

Master's degree in Advanced Materials Science and Engineering

The **master's degree in Advanced Materials Science and Engineering** ([master's degree website](#)) provides an in-depth education in the field of materials science and engineering, an interdisciplinary area of knowledge that includes the study of structures, properties, processing and applications of metallic, ceramic, polymeric and biological materials. It covers traditional structural materials, functional materials, nanomaterials and biomaterials.

GENERAL DETAILS

Duration and start date

Two academic years, 120 ECTS credits. Starting September

Timetable and delivery

Afternoons. Face-to-face

Fees and grants

Approximate fees for the master's degree, excluding other costs, €3,320 (€8,300 for non-EU residents).

[More information about fees and payment options](#)

[More information about grants and loans](#)

Language of instruction

Check the language of instruction for each subject in the course guide in the curriculum.

Information on [language use in the classroom and students' language rights](#).

Location

[Barcelona East School of Engineering \(EEBE\)](#)

Official degree

[Recorded in the Ministry of Education's degree register](#)

ADMISSION

General requirements

[Academic requirements for admission to master's degrees](#)

Specific requirements

The most appropriate educational profile for successful completion of this master's degree is to have a scientific or technical university qualification equivalent to 180 credits and more than 60 credits in the following subject areas: Mathematics, Physics, Chemistry, Physics and Chemistry, Mechanics, Materials Science and English.

English level B2 and Spanish level B2 are required (foreign students). Documents to submit for enrolment

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](#).

DOUBLE-DEGREE AGREEMENTS

With international universities

- Bachelor's degree EEBE (Biomedical, Electrical, Industrial Electronic and Automatic Control, Energy, Mechanical, Materials, Chemical) / Bs.C.Ecole Centrale + Master's degree EEBE (Advanced Materials Science and Engineering, Master in Interdisciplinary and Innovative Engineering, Chemical Engineering) (Ecole Centrale Lille - Centrale de Lyon - Ecole Centrale Marseille - Ecole Centrale de Nantes - CentraleSupélec - Francia)

PROFESSIONAL OPPORTUNITIES

Professional opportunities

Graduates of this master's degree course will be experts who are able to:

- Work in their professional area in companies in various industrial sectors (transport industries, mechanics, chemistry, manufacturing, paper, textiles, electronics, food and beverages, pharmaceuticals, healthcare and construction), in areas related to materials design, production, transformation and control, in addition to management and services related to materials, the environment and the sustainable use of materials (professional profile).
- Complete a doctorate in Materials Science and Engineering (research profile).

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.

Specific competencies

On completion of the course, students will be able to:

- Design, develop and select materials.
- Create and develop production and transformation processes.
- Carry out inspections and quality control of materials and production, and transformation and utilization processes.
- Evaluate the security, durability and functional life of materials.
- Design, develop and control recovery, re-use and recycling processes for materials.
- Issue all kinds of expert reports on materials and processes.
- Carry out research and teaching in the areas mentioned.

ORGANISATION: ACADEMIC CALENDAR AND REGULATIONS

UPC school

[Barcelona East School of Engineering \(EEBE\)](#)

Academic coordinator

[Jéssica Calvo Muñoz](#)

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

Subjects	ECTS credits	Type
FIRST SEMESTER		
Advanced Characterization of Materials	6	Compulsory
Advanced Surface Engineering	6	Optional
Mechanical Behavior of Materials and Their Simulation	6	Optional
Nanostructured Materials	6	Optional
Structure and Properties of Metal Alloys	6	Optional
Structure and Properties of Polymers	6	Optional
Sustainability & Circular Economy	6	Compulsory
Systems Modeling	6	Optional
SECOND SEMESTER		
Biofunctional Materials	6	Optional
Biomedical Materials	6	Optional
Composite Technology	6	Optional
Functional Materials	6	Optional
Management of Technology	6	Compulsory
Material Bonding Technology	6	Optional
Modern Manufacture of Metallic Materials	6	Compulsory
New Challenges in Additivation and Degradation of Plastic Materials	6	Optional
Structural Integrity and Failure Analysis	6	Compulsory
THIRD SEMESTER		
Advanced Ceramics	6	Compulsory
Advances in the Processing of Plastic Materials	6	Compulsory
Experimentation in Materials Science and Engineering	6	Compulsory
Materials with Applications in Transport and Energy	6	Optional
Plasticity, Defects and Microstructure	6	Optional
Sustainable Materials	6	Optional
FOURTH SEMESTER		
Master's Thesis	30	Project