCH IN INFORMATICS

FIB
Barcelona School of Informatics

UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH

UPC

MASTER'S DEGREE IN INNOVATION AND RESEARCH IN INFORMATICS

1st
Spanish university in Computer Science and Information Systems

Source: QS World University Rankings by Subject 2023

Informatics has become a driving force in many scientific and technological fields. The master's degree in Innovation and Research in Informatics, taught at the Barcelona School of Informatics, provides a solid background in research and innovation in informatics and specialised knowledge of a computer science field such as Advanced Computing, Computer Graphics and Virtual Reality, Service Engineering, Computer Networks and Distributed Systems, Data Science, and High Performance Computing, in addition to state of the art seminars performed by the Barcelona Supercomputing Center using its infrastructures.

Graduates of the master's degree will be capable of analysing and solving complex problems. The degree covers many research and innovation areas that are of direct applicability to society. Proof of this are students' master's theses, which have covered areas such as big data analysis, health applications (virtual reality, privacy, prediction), software and hardware acceleration, fraud detection, bioinformatics, information extraction from linked open data, real time analysis of sensor data and social networks, customer relationship management, cloud computing and the Internet of Things.

Curriculum

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

120 ECTS credits

1st year

Algorithmic Methods for Mathematical Models	6
Concurrence, Parallelism and Distributed Systems	6
Statistical Modelling and Design of Experiments	6
Techniques and Methodology of Innovation and Research iun Informatics	6
Seminars*	6
Specialisation Subjects**	30

2nd year

Specialisation Subjects**	18
Elective Subjects	12
Master's Thesis	30

* Recommended first year, but it can be done along all the master.

**Specialisation Subjects
Combinatorial Problem Solving / Algorithmics for Data Mining / Advanced 3D Modeling / Virtual and Augmented Reality / Mechanisms and Game Theory in Networks / Computer Network Architectures and Network Management / Cloud Computing and Big Data Analytics, Internet Applications and Security / Data Warehousing / Machine Learning / Big Data Management / Multiprocessors Architecture, Parallel Programming Tools and Models / Processor Architecture / Interdisciplinary Innovation Project, etc.

Compulsory Subjects

Aimed at

The programme addresses students who wish to incorporate emerging technologies in the sector, especially at companies with R&D centres, public and private research centres and university departments. Graduates of this master's degree also acquire the skills and knowledge needed to pursue a doctoral degree.

Admission

Holders of a bachelor's degree in informatics or a related field may gain direct admission. Candidates with a degree in engineering or science issued by a higher education institution that qualifies the holder to pursue postgraduate education in the issuing country may also be considered. Candidates must be able to 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 Innovation and Research in Informatics from the UPC and a master's degree from the partner institution. In addition, you can make the most of the mobility programmes that the Barcelona School of Informatics has around the world.

Structure

The programme consists of 120 ECTS credits distributed over four semesters of 30 ECTS credits each.
- As far as common compulsory subjects (30 ECTS credits) are concerned, 24 ECTS credits are taken in the first two semesters, covering basic concurrence, parallelism and distributed systems, basic statistical and mathematical methods and fundamental innovation and research techniques and methods in informatics. Optional seminars on innovation and research in informatics (6 ECTS credits) are also taught during the entire master's degree.
- The programme includes compulsory and elective specialisation subjects (48 ECTS credits) that are divided into areas of specialisation: Advanced Computing, Computer Graphics and Virtual Reality, Computer Networks and Distributed Systems, Data Science, High Performance Computing and Service Engineering. Students can also choose to take subjects in another area of specialisation or on another master's degree and external curricular placements, or to have optional credits recognised for work experience (12 ECTS credits).
- The master's thesis (30 ECTS credits) can be carried out within a research group or project at the University, a research centre or a company. Students work on a project that focuses on research and innovation in the chosen field.

Curricular placements and work experience

Students' placements become an educational activity under the supervision of teaching staff. The aim is for students to apply and complete the academic training they have received and to foster the professional skills that they will need and that increase their employability. These activities take place in the framework of educational cooperation agreements and may be recognised as part of the master's degree with optional ECTS credits. Work experience in the areas of knowledge of the master's degree may also be recognised with optional ECTS credits.

Professional opportunities

Graduates of the master's degree in Innovation and Research in Informatics have an employment rate of practically 100% and salaries are among the highest for university graduates. They may find work as:
- Professionals who are equipped to manage ICT projects, installations and organisations that comply with prevailing regulations and meet quality and environmental criteria.
- Entrepreneurs and researchers who are able to carry out projects in an international environment.
- Professionals who have the skills to implement ICTs in all types of companies and organisations.
- Professionals who can lead R&D departments and projects with a substantial research component.

A world of opportunities

The master's degree in Innovation and Research in Informatics will allow you to:
- Broaden your knowledge with the latest trends and technologies in informatics.
- Carry out your master's thesis or work placement and get paid for it at a company.
- Collaborate with many research centres and research groups linked to the Barcelona School of Informatics.
- Participate in sports, cultural, development cooperation and leisure activities organised by student associations.

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The **Barcelona School of Informatics (FIB)** has been a leading computer-science school in Spain since 1976. It has ties to the best companies in the field and provides well-equipped facilities and the latest technologies to support the most modern teaching methods. At the FIB, you can take a double master's degree with a foreign university and collaborate with research centres and groups.

The **FIB** is a school of the **Universitat Politècnica de Catalunya - BarcelonaTech (UPC),** a benchmark public institution of research and higher education in the fields of engineering, architecture, science and technology. With 50 years of history and more than 30,000 students, the UPC has the greatest concentration of research and innovation in IT in southern Europe. It is the best Spanish university in Computer Science and Information Systems, according to the 2023 QS World University Rankings by Subject.

FIB   There's much more to IT

EXCELLENT
Accreditation
4313729-33018-23
AQU Catalunya registered on EQAR

Euro-Inf
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