

MASTER'S DEGREE IN CYBERSECURITY

**Barcelona School
of Telecommunications Engineering
Barcelona School of Informatics**



**UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH**

International Campus of Excellence

MASTER’S DEGREE IN CYBERSECURITY

The master’s degree in Cybersecurity is a joint programme of the Barcelona School of Telecommunications Engineering (ETSETB) and the Barcelona School of Informatics (FIB). The goal of the master's degree is to provide graduates with a solid grounding in the design, implementation and management of security in today’s infrastructure and communications.

In recent years, the number of organisations protecting themselves against cyberattacks has grown exponentially. Public and private organisations search for security experts, but there are not enough professionals to meet the demand. This master’s degree has a markedly professional orientation and provides fundamental skills in the cybersecurity field, including the analysis of systems’ risks and vulnerabilities, the prevention of cyberattacks and threats, the detection of and efficient response to cyberattacks, compliance with existing regulations on data protection and the design of security and privacy architectures. As a graduate of the master’s degree you will be able to pursue a career as a security expert in industry, education and public and private organisations.

Curriculum

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

60 ECTS credits

Network Security	5
Network Traffic Monitoring and Analysis	5
Application Security	5
Malware	5
Data Protection	5
Network Security - Authentication and Authorisation	5
Optional subjects* / Seminars	18
Master’s Thesis	12

* Optional subjects

Blockchain / 5G Fixed Network Security / Secure Communications in Fibre Optic Networks / Quantum Computing and Cryptography / Coding Theory and Cryptography Mathematics / Cybersecurity Management / Cybersecurity Use Cases

Compulsory subjects

1st

Spanish university and 76th in the world in Engineering and Technology

Source: 2020 QS World University Rankings by Subject

93%

UPC master’s degree graduate employment rate

Source: 2nd 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 purpose of this master’s degree is to train experts in the design, implementation and management of the security of infrastructure and communications in today’s digital world and the applications and services they offer.

The degree is eminently practical and focuses on professional skills. Graduates of the UPC’s master’s degree in Cybersecurity will gain the abilities needed to analyse risks and vulnerabilities in complex ICT systems, design ICT systems (their architecture and software), consider security prevention (security by design), detect unavoidable attacks and provide the fastest and most efficient response.

Aimed at

The entry profile of the master’s degree is a university graduate in the ICT field or a professional with a related degree and extensive experience in the sector.

Admission

Holders of a degree or students in the last year of a degree may apply for admission to the master’s degree in Cybersecurity. An official degree certificate must be produced on the day of enrolment, in September.

Holders of bachelor’s degrees in the following disciplines will be given preference:

- Bachelor’s degree in Informatics Engineering.
- Bachelor’s degree in Telecommunications Science and Technology.
- Bachelor’s degree in Data Science and Engineering.
- Bachelor’s degrees that qualify the holder to practise as a technical telecommunications engineer: bachelor's degrees in Audiovisual Systems Engineering, Electronic Systems Engineering, Telecommunications Systems Engineering and Network Engineering.

Admission will be based on applicants’ academic background, professional experience and motivation. Depending on their entrance qualification, applicants may be asked to take bridging courses. English Level B2 is required for admission to the master’s degree and must be demonstrated when you enrol.

Structure

The master’s degree in Cybersecurity is worth 60 ECTS credits and is taught over one academic year, in the afternoons, face-to-face.

It is taught entirely in English and can be taken full-time or part-time. The master’s degree promotes applied training and has a markedly professional orientation in the areas of information security and information systems.

Specialisation

On completion of the master’s degree, students will have advanced knowledge of:

- Forensic analysis.
- Security architectures.
- Network threats and vulnerabilities.
- Reverse engineering.
- Protection mechanisms and cryptographic techniques.
- Cybersecurity management, standards, cyberdefence.
- Blockchain.
- Pen testing, ethical hacking.
- Cybercrime, digital fraud identification.

Professional opportunities

The master’s degree in Cybersecurity is associated with a field in which demand for labour is high. The European Union estimates that 825,000 experts in cybersecurity will be required in the year 2025.

Graduates may pursue careers as:

- Chief security officer (CSO) in technology companies.
- CSO in non-technological companies that have IT departments.
- Security operations centre (SOC) specialist.
- Security analyst.
- Security risk specialist.
- Security consultant.
- Digital forensic analyst.
- Ethical hacker.

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This master's degree is a joint programme of the Barcelona School of Telecommunications Engineering (ETSETB) and the Barcelona School of Informatics (FIB). Both are globally renowned schools with wide-ranging research activity and close ties to industry.

The ETSETB and the FIB are schools 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, Engineering and Technology, according to the 2020 QS World University Rankings by Subject.

Cybersecurity: managing threats in cyberspace

Further information:

cybersecurity.masters.upc.edu

telecos.upc.edu

fib.upc.edu

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