

# BIOENGINEERING



# BACHELOR'S DEGREE IN Bioengineering

For more information about  
grants and financial aid visit:

[uic.es/grants](http://uic.es/grants)

## EXCHANGE UNIVERSITIES



### North America

- University of California, Riverside, US
- University of California, Santa Cruz, US
- University of California, Los Angeles, US
- University of California, Berkeley, US

**Among others...**

CONSULT ALL  
OUR INTERNATIONAL  
AGREEMENTS



### South America

- Austral University, Argentina

### Europe

- Brno University of Technology, Czech Republic
- Istanbul Bilgi University, Turkey
- Marmara Üniversitesi, Turkey
- Reykjavik University, Iceland
- Scuola Universitaria Professionale della Svizzera Italiana, Switzerland
- Universidade da Beira Interior, Portugal
- Université Nice Sophia Antipolis, France
- University of Stuttgart, Germany
- Sapienza University of Rome, Italy
- Silesian University of Technology, Poland
- University of Porto, Portugal
- Istanbul Medeniyet University, Turkey

**Among others...**

### Asia

- National Taipei University of Technology, China
- Pukyong National University Daeyeon Campus, South Korea
- Chung-Ang University Seoul, South Korea
- Dongguk University Seoul, South Korea
- University of Kyoto, Japan

**Among others...**

### Oceania

- The University of Western Australia, Australia
- University of Sydney, Australia
- University of Newcastle, Australia
- University of Queensland, Australia

**Among others...**



*“The interdisciplinary nature of this degree meant I was constantly learning new things, which fueled my curiosity about the world around me. I’m confident that everything I learned will enable me, one day, to help others from a fresh, innovative perspective.*”

*I’d like to think that in the future I will proudly call myself a bioengineer. I wanted to bridge the gap between medicine and engineering, and I loved the fact that it sounded complex and challenging. That challenge made me even more determined to devote myself every day to what I loved doing.”*

**BERTA MADURELL GALERA**

Graduated in  
Bioengineering  
by UIC Barcelona

Innovation,  
Portfolio and  
Strategy Developer  
in Novozymes

An innovative and 100% English-taught degree that combines science and technology to transform clinical care from a global perspective. The Bachelor's Degree in Bioengineering applies engineering principles to biological systems with the aim of improving patients' quality of life, developing devices, materials and technologies capable of replacing or regenerating damaged body parts.

You will leverage your knowledge of basic sciences – physics, chemistry and biology – to design materials that trigger biological processes and combine them with engineering principles to create solutions that regenerate tissues or replace bodily functions. And all within an international environment, alongside classmates from around the world, with English as the medium of instruction from the start.

Moreover, right from year one, you will have the opportunity to undertake curricular work placements in companies and research centres, a unique advantage that will fast-track your professional development and give you firsthand experience with the global biomedical industry from the outset.

## STUDENT PROFILE

If you want to make a positive impact on society by applying new technologies in the field of health and are eager to work in a multicultural environment, this is your degree.

- Innovative and curious mindset
- Interest in technology and medical engineering
- Motivation to conduct research and address global health challenges
- Strong intercultural communication skills
- Scientific and spatial reasoning
- Observation skills, responsibility and ability to work in international teams

## CAREER OPPORTUNITIES

By taking a globally focused degree, you will be able to work in highly international sectors:

- Healthcare, as part of medical teams
- Head of R&D+i departments and manufacturing processes
- Design of new machinery and creation/production of new materials
- Quality department
- Medical device verification
- Design and production of custom-made devices
- Consultancy in insurance companies
- Research

## REASONS TO STUDY THIS DEGREE

### 1. High global employability.

You will be able to work in diverse sectors such as medical technology, the pharmaceutical industry, the cosmetics industry, the dental sector, the food industry, or even in tech companies.

### 2. Fully international and 100% in English.

You will study on a multicultural campus, with students from over 100 nationalities and access to international mobility programmes at universities throughout Europe, Asia, the Americas and Oceania. You may also choose to continue your studies with a one-year postgraduate programme at UCLA Extension (California) in Project Management, or at UC Riverside in Bioengineering Management. By completing these postgraduate courses, you may be eligible to apply for a one-year work visa in the United States.

### 3. Personalized and flexible research projects.

The Faculty guides and assists you in finding the necessary resources to carry out your project, whether for internships or your final degree project, in research centers or universities around the world.

### 4. Unique curricular approach.

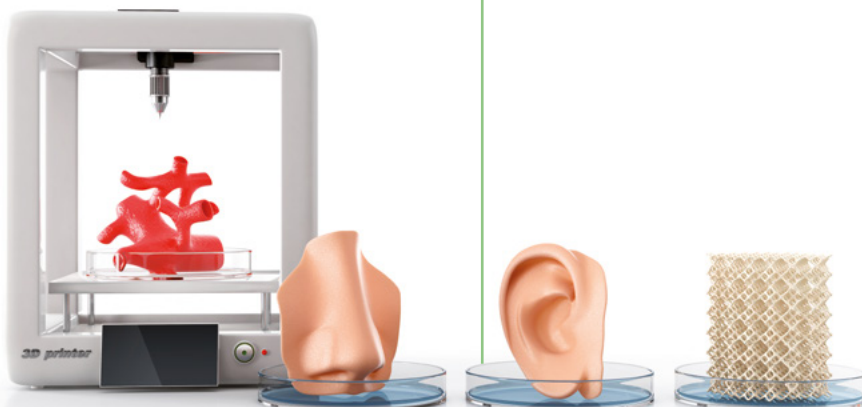
Focused on materials, the program explores two main aspects: the interaction of materials with cells and their ability to regenerate tissues, and the application of these materials to replace limbs and create biomedical devices or dental implants.

### 5. Faculty with a strong research background.

The Bioengineering faculty has training in internationally renowned institutions such as MIT or Harvard and stands out for its research activity. Faculty members publish in high-impact scientific journals and lead national and international projects, including European initiatives and prestigious fellowships such as Ramón y Cajal, Juan de la Cierva, and Beatriu de Pinós. Additionally, they are part of the Ranking of the World Scientists: World's Top 2% Scientists by Stanford University and have experience in patent development and technological innovation.

### 6. Degree integrated into the Bioengineering Institute of Technology.

The degree is taught at the prestigious Bioengineering Institute of Technology, where our active researchers lead the teaching. This unique combination provides an academic environment of excellence and professional training, preparing students to innovate in a constantly evolving sector.



# DO YOU KNOW THE DIFFERENCE BETWEEN BIOENGINEERING AND BIOMEDICAL ENGINEERING?

Watch the video for more information

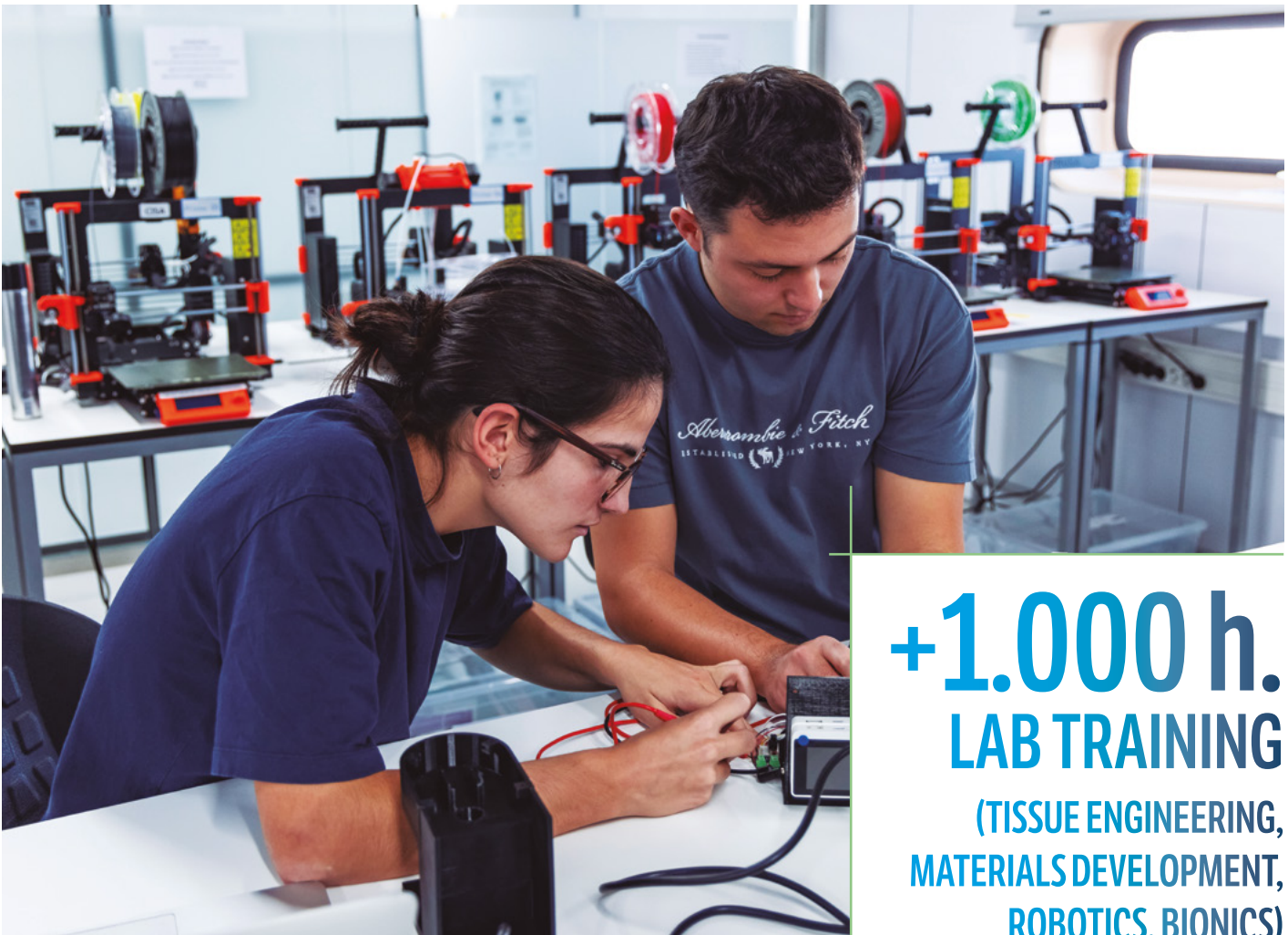


## BIOENGINEERING

- Bioengineering involves designing implantable medical and materials devices that can restore function to damaged tissue or organs.
- Bioengineers build devices that are inserted into the body or fitted on the outside of the body, and which are normally permanent.
- Bioengineering focuses on the knowledge of materials and their properties.

## BIOMEDICAL ENGINEERING

- Biomedical engineering involves designing and optimising treatment and diagnosis devices like the ones we find in hospitals.
- Biomedical engineers build devices that are usually used on the outside of the body and, if inserted into the body, are never permanent.
- Biomedical engineering is largely based on applied electronics, image analysis and robotics.



**+1.000 h.**  
**LAB TRAINING**  
(TISSUE ENGINEERING,  
MATERIALS DEVELOPMENT,  
ROBOTICS, BIONICS)

## OBJECTIVES AND COMPETENCIES

**The Bachelor's Degree in Bioengineering responds to a growing global demand: population ageing, the increase in chronic diseases and the expansion of disruptive technologies are driving the need for new medical devices, advanced materials and tissue regeneration solutions. This context, together with the rapid development of new biomaterials, robotics, sensors, 3D printing and tissue engineering, makes bioengineering a strategic field worldwide.**

**The objective of the degree is to train bioengineers capable of designing, developing and applying innovative technological solutions to real medical problems and improving patients' quality of life, working in collaborative and multinational environments.**

As a Bioengineering student:

- You will be taught to design and manufacture devices and biomaterials using state-of-the-art technologies, with direct applications in regenerative medicine, orthopaedics, prosthetics and implantable devices.
- You will learn in a multidisciplinary environment where engineering, biology, medicine, materials and computing converge, gaining the ability to tackle complex problems from multiple perspectives.
- You will master essential conceptual, technical and digital tools that will allow you to design, simulate, characterise and validate biomedical devices.
- You will develop the skills required to work in international teams, collaborating with professionals from diverse disciplines and cultures.
- You will learn to manage R&D+i projects, including regulatory documentation, material selection and procurement, manufacturing processes, quality management and team leadership.
- You will acquire the skills needed to develop:
  - Prosthetic devices and artificial joints (hip, knee, etc.)
  - Medical and bionic devices
  - Advanced cell therapies
  - Micro- and nanotechnologies applied to healthcare
  - Biomaterials for tissue regeneration

## KNOWLEDGES



Regenerative Medicine



Chemistry and Molecular Engineering



Applied Bioengineering



Biomechanics and Robotics



IT and Computing



Materials Engineering



Molecular Biology



Orthopaedic Prosthesis

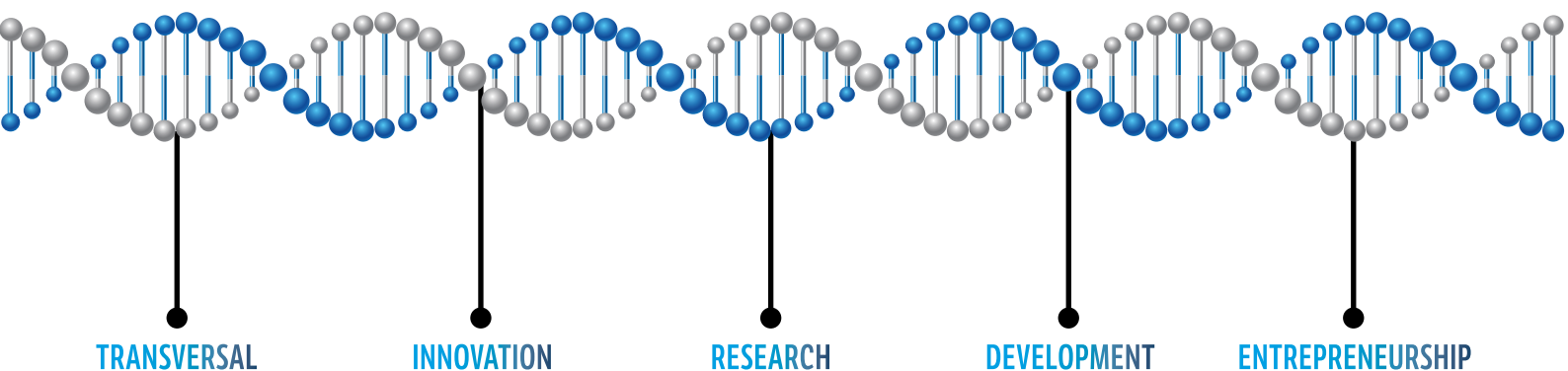


Biomedical Engineering



Tissue Engineering

## SKILLS



# STUDY PROGRAMME\*

8 SEMESTERS

240 ECTS

40 PLACES

FROM SEPTEMBER TO JUNE

SANT CUGAT CAMPUS

ENTIRELY IN ENGLISH

## 1

ECTS	SEMESTER 1
6	Algebra
6	Anatomy and Physiology
6	Materials
6	Mechanics
6	Chemistry/Biochemistry
<b>30</b>	<b>Subtotal</b>

ECTS	SEMESTER 2
6	Anthropology
6	Cell and Molecular Biology
6	Biomaterials and Biocompatibility
6	Basic Biomechanics
6	Calculus
<b>30</b>	<b>Subtotal</b>

**60 TOTAL**

## 2

ECTS	SEMESTER 1
3	Informatics
3	Graphical Design Techniques
6	The Basics and Electronic Systems
6	Biomedical Instrumentation
6	Material Selection
6	Applied Pathology
<b>30</b>	<b>Subtotal</b>

ECTS	SEMESTER 2
6	Biostatistics
3	Cell and Molecular Biology II
3	Laboratory Techniques and Methodologies
6	Techniques for the Configuration of Materials
6	Signals and Systems Theory
6	Ethics
<b>30</b>	<b>Subtotal</b>

**60 TOTAL**

## 3

ECTS	SEMESTER 1
6	Laboratory Biology Materials and Biomaterials
6	Tissue Engineering
3	Business Psychology
15	<b>Electives:</b>
	- Biomaterials Characterization Techniques
	- Micro and Nanotechnology
	- Pharmacology
	- Modeling and Simulation Techniques
	- Neurosciences Applied to Orthoprosthesis
	- Computing, Robotics and Bionics I
<b>30</b>	<b>Subtotal</b>
	Mandatory 15 + Electives 15

ECTS	SEMESTER 2
6	Lab. de Prototipo de Sistemas Biomédicos
6	Terapia Celular
6	Lab. de Ingeniería de Tejidos
12	<b>Electives:</b>
	- Protein Engineering and Genetics
	- Microbiology
	- Microbiology Lab
	- Drug Discovery and Delivery
	- Foundations of Pathophysiology
	- Computation, Robotics, and Bionics II
<b>30</b>	<b>Subtotal</b>
	Mandatory 18 + Electives 12

**60 TOTAL**

## 4

ECTS	SEMESTER 1
3	Business, Entrepreneurship and Society
3	Science and Technology Policies
6	Transversal Bioengineering
6	Electives Cultural Foundations I / II
12	<b>Electives:</b>
	- Design, Diagnosis and Imaging
	- Start-Up Project
	- Immunology
	- Therapeutic Methods in the Field of Orthoprosthesis
	- Advanced Laboratory in Tissue Engineering
<b>30</b>	<b>Subtotal</b>
	Mandatory 12 + Electives 18

ECTS	SEMESTER 2
3	Introduction to Bioengineering Research
10	External Academic Internships
17	Final Degree Project
<b>30</b>	<b>Subtotal</b>

**60 TOTAL**



AQU Catalunya registered on EQAR



\*The curriculum will undergo some changes that will not affect the general content of the degree. You can consult the update at: [uic.es/folleto-grad](http://uic.es/folleto-grad) or on the degree's website.

SAN FRANCISCO,  
USA

BER  
KE  
LEY

SUMMER  
SESSIONS

At UC Berkeley,  
learning doesn't take  
a summer break

Join us for the UC Berkeley Summer Sessions, one of the largest and most exciting summer programmes in the United States. With more than 600 courses to choose from, the Summer Sessions let you accelerate your learning while experiencing the academic rigour for which UC Berkeley is renowned.

WHY STUDY AT  
UC BERKELEY?

**1. Challenge Yourself**

Complete semester-long courses alongside UC Berkeley students in just one summer.

**2. Get Social**

Meet students from UC Berkeley and around the world. More than 16,000 students attend the Summer Sessions each year, including more than 3,000 visiting and international students.

**3. Experience the Bay Area**

Enjoy summer in the San Francisco Bay Area—one of the most beautiful and vibrant destinations in the world—known for its diversity, food, technology, arts and nature.

SCHOLARSHIPS

UIC Barcelona is offering **3 scholarships of €2,000** that will cover part of the UC Berkeley enrolment fees, depending on the number of credits the student wishes to take.

Berkeley Summer Sessions



LOS ANGELES,  
USA, MOSTLY  
6-12 MONTHS

UCLA

EXTENSION  
CERTIFICATE  
PROGRAMS FOR  
INTERNATIONAL  
STUDENTS

UIC Barcelona students who have completed a Bachelor's Degree in Advertising and Public Relations, Bachelor's Degree in Audiovisual Communication or a Bachelor's Degree in Journalism, are eligible for a discount on professionalising certificate programs at UCLA Extension.

These courses offer students multiple benefits, giving them a unique opportunity to gain work experience in the United States. In addition to gaining work experience in their area of study while still studying, the students also have the option to stay and work in the country once the programme is over via a 12-month work permit (Optional Practical Training - OPT).

IN COLLABORATION WITH



## WHY STUDY AT UCLA EXTENSION?

### 1. Prestige of University of California, Los Angeles (UCLA) and UCLA Extension.

UCLA is a world-renowned university. UCLA Extension is the continuing education division of UCLA. UCLA Extension is one of the oldest and largest continuing higher education providers in the United States.

**2. The UCLA Extension Certificate Programs** are equivalent to a postgraduate degree in Spain.

**3. Teaching methodology.** You will have access to academic programmes taught by experts in their respective fields.

**4. In-company internships.** You will have the option to complete internships in the industry during or after your studies in Los Angeles.

**5. International outlook.** Living in Los Angeles, studying at UCLA Extension, and experiencing life in the U.S. increases your proficiency in English and your cross-cultural awareness.

**6. Networking.** Establish contacts with industry professionals and gain access to the job market in the United States.

## FINANCIAL AID

UIC Barcelona is offering **scholarships** to contribute towards the fees for UCLA Extension Certificate programs. The selection process will take place in February and the main pre-requisites are:

- To have graduated from UIC Barcelona the same year or the year before the mobility.
- A good academic record
- At least C1 level English.
- To be highly motivated.



## UCLA EXTENSION CERTIFICATE PROGRAMS

Offer in-depth study of a professional field. (Accounting & Finance, Art & Design, Business & Management, Digital Technology, Engineering, Entertainment, Humanities & Sciences, International Trade & Commerce, Legal programs & Marketing)

Check all the Certificate Programs available for International Students at:  
**[www.uclaextension.edu/international-students](http://www.uclaextension.edu/international-students)**

# ABOUT UIC BARCELONA

**Since 1997, we have been committed to making a positive impact on society.**

Our mission is to educate individuals who contribute to humanising the transformation of society through professional excellence, the pursuit of impact, integrity and social commitment. We offer 16 bachelor's degrees, 11 double degrees, 52 international double degree programmes, 4 doctoral programmes and more than 70 master's degrees and postgraduate courses to a community of 9,400 students.

**We have eight faculties located across two campuses in Barcelona and Sant Cugat del Vallès.**

We believe in lifelong learning and provide personalised

guidance, a holistic, student-centred approach, ongoing professional engagement and innovative teaching and research methods.

We are strongly international in character, with people from more than one hundred nationalities living and studying on our campuses.

We are connected to society and the business world through 14 chairs, four business classrooms, six research institutes and three university clinics.

**WE ARE A HUMANISTIC, SUSTAINABLE, INNOVATIVE AND GLOBAL UNIVERSITY AND APPEAR IN THE TOP NATIONAL AND INTERNATIONAL RANKINGS.**



## RATING



## RANKINGS



**FIND ABOUT ALL OUR RANKINGS**



# UNIVERSITY LIFE

Experience the best university experience at UIC Barcelona.

Studying at UIC Barcelona involves all-round personal growth. We promote solidarity, culture and sporting values.

**Pre-enrollment and documentation:**  
[uic.es/doc](http://uic.es/doc)

**Accommodation:**  
[uic.es/accomm](http://uic.es/accomm)



## STUDENT SERVICES

We ease your transition into the university system and offer support throughout your academic journey.

We will help you with everything related to university life: **accommodation, grants and financial aid, educational support, workshops and extracurricular activities, student ID cards and more.**

We will provide advice about student halls, residences and other options that suit your needs. We are also part of **Barcelona University Centre (BCU)**, the official reception service for those coming to study or conduct research in Barcelona.

As a student at UIC Barcelona, you can take part in a variety of activities that complement your classes and enhance your personal and professional development such as: **theatre, painting, choir, reading, debate, exhibitions or competitions**, which will help you take your creativity to the next level and develop your **soft skills**, highly valued among employers.

We also offer sports activities and special rates and discounts at external facilities. Our teams compete in interuniversity leagues and competitions at Catalan, Spanish and international level.

In addition to this, the **Sport Talent programme** enables high-performance athletes to combine professional sport with their university studies and apply for a grant.

You can take part in solidarity projects and experiences that will change your life and the lives of others. We organise solidarity events such as **Social Day**, local volunteering initiatives and international volunteer programmes during the summer, offering you the chance to have a transformative experience.

## INTERNATIONAL EXPERIENCE

UIC Barcelona's international commitment is embedded in our identity and across all our activities.

We are open to the world, which is reflected in our extensive network of international agreements and mobility programmes for students, teaching staff, researchers and administrative and service staff.

**We offer around fifty international double degree programmes.**

People from over one hundred nationalities live and study on both campuses, providing a cultural richness and diversity that form an integral part of the students' education and learning.

## MENTORING & COACHING

**Boost Your Talent** is UIC Barcelona's personal development and mentoring programme, designed to support your growth throughout your studies.

Its aim is to help you understand your competences, identify your strengths and areas for improvement and certify these skills once you complete your degree.

Through this programme, you will receive guidance from a personal mentor who will accompany you in nurturing your talent and maximising your potential.

**Furthermore, if after your bachelor's degree you choose to pursue a master's or postgraduate degree at the University, you will also have access to a coaching process to help you plan your next steps.**

## CHAPLAINCY

The Chaplaincy Service offers a space for **reflection, dialogue and spiritual growth** and organises activities open to the entire university community.

## LINGUISTIC SERVICES

At UIC Barcelona, you may study multiple languages, both on-site and online, and certify your level of Catalan through official examinations. You may also take part in language support and welcome activities.

## ALUMNI AND CAREERS

Once you have completed your studies, you will become part of Alumni UIC Barcelona, an international community of **more than 30,000 people**.

At UIC Barcelona, we believe that being a university student is a way of living and seeing the world, and through **Alumni, these values will continue to be part of your life.**

Our goal is to foster lifelong learning and professional development and to maintain strong connections with the community through networking and reunions.

Through the Careers Service, we offer a **comprehensive guidance service that enhances the employability** of both current students and alums. This includes a Job Bank, a mentoring programme and a professional guidance service, among many other resources and activities.

Discover all the activities and services at **[alumni.uic.es](http://alumni.uic.es)**



Get in touch with your advisor



**Sant Cugat Campus**

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