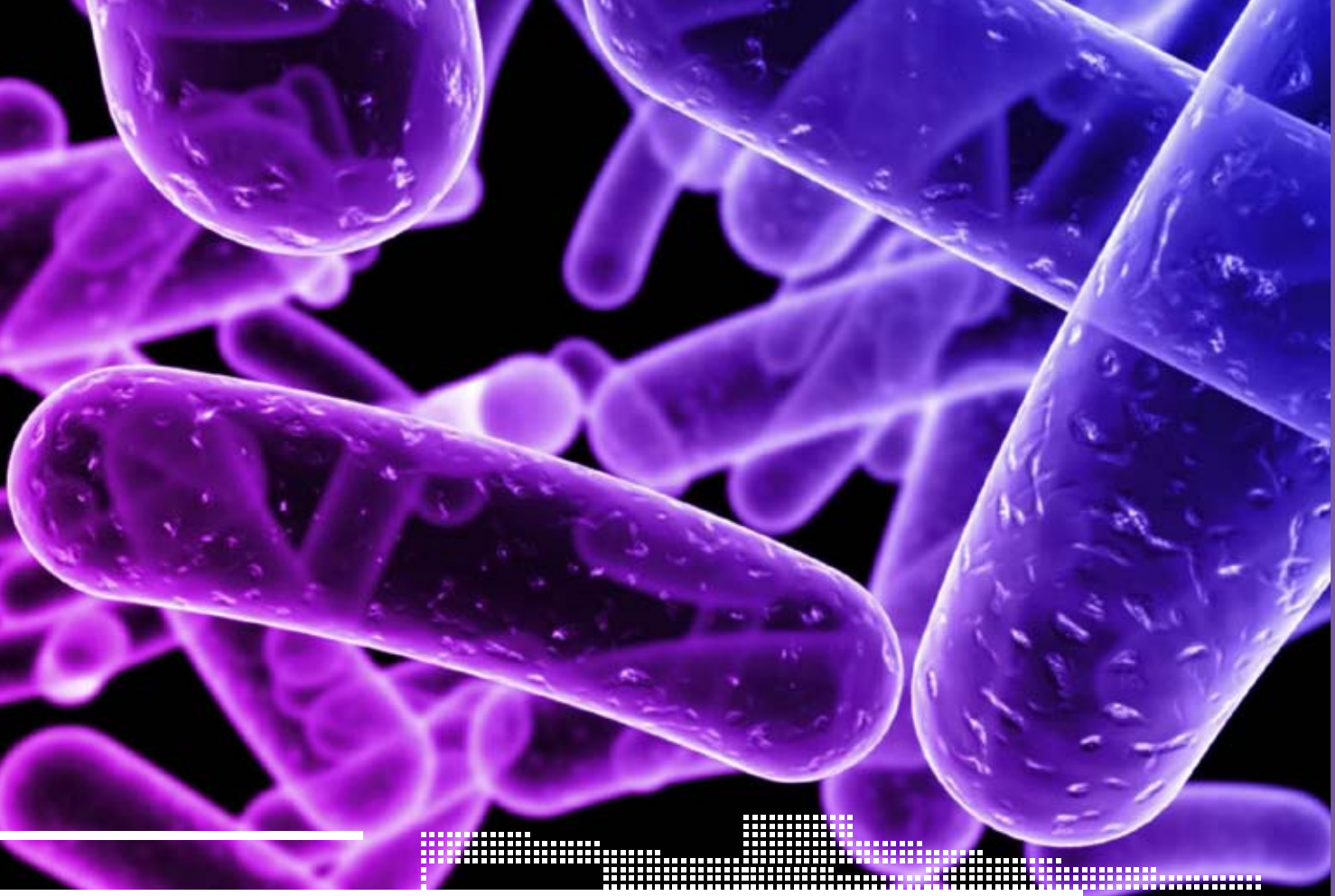

ESAB - UPC: Escola Superior d'Agricultura de Barcelona

Bachelor's Degree in

BIOSYSTEMS ENGINEERING

Biotechnology applied to food and bioprocessing industries, waste management and environmental issues

Biotechnology, Bioreactors, Bioenergy Production, Bioremediation, Modeling of Biological Systems, Evaluation of Organic Waste...

UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH
Escola Superior d'Agricultura de Barcelona

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Further information and application:
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ESAB - UPC: Escola Superior d'Agricultura de Barcelona

Bachelor's Degree in BIOSYSTEMS ENGINEERING

INTRODUCTION

The bachelor's degree in Biosystems Engineering will provide you with the scientific and technological knowledge necessary to design, plan and manage the production and processing of biological materials for use in industry, green energy production, and the recovery and improvement of natural and environmental resources. You will receive multidisciplinary training in the techniques of plant and animal production, as well as the fundamentals of design and management of bioprocesses aimed at environmental bioremediation, water treatment, production of aquatic organisms, industrial bioproducts and in vitro plant tissue culture. You will also learn the technological fundamentals of engineering applied to the design and use of facilities and equipment for the production and processing of biological materials.

Duration 4 years

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

Delivery Face-to-face classes.

PROFESSIONAL OPPORTUNITIES

- Industrial biotechnology.
- Environmental bioremediation.
- Design and operation of bioreactors.
- Bioinstrumentation.
- Production of industrial biofuels and bioproducts.
- Wastewater management and treatment.
- Design and maintenance of facilities for producing, storing and processing plant material.
- Plant tissue culture.
- Biological treatment and recovery of waste.
- Design and aquaculture facilities.

COURSE STRUCTURE

	FALL	SPRING
1st year	**FIRST SEMESTER**	**SECOND SEMESTER**
	General Biology (6) Drawing for Engineering (6) Physics I (6) Mathematics I (6) Chemistry I (6)	Plant Biology (6) Earth Sciences (6) Physics II (6) Mathematics II (6) Chemistry II (6)
2nd year	**THIRD SEMESTER**	**FOURTH SEMESTER**
	Ecology and Environmental Management Systems (6) Economics and Business Administration (6) Statistics (6) Hydraulics (6) Energy Systems and Components (6)	Biochemistry (6) Microbiology and Microbial Metabolism (6) Heat Transfer in Biological Systems (6) Geomatics (6) Electronic Circuits and Systems (6)
3rd year	**FIFTH SEMESTER**	**SIXTH SEMESTER**
	Non-Food Biomass (6) Molecular Biology and Biotechnology Tools (6) Bioinstrumentation and Control (6) Mass transfer in biological systems (6) Environmental Bioremediation (6)	Biotechnology for Production (6) Bioreactors (6) Aquatic organisms production (6) Programming and Problem Solving for Engineering (6) Wastewater Treatment (6)
4th year	**SEVENTH SEMESTER**	**EIGHTH SEMESTER**
	Modelling and Simulation of Biological Systems (6) Bachelor's Thesis or Project (18) Work Placement (12) National and International Mobility: Sicue, Erasmus...(up to 24)	Design of Biosystems Facilities (6) Biological Treatment of Waste (6) Bachelor's Thesis or Project (18)
	ELECTIVE COURSES: (up to 24)	**ELECTIVE COURSES: (up to 24)**
	New Products Desing and Formulation (6) Sensorial Analysis (6) Economic Botany (6) Entrepreneurship in the Agro-Food Sector (6)	Advanced Statistics (6) Materials properties in biological systems (6)

ECTS credits in brackets