

# Bachelor's degree in Biosystems Engineering

The **bachelor's degree in Biosystems Engineering** combines biology with the UPC's expertise in technology to produce engineers who have technical skills and a capacity for innovation in the biotechnology sector. You will receive multidisciplinary training in areas such as microbiology, biochemistry, molecular biology, bioinstrumentation, in vitro culture and bioreactor operation, as well as techniques for bioenergy and biomaterial production, environmental bioremediation and aquatic organism production. You will also learn the technological fundamentals of engineering for the design and use of facilities and equipment in the biotechnology industry and for the application of biotechnology in environmental recovery and improvement.

The programme includes fieldwork, laboratory and computer modelling practicals that provide training in technology, applied biology and the economic viability of companies in the sector.

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## GENERAL DETAILS

### Duration

4 years

### Study load

240 ECTS credits (including the bachelor's thesis). One credit is equivalent to a study load of 25-30 hours.

### Delivery

Face-to-face

### Language of instruction

Check the language of instruction for each subject (and timetable) in the course guide in the curriculum.

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

### Fees and grants

Approximate fees per academic year: €1,107 (€2,553 for non-EU residents). [Consult the public fees system based on income \(grants and payment options\)](#).

### Location

[Barcelona School of Agri-Food and Biosystems Engineering \(EEABB\)](#)

### Official degree

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

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## ADMISSION

### Places

55

### Registration and enrolment

[What are the requirements to enrol in a bachelor's degree course?](#)

### Legalisation of foreign documents

All documents issued in non-EU countries must be [legalised and bear the corresponding apostille](#).

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## DOUBLE-DEGREE AGREEMENTS

### Double-degree pathways at the UPC

You have the possibility of complementing this bachelor's degree with a specific pathway towards a double degree by taking

an additional number of credits from one of the other degrees taught at the School. Generally, this involves an additional year of study. To gain admission to a double degree of this kind you must have taken a minimum number of credits on one of the bachelor's degrees. The number of places is limited.

- Bachelor's degree in Biological Systems Engineering + Bachelor's degree in Food Engineering

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## PROFESSIONAL OPPORTUNITIES

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### Professional opportunities

- Technical management of industrial biotechnology facilities.
- Design and operation of bioreactors.
- Technical and project management in bioremediation.
- Wastewater management and treatment, biological treatment and waste valorisation.
- Design and management of facilities for the production, storage and processing of biological material.
- Design and management of aquaculture facilities.
- Research, design and development in the biotechnology sector.

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## ORGANISATION: ACADEMIC CALENDAR AND REGULATIONS

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### Academic calendar

[General academic calendar for bachelor's, master's and doctoral degrees courses](#)

### Academic regulations

[Academic regulations for bachelor's degree courses at the UPC](#)

### Language certification and credit recognition

Queries about [language courses and certification](#)

Barcelona School of Agri-Food and Biosystems Engineering (EEABB)

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## CURRICULUM

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Subjects	ECTS credits	Type
<b>FIRST SEMESTER</b>		
Chemistry I	6	Compulsory
Drawing for Engineering	6	Compulsory
General Biology	6	Compulsory
Mathematics I	6	Compulsory
Physics I	6	Compulsory
<b>SECOND SEMESTER</b>		
Chemistry II	6	Compulsory
Earth Sciences	6	Compulsory
Mathematics II	6	Compulsory
Physics II	6	Compulsory
Plant Biology	6	Compulsory
<b>THIRD SEMESTER</b>		
Business Economics and Management	6	Compulsory
Energy Systems and Components	6	Compulsory

<b>Subjects</b>	<b>ECTS credits</b>	<b>Type</b>
Geomatics	6	Compulsory
Hydraulics	6	Compulsory
Statistics	6	Compulsory
<b>FOURTH SEMESTER</b>		
Biochemistry	6	Compulsory
Electronic Circuits and Systems	6	Compulsory
Heat Transfer in Biological Systems	6	Compulsory
Microbiology and Microbial Metabolism	6	Compulsory
Molecular Biology and Biotechnology Tools	6	Compulsory
<b>FIFTH SEMESTER</b>		
Bioinstrumentation and Control	6	Compulsory
Bioreactors	6	Compulsory
Environmental Bioremediation	6	Compulsory
Genomics and Breeding	6	Compulsory
Mass Transfer in Biological Systems	6	Compulsory
<b>SIXTH SEMESTER</b>		
Aquatic Organism Production	6	Compulsory
Biological Treatment of Waste	6	Compulsory
Ecology and Environmental Management Systems	6	Compulsory
Experimental Projects in Biosystems and Agri-Food Engineering	6	Optional
Non-Food Biomass	6	Compulsory
Programming and Problem Solving in Bioengineering	6	Compulsory
<b>SEVENTH SEMESTER</b>		
Biotechnology for Production	6	Compulsory
Economic Botany	6	Optional
Entrepreneurship in the Agri-Food Sector	6	Optional
Life-Cycle Assessment of Products and Processes	6	Optional
Modelling and Simulation of Biological Systems	6	Compulsory
Sensory Analysis	6	Optional
Wastewater Treatment	6	Optional
Waves and Biological Systems	6	Optional
Work Placement	12	Optional
<b>EIGHTH SEMESTER</b>		
Advanced Statistics	6	Optional
Design of Biosystems Facilities	6	Compulsory
New Product Design and Formulation	6	Optional
Properties of Materials in Biological Systems	6	Optional
Bachelor's Thesis	18	Project

