Master's degree in Engineering Physics

The master's degree in Engineering Physics (master's degree website) 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, if starting in September and one and a half academic year, if starting in February, 60 ECTS credits.
Starting February and September

Timetable and delivery
Mornings. Face-to-face

Fees and grants
Approximate fees for the master's degree, excluding other costs, €1,660 (€2,490 for non-EU residents).
More information about fees and payment options
More information about grants and loans

Language of instruction
English
Information on language use in the classroom and students' language rights.

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 period open.
Expected deadline: 04/07/2022.

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>Atomic and Molecular Physics</td>
<td>4</td>
<td>Optional</td>
</tr>
<tr>
<td>Computational Astrophysics</td>
<td>4</td>
<td>Optional</td>
</tr>
<tr>
<td>Critical Phenomena and Complexity</td>
<td>5</td>
<td>Compulsory</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>Biophysical and Materials Science Characterisation</td>
<td>4</td>
<td>Optional</td>
</tr>
<tr>
<td>Complexity in Biological Systems</td>
<td>4</td>
<td>Optional</td>
</tr>
<tr>
<td>Large Facilities: Synchrotron and Neutron Sources</td>
<td>5</td>
<td>Compulsory</td>
</tr>
<tr>
<td>Subjects</td>
<td>ECTS credits</td>
<td>Type</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>--------------</td>
<td>------------</td>
</tr>
<tr>
<td>Machine Learning with Neural Networks</td>
<td>4</td>
<td>Optional</td>
</tr>
<tr>
<td>Materials Science of Drugs</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>

May 2022. [UPC](https://upc.edu). Universitat Politècnica de Catalunya · BarcelonaTech