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
masters.etsetb@upc.edu

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Barcelona School of Telecommunications Engineering
Barcelona School of Informatics
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.

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.

- Bachelor’s degree in Telecommunications Science and Technology.
- Bachelor’s degree in Data Science and Engineering.
- Bachelor’s degree 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.

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.

On completion of the master's degree, holders 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 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.

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Security</td>
<td>5</td>
</tr>
<tr>
<td>Network Traffic Monitoring and Analysis</td>
<td>5</td>
</tr>
<tr>
<td>Application Security</td>
<td>5</td>
</tr>
<tr>
<td>Malware</td>
<td>5</td>
</tr>
<tr>
<td>Data Protection</td>
<td>5</td>
</tr>
<tr>
<td>Network Security - Authentication and Authorisation</td>
<td>5</td>
</tr>
<tr>
<td>Optional subjects* / Seminars</td>
<td>18</td>
</tr>
<tr>
<td>Master’s Thesis</td>
<td>12</td>
</tr>
</tbody>
</table>

* Optional subjects

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 degree 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.

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.

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

80 ECTS credits

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By Subject

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cryptography Mathematics / Cybersecurity Management / Cybersecurity Use Cases</td>
<td>12</td>
</tr>
<tr>
<td>Compulsory subjects</td>
<td>12</td>
</tr>
</tbody>
</table>
MASTER’S DEGREE IN CYBERSECURITY

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