Master's degree in Engineering Physics

The master's degree in Engineering Physics is oriented towards frontier engineering based on advanced education in physics. Specialist engineering fields such as nanotechnology, nanoelectronics and biomedical engineering require an ever-growing number of professionals who have extensive training in advanced physics and sound knowledge of quantum physics, complex system physics and device physics, which can be applied both at the nanoscopic scale and in large-scale facilities.

Applicants must prove that they have a bachelor's degree in Physics or Engineering Physics and that they have passed 240 ECTS credits.

**GENERAL DETAILS**

**Duration and start date**
One academic year, 60 ECTS credits. Starting September

**Timetable and delivery**
Face-to-face

**Fees and grants**
Approximate fees for the master's degree, excluding other costs, €2,766 (€4,149 for non-EU residents).
More information about fees and payment options
More information about grants and loans

**Language of instruction**
English

**Official degree**
Official university degree.

**ADMISSION**

**General requirements**
Academic requirements for admission to master's degrees

**Specific requirements**
Applicants must prove that they have a bachelor's degree in Physics or Engineering Physics and that they have passed 240 ECTS credits.

**Places**
30

**Pre-enrolment**
Pre-enrolment closed (consult the new pre-enrolment periods in the academic calendar).

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.

**PROFESSIONAL OPPORTUNITIES**

Professional opportunities
• Industries with a strong technology component.
• Basic and applied research centres.
• Frontier engineering in the field of nanotechnology.
• Research centres and large-scale facilities, as a qualified specialist.
• Doctoral training in research centres and universities.

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.

ORGANISATION: ACADEMIC CALENDAR AND REGULATIONS

UPC school
Barcelona School of Telecommunications Engineering (ETSETB)

Academic coordinator
Jordi Martí Rabassa

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

<table>
<thead>
<tr>
<th>Subjects</th>
<th>ECTS credits</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIRST SEMESTER</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical Phenomena and Complexity</td>
<td>5</td>
<td>Compulsory</td>
</tr>
<tr>
<td>Large Facilities: Synchrotron and Neutron Sources</td>
<td>5</td>
<td>Compulsory</td>
</tr>
<tr>
<td>Machine Learning with Neural Networks</td>
<td>4</td>
<td>Optional</td>
</tr>
<tr>
<td>Numerical Methods for Continuum Systems</td>
<td>4</td>
<td>Optional</td>
</tr>
<tr>
<td>Physics of Materials</td>
<td>4</td>
<td>Optional</td>
</tr>
<tr>
<td>Project Management</td>
<td>3</td>
<td>Compulsory</td>
</tr>
<tr>
<td>Quantum Matter</td>
<td>5</td>
<td>Compulsory</td>
</tr>
<tr>
<td>Surface Engineering and Microdevices</td>
<td>5</td>
<td>Compulsory</td>
</tr>
<tr>
<td><strong>SECOND SEMESTER</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atomic and Molecular Physics</td>
<td>4</td>
<td>Optional</td>
</tr>
<tr>
<td>Complexity in Biological Systems</td>
<td>4</td>
<td>Optional</td>
</tr>
<tr>
<td>Computational Astrophysics</td>
<td>4</td>
<td>Optional</td>
</tr>
<tr>
<td>Molecular and Soft Condensed Matter</td>
<td>4</td>
<td>Optional</td>
</tr>
<tr>
<td>Stochastic Methods for Optimization and Simulation</td>
<td>4</td>
<td>Optional</td>
</tr>
<tr>
<td>Master’s Thesis</td>
<td>17</td>
<td>Project</td>
</tr>
</tbody>
</table>