

# MASTER'S DEGREE IN CHEMICAL ENGINEERING

**EEBE**

Barcelona East School of Engineering



UNIVERSITAT POLITÈCNICA  
DE CATALUNYA  
BARCELONATECH

# MASTER'S DEGREE IN CHEMICAL ENGINEERING

**+50**  
R&D projects in the  
chemical engineering  
field

**93%**  
UPC graduate employment rate  
Source: Graduate employment survey of master's degree  
graduates of Catalan universities (AQU Catalunya) 2020.

**+50**  
universities have international mobility  
programmes with the EEBE

Chemical engineering is directly concerned with obtaining products (fuels, solvents, medicines, paints, plastics, detergents, etc.) and services (water and energy supply, waste management and valorisation, etc.) that ensure our quality of life and without which modern life as we know it would be impossible. In addition, society demands that the most innovative technologies be used in these processes to ensure that they are efficient, sustainable, economically viable, safe and environmentally friendly.

The master's degree in Chemical Engineering (Smart Chemical Factories) aims to produce engineers with the high-level competencies that will allow them to deal with current challenges in chemical engineering (sustainability, circular economy, climate change, etc.) and to take advantage of the opportunities that Industry 4.0 technology can afford. The programme provides advanced training for chemical engineers who will easily adapt to positions of responsibility in companies, research centres, universities and public administrations.

## Aimed at

This master's degree addresses graduates in Chemical Engineering and other scientific fields such as chemistry, biotechnology and environmental sciences, who wish to acquire deeper knowledge of chemical engineering and Industry 4.0 related applications. It has been specially conceived to provide students with the skills needed to provide solutions to sustainable development challenges, including water solutions, energy-efficient solutions, the environment and the circular economy, healthcare, 4.0 technologies, smart mobility and smart cities.

## Admission

Holders of a bachelor's degree in Chemical Engineering will gain direct admission to the programme. Applicants with a degree in Industrial Technology Engineering, Chemistry, Biotechnology, Environmental Sciences, Nanoscience, Nanotechnology and other science and engineering degrees must complete bridging courses, up to a maximum of 30 ECTS credits, to access the programme. English level B2 and Spanish level B2 (in the case of foreign students) are required.

## Specialisations

The programme offers two specialisations: Green Chemical Process Engineering (GCPE) and Smart Polymer Engineering (SPE). The GCPE specialisation will provide students with technical and scientific skills for sustainable chemical process engineering. Students will be trained to face the

challenges of designing and transforming traditional process plants into circular economy models by integrating new chemical routes and innovative processes and technologies for the benefit of the environment, the economy and society. The SPE specialisation will provide students with technical and scientific skills for developing advanced polymer materials. Students will be trained to synthesise, characterise and process polymers and biopolymers for a wide variety of purposes, including tissue engineering, energy storage, optical data storage, environmental protection and medical applications.

## Professional opportunities

Graduates of the master's degree often find employment in a wide and diverse range of industries, including the chemical and petrochemical, pharmaceutical, polymers and plastics, environmental, biotechnological and food industries.

## 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.

## Work placement and work experience

The EEBE promotes the participation of its master's students in work placement at companies, institutions and national or international, public or private bodies. In the case of this master's degree, students can enrol for 12 ECTS credits,

rather than 12 specialisation credits, to gain professional experience in a leading company in the sector.

## Timetable

This is a face-to-face programme that takes place in the afternoons.

## Language of instruction

All the courses are taught entirely in English.

## 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 m<sup>2</sup>, 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.

## Curriculum

This information may be subject to change.  
Up-to-date information is available at [upc.edu](http://upc.edu)

**120 ECTS  
credits**

### 1st year 1st semester

Biotech Processes and Polymer Industry	6
Chemical and Catalytic Reaction Engineering	6
Data Analysis and Pattern Recognition	6
Sustainability and Circular Economy	6
Technology Innovation	6

### 2nd semester

Polymer Physics	6
Process Control	6
Management and Organisation	6
Specialisation subjects*	12

### 2nd year 1st semester

Nanotechnology	6
Risk and Safety in the Chemical Industry	6
Waste Resource Technologies	6
Specialisation subjects*	12

### 2nd semester

Specialisation subjects*	12
Master's Thesis	18

#### \* Specialisation subjects

##### Smart Polymer Engineering

Experimentation and Instrumentation / Polymer Transformation Processes / Biopolymers and Bioplastics / Polymerisation Chemistry / Advanced Materials / Design of Coating Equipment and Technology

##### Green Chemical Process Engineering

Industrial Water Technologies / Membrane Processes and Technologies / Advanced Catalytic Reactors / Process Integration / Circular Process Engineering / Computational Fluid Dynamics

# MASTER'S DEGREE IN CHEMICAL ENGINEERING

**This master's degree enables you to practise as a:**

- Chemical engineer.

**Two specialisations:**

- Smart Polymer Engineering.
- Green Chemical Process 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 socio-economic fabric of Catalonia and with a strong international focus.

The **EEBE** is a school of the **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 second 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](http://eebe.upc.edu/en)

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