MASTER'S DEGREE IN
POLYMERS AND BIOPLASTICS

This master's degree provides direct admission to the PhD programme in Polymers and Biopolymers.

This master's degree provides direct admission to the PhD programme in Advanced Materials Science and Engineering.

The **Barcelona East School of Engineering (EEBE)** is located on the new Diagonal-Besòs Campus of the Universitat Politècnica de Catalunya (UPC) and has about 3,500 bachelor's, master's and doctoral degree students and 400 professors and researchers. The EEBE is a high-quality school in the field of engineering for industry in the twenty-first century that acts as an agent of transformation in collaboration with the socioeconomic fabric of Catalonia and with a strong international focus.

The **UPC** is 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 every year, the UPC is one of Europe's leading technological universities. It is the second-best Spanish university and the best Catalan university in Engineering and Technology, according to the 2022 QS World University Rankings by Subject.

Science is about knowing, engineering is about doing

Further information:
eebe.upc.edu/en

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UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH
Barcelona East School of Engineering

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UPC studies

MASTER'S DEGREE IN POLYMERS AND BIOPLASTICS

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MASTER'S DEGREE IN POLYMERS AND BIPLASTICS

+40
R&D projects in the polymers and plastics field

93%
UPC graduate employment rate
Source: 2023 graduate employment survey of master's degree graduates of Catalan universities (AQU Catalunya)

+50
universities have international mobility programmes with the EEBE

Polymers are of utmost importance, as they underlie the production of materials with widespread industrial applications. These versatile compounds impact virtually every sector, from packaging and the automotive sector to healthcare and electronics. Polymers contribute to advances in technology, enabling innovation in materials design, product development and manufacturing processes. Moreover, the field plays a critical role in addressing environmental concerns through the exploration of biodegradable and sustainable alternatives such as bioplastics. As we strive for more eco-friendly solutions, the study of polymers becomes instrumental in shaping a sustainable future, balancing the demands of industry with environmental responsibility.

This UPC master's degree has been designed to provide specialised scientific and technological training in the field of polymers and bioplastics, including both industrial and research aspects. The curriculum covers scientific fundamentals (enabling an understanding of the relationship between the structure of polymers and their material properties) and aspects related to production, transformation, use, innovation and sustainability, encompassing both conventional and advanced applications (e.g. conductive polymers, sensors, nanotechnology, biotechnology, tissue engineering, printing technologies and energy-related applications). The UPC is a pioneer in Spain in the field of polymer materials, both in teaching and research. The University also offers a related PhD programme in Polymers and Biopolymers, distinguished with a quality mention by AQU (Catalan University Quality Assurance Agency).

Curriculum

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

60 ECTS credits

1st semester

Chemistry of Polymerisation	3
Polymer Physics	6
Polymer Processing and Coating Technologies	6
Nanotechnology	3
Biotechnological Processes	3
Advanced Materials	3
Experimentation and Instrumentation	3
Technology Innovation	3
Total ECTS credits (1st semester)	**30**

2nd semester

Polymer Characterisation	6
Biopolymers and Bioplastics	6
Master's Thesis	18
Total ECTS credits (2nd semester)	**30**

Compulsory

Aimed at

This one-year master's degree serves as an ideal complement for graduates of degrees in Chemistry, Chemical Engineering, Materials Engineering and other related degrees who wish to delve deeper into the field of polymers or who require specialised training in this field for professional reasons.

Admission

Graduates of the following university studies are eligible for direct admission to the master's programme:

- Pre-EHEA or bachelor's degree in Chemical Engineering, Materials Engineering, Biomedical Engineering and Engineering Physics.
- Pre-EHEA or bachelor's degree in Chemistry, Biotechnology and Pharmacy.

Those with a bachelor's degree in Biology, Food Science and Technology, Food Engineering, Industrial Technologies or Environmental Engineering must complete 4 credits in Fundamentals of Polymers.
For candidates with other degrees, the academic committee of the master's degree will evaluate the need for bridging courses (up to a maximum of 12 ECTS credits).
English Level B2 is required for admission to the master's degree.

Professional opportunities

The employment prospects for graduates of the master's degree in Polymers and Bioplastics are highly diverse, given the pivotal role that polymers (either traditional or advanced polymer materials) play in numerous sectors. Significant domains include packaging, consumer goods, textiles, electronics, automotive engineering, construction, sustainability, printing technologies, nanotechnology, biotechnology, biomedicine, sensors and energy. Graduates may be employed as the following.

- Polymer development specialist: engaging in research and development of new polymer materials or the improvement of existing ones for specific applications (e.g. in the automotive, electronics, construction or biomedical industries).
- Plastics processing engineer: optimising manufacturing and transformation processes.
- Quality control specialist: ensuring that purchased products comply with current standards and regulations.
- Polymers and bioplastics consultant: providing guidance to companies on material selection, production processes and sustainability strategies.
- Researcher in polymers and bioplastics at public research centres and corporate R&D departments.
- Plastic recycling technician: managing the collection, separation and recycling of plastic products.

Mobility

The Barcelona East School of Engineering (EEBE) offers mobility programmes with national and international universities. An academic exchange will allow you to acquire new knowledge, live in a different culture and improve a foreign language.

Language of instruction

All the courses are taught entirely in English, in accordance with the international nature of this master's degree.

Location

You will study this master's degree at the Barcelona East School of Engineering (EEBE) on the Diagonal-Besòs Campus, one of the most modern technological campuses in Europe.
With an area of 53,000 m2, the Campus currently has three buildings for teaching and research, where 400 professors and researchers, 3,500 students and 31 official research groups in a range of engineering fields carry out their activity. Additionally, it is equipped with student halls of residence.