

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.

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

Fees and grants

Approximate fees per academic year: €1,660 (€2,490 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](#)

ADMISSION

Places

50

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](#).

PROFESSIONAL OPPORTUNITIES

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.

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)

CURRICULUM

Subjects	ECTS credits	Type
FIRST SEMESTER		
Chemistry I	6	Compulsory
Drawing for Engineering	6	Compulsory
General Biology	6	Compulsory
Mathematics I	6	Compulsory
Physics I	6	Compulsory
SECOND SEMESTER		
Chemistry II	6	Compulsory
Earth Sciences	6	Compulsory
Mathematics II	6	Compulsory
Physics II	6	Compulsory
Plant Biology	6	Compulsory
THIRD SEMESTER		
Economics and Business Administration	6	Compulsory
Energy Systems and Components	6	Compulsory
Geomatics	6	Compulsory
Hydraulics	6	Compulsory
Statistics	6	Compulsory
FOURTH SEMESTER		
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
FIFTH SEMESTER		
Bioinstrumentation and Control	6	Compulsory
Bioreactors	6	Compulsory

Subjects	ECTS credits	Type
Environmental Bioremediation	6	Compulsory
Mass Transfer in Biological Systems	6	Compulsory
Non-Food Biomass	6	Compulsory
SIXTH SEMESTER		
Aquatic Organism Production	6	Compulsory
Biological Treatment of Waste	6	Compulsory
Ecology and Environmental Management Systems	6	Compulsory
Experimental Projects in Biosystems and Agrifood Engineering	6	Optional
Programming and Problem Solving for Engineering	6	Compulsory
Wastewater Treatment	6	Compulsory
SEVENTH SEMESTER		
Biotechnology for Production	6	Compulsory
Economic Botany	6	Optional
Entrepreneurship in the Agri-Food Sector	6	Optional
Genomics and Breeding	6	Optional
Life-Cycle Assessment of Products and Processes	6	Optional
Modelling and Simulation of Biological Systems	6	Compulsory
New Products Design and Formulation	6	Optional
Sensorial Analysis	6	Optional
Work Placement	12	Optional
EIGHTH SEMESTER		
Advanced Statistics	6	Optional
Design of Biosystems Facilities	6	Compulsory
Materials Properties in Biological Systems	6	Optional
Bachelor's Thesis	18	Project