



UNIVERSITAT DE
BARCELONA

Faculty of Biology

Biology

Biochemistry

Biotechnology

Env. Sciences

Biomedical Science

Marine Sciences



The University of Barcelona



Congratulations!

Now it's yours. After many years of effort, it is time to choose where you want to orientate your professional life, and at the University of Barcelona we will help you in this process.

Nowadays, being informed and knowing how to navigate between so much information are two essential conditions when making good decisions. This brochure will help you find your academic and professional life.

Here you will find information on a very wide and varied offer of undergraduate degrees. We want to put at your disposal a university that has the experience of more than 500 years of history and that, at the same time, is a leader in Spain in the majority of university rankings.

As a public university, we aim to ensure access to higher education without any other limitation than merit. We are an institution with the responsibility and commitment to educate citizens from the promotion of critical thinking and the civic and social values of a democratic society. Ours is a public university that looks for everyone to have opportunities, and sensitive to diversity and plurality.

The UB is, therefore, a powerful university to train and interesting to live a few years in a pleasant atmosphere, where coexistence, critical spirit, culture, sport are encouraged. We work to build together your future.

At the University of Barcelona we are hosting more than 11,000 new students each year. And, if you want, we will be very pleased to welcome you. The decision is yours. I am convinced that some of the best years of your life begin, and we want to share them with you. We hope that in the future you feel proud of being a member of this university and that you can say with joy and energy: "I am UB!"

Joan Elias
Rector



**Most innovative
university in
Spain**

(Reuters Top 100)

300.000

Euros per year to the programme
bkUB, to ensure that economic
difficulties are not an obstacle to study

800

Destinations to international
universities from all around the world
and more than 1,000 students joining
mobility programmes each year

**More than 200 orientation
activities to improve the
employability of students**

85 %

of good performance

14.041

Students choose UB as their
first option

75

Bachelor Degrees
in all areas of knowledge

more than

150

Masters

Around

500

**Postgraduate
courses**

48

**Doctoral
programmes**

Top
25 best university in the world with more than 400 years of history (THE World University Rankings)

International rankings

166

worldwide
(64 in Europe)

QS World University Rankings

81

worldwide
(24 in Europa)

Best Global Universities Rankings

Agreements with
122 of the 200
best universities
(THE World University Rankings)

17

libraries with more than
800.000 documents
in loan every year

14.000

Students doing internships,
more than 200 of them abroad

87 %

employment
rate

1.613

Athletes and **90 medals**
in competitions across Catalonia,
Spain and Europe

100.000 m²

of facilities dedicated to health and sports

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The Faculty of Biology

Position of the UB in Biosciences according to the QS University Ranking

Area	Position
Barcelona	1
Catalonia	1
Spain	2
Europe	26
World	77

The Faculty of Biology was founded in 1974, and was a pioneer in Spain. It is located on Avinguda Diagonal, on the knowledge campus of Barcelona, the BKC.

The three basic functions of the Faculty are:

- Teaching: the transmission of knowledge.
- Research: the generation of knowledge.
- The relationship with society: development and transfer of research, and the incorporation into the labor market.

The Faculty has three buildings: the Margalef building, the Aulari building and the Prevosti building. Classrooms have different capacities to adapt to the various educational needs. Subjects that require the study of living things in their environment are carried out through field practices.

The Faculty is equipped with laboratories, a greenhouse, experimental fields, a library and specific scientific facilities.

To contribute to the student learning process, a new teaching innovation project is being implemented applying the new information and communication technologies.

In the same way that university studies are renewed and interact in the European context, the Faculty of Biology of the University of Barcelona has assumed its role in this challenge and has wide experience in the teaching of five full consolidated Bachelor's Degree courses: Biology, Biotechnology, Biomedical Sciences, Biochemistry, Environmental Sciences and Marine Sciences.

On the other hand, the Faculty offers fifteen Master's degrees (Environmental Agrobiology, Biological Anthropology, Aquaculture, Biodiversity, Marine Sciences: Oceanography and Marine Environment Management, Ecology, Management and Restoration of the Natural Environment, Integrative Physiology, Genetics and Genomics, Advanced Immunology, Advanced Microbiology, Neurosciences), as well the participation in the interdisciplinary masters of Biomedicine, Molecular Biotechnology, Nutrition and Metabolism.

All this educational offer represents a great variety of choice for students to be able to participate in the real needs of a changing society..

Bachelor's Degrees at

The Faculty

Biology

ECTS: 240 (4 years)

The Bachelor's Degree in Biology provides the knowledge to recognize the living beings, their different degrees of organization and the biodiversity: concept and origin of the life, chemical structure of the living beings, types and degrees of organization, genetics and biodiversity, evolution and development.

It allows to recognize the activities that carry out living things and the mechanisms that underlie these activities: metabolism, replication, transcription, translation and modification of genetic material, cell signaling, regulation and integration of fine processes. It also allows to interpret the evolutionary processes that have developed over time and have led to the current biodiversity.

It enables to recognize the adaptations of living beings to the environment (physical environment, structure and dynamics of populations and communities, energy flows and matter). It prepares you to know, analyze and solve problems about biological issues, and be able to do trials.

It promotes involvement in the work of safe laboratory and field work, promoting the knowledge of ethical and bioethical aspects of the area.

What will you study?

Subject	ECTS
Basic Training	60
• Mathematics	
• Chemistry	
• Physics	
• Geology	
• Biology	
• Biochemistry	
• Physiology	
Compulsory	108
Optional	60
Final research project	12

Curriculum

First year: 60 ECTS	
First semester	ECTS
Mathematics	6

Physics	6
Chemistry	6
Earth System	6
Biology I	6

Second semester ECTS

Cytology and Histology	6
Structural Biochemistry	6
Biologic anthropology	6
Statistics	6
Biology II	6

Second year: 60 ECTS

First semester ECTS

Molecular Genetics	6
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Second semester ECTS

Genetics: gene analysis	6
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Annual ECTS

Botany	12
Zoology	12
Animal physiology	12
Microbiology	12

Third year: 60 ECTS

First semester ECTS

Metabolic Biochemistry	6
Evolutiinart Ecology	6
Cell Biology	6
Evolution	6

Second semester ECTS

Ecosystems and communities ecology	6
Optional	18

Annual ECTS

Plant physiology	12
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Fourth year: 60 ECTS

First semester ECTS

Experimental design and data analysis	6
Optional	24
Practicum I	6

Optional	6
Practicum II	6
Final Research Project	12

Mentions

- Biodiversity
- Molecular, Cell and Systems Biology

Where will you be able to work?

- Healthcare: resident biologist (BIR), clinical laboratory, human reproduction, public health, nutrition and diet, animal and plant health.
- Research
- Pharmaceutical, agro-food and chemical industry, production and quality management.
- Farming sector in exploitation and optimization of plant crops, animals and fungi, and search of new sites of exploitable living resources.
- Environment: planning, conservation and control of the territory, management of natural resources, waste management, impact assessment and restoration of the natural environment.
- Information, documentation and dissemination: museums, natural parks, zoos, publishers, communication offices, companies, scientific foundations, press or television.
- Trade and marketing of products and services related to biology
- Management and organization of companies related to biology.
- Teaching in secondary and university education..

Labor insertion: 84.30% of UB graduates are working three years after finishing their studies (AQU, 2017).

Biochemistry



ECTS: 240 (4 years)

The degree in Biochemistry provides the necessary knowledge to understand biological processes and the molecular mechanisms on which they are based.

It promotes the acquisition of skills in the standard techniques of biochemistry and experimental design through laboratory courses, along with specific practices associated with the different subjects of study: microbiology, cell biology, molecular genetics and genetic engineering, physiology, tissue engineering, bioinformatics, structure and function of macromolecules.

It promotes the involvement in the work of a safe laboratory, and promotes the knowledge of the ethical and bioethical aspects of the area. It prepares graduates to develop a wide variety of professional activities, such as basic and applied research, work in clinical laboratories or in hospital services, tasks of technological development, production and management in various industrial sectors, jobs in the field of information and dissemination, as well as teaching

At the same time, it promotes the acquisition of transversal competences that facilitate the incorporation into the work environment, the exercise as professionals and the efficient adaptation to a rapidly evolving scientific, technological and social environment.

In addition, the degree of Biochemistry also facilitates access to postgraduate studies in the same area and related areas.

What will you study?

Subject	ECTS
Basic training	60
• Mathematics	
• Chemistry	
• Physics	
• Biology	
• Biochemistry	
• Physiology	
Compulsory	132
Optional	36
Final Research Project	12

Curriculum

First year: 60 ECTS

First semester	ECTS
Chemistry I	6
Mathematics	6
Laboratory I	6
Biology	6
Organic Chemistry	6

Second semester	ECTS
Cytology and Histology	6
Principles of organic reactions	6
Statistics	6
Physics	6
Chemistry II	6

Second year: 60 ECTS

First semester	ECTS
Bioenergetics	6
Molecular Genetics	6
Cell Biology	6
Macromolecule structure	6
Microbiology	6

Second semester

	ECTS
Molecular and cell biology of microorganisms	6
Molecular Interactions	6
Animal Physiology	6
Genetic analysis	6
Laboratory II	6

Third year: 60 ECTS

First semester	ECTS
Genetic Engineering	6
Molecular Endocrinology and cell signaling	6
Metabolic pathways	6
Plant physiology	6
Laboratory III	6

Second semester	ECTS
Cell culture and tissue engineering	6
Immunology	6
Metabolism regulation	6
Bioinformatics	6
Laboratory IV	6

Fourth year: 60 ECTS

First semester	ECTS
Industrial microbiology and biochemistry	6
Experimental Design and Data Analysis	6
Optional	12
Practicum I	6

Second semester	ECTS
Optional	12
Practicum II	6
Final Research Project	12

Where will you be able to work?

Basic and applied research in public centers.
Research applied to the chemical,
pharmaceutical, food and biotechnology
industries.

Hospital laboratories.

Analysis and diagnostic laboratories.

Companies of services, materials and scientific
equipment.

Companies of communication and scientific
dissemination

Secondary and university education

Labour insertion: 86,70% of UB graduates
are working three years after finishing their
studies (AQU, 2017).

Biotechnology



ECTS: 240

This degree aims to provide the training and skills of biotechnology, in both scientific and practical aspects. It provides a solid base in the knowledge of the molecular mechanisms of living beings and also in the biotechnological applications that arise from them, for production of goods and services, the industrial scaling of processes and the bioremediation of the environment.

Training in the basic aspects of the legislation, management and commercialization of biotech products and services, and in the entrepreneurial spirit, the transfer of knowledge and the development of patents.

It also provides skills for the development of biotechnology research (new technologies and border strategies), with a view to subsequent application. It promotes the involvement in the work of a safe laboratory and promotes the knowledge of ethical and bioethical aspects of the area. Through transversal activities programmed in the various subjects, it stimulates work in team and communication strategies.

What will you study?

Subjects	ECTS
Basic training	60
• Mathematics	
• Chemistry	
• Physics	
• Biology	
• Biochemistry	
• Physiology	
Compulsory	114
Optional	54
Final research project	12

Curriculum

First year: 60 ECTS

First semester	ECTS
Mathematics	6
Physics	6
Chemistry	6
Biology I	6
Biology II	6

Second semester	ECTS
Cytology and Histology	6
Biochemistry	6
Organic chemistry	6
Statistics	6
Chemical Engineering	6

Second year: 60 ECTS

First semester	ECTS
Metabolism	6
Molecular Genetics	6
Cell Biology	6

Biologic macromolecules	6
Microbiology	6

Second semester ECTS

Biology of Microorganisms	6
Animal physiology	6
Genetic analysis	6
Optional	12

Third year: 60 ECTS

First semester	ECTS
Genetic engineering	6
Industrial Microbiology	6
Immunology	6
Cell culture and Tissue Engineering	6
Environmental Microbiology	6
Bioinformatics	6
Optional	6

Fourth year: 60 ECTS

First semester	ECTS
Experimental Design and Data Analysis	6
Legal Aspects and Project Management	6
Optional	12
Practicum I	6
Second semester	ECTS
Optional	12
Practicum II	6
Final Research Project	12

Honours

- Molecular Biotechnology
- Agro-food Biotechnology

Where will you be able to work in?

- Industrial research: pharmaceutical, biomedical and veterinary.
- Research of new biotechnological processes in research centers.
- Biological material production industry: enzymes, antibodies, protein engineering, antibiotics, vitamins.
- Chemical industry: processes of chemical engineering and sustainable processes..
- Food industry: food production and study of conservation and processing.
- Optimization of biotechnological processes
- Biotechnological industry of materials and nanobio-technology.
- Primary production companies
- Environmental Companies
- R+D management
- Environmental technology: processes for bioremediation and recovery of waste.

Labour insertion: 80,80% of UB graduates are working three years after finishing their studies (AQU, 2017).

Environmental Science



ECTS: 240

This degree aims to provide knowledge of theoretical and practical aspects of natural sciences and offers the tools to apply them. It provides adequate training in various aspects of the environment, which enables it to deal with environmental issues, taking into account the rest of the social and economic problems.

It provides a multidisciplinary and global vision of the environmental problems and gives a specific orientation towards the conservation and management of the environment and natural resources in relation to the health of the ecosystem, including the human being.

What will you study?

Subjects	ECTS
Basic Training	60
• Mathematics	
• Chemistry	
• Physics	
• Biology	
• Geology	
• Geography	
Compulsory	126
Optional	42
Final Research Project	12

Curriculum

First year: 60 ECTS	
First semester	ECTS
Mathematics	6
Physics	6
Chemistry	6
Society and Environment	6
Biology	6
Second semester	ECTS
Statistics	6
Plant Biology	6
Environmental Law	6
Chemistry of Aquatic Systems	6
Geology	6

Second year: 60 ECTS	
First semester	ECTS
Animal Biology	6
Geochemistry	6
Geography and Climatology	6
Soil Science	6
Environmental Microbiology	6
Second semester	ECTS
Environmental Technology	6
Ecosystems Ecology	6
Geographic information systems	6
Urban Planning	6
Basic Economy	6
Third year: 60 ECTS	
Environmental Impact Assessment	6
Pollution and Chemical Analysis	6
Waste management	6

Second semester	ECTS
Sustainable development	6
Biodiversity Conservation	6
Environmental Toxicology	6
Optional	12

Fourth year: 60 ECTS	
Primer semester	ECTS
Data analysis	6
Optional	18
Practicum I	6
Second semester	ECTS
Optional	12
Practicum II	6
Final Research Project	12

Honours

- Environmental Management
- Environmental Technology

Where will you be able to work?

- Teaching and research
- Environmental Management
- Quality management in companies and organizations
- Environmental Impact Assessments and Consulting
- Environmental Technology

Labour insertion: 80% of UB graduates are working 3 years after graduating (AQU, 2017)

Biomedical Sciences

ECTS: 240

Biomedicine is a field of biosciences that focuses its efforts on the transfer of knowledge in basic research into concrete applications for the improvement of public health.

The degree in Biomedical Sciences, which is offered with the Faculty of Medicine, is based on the understanding of the structure and function of the human body, with special emphasis on the determinants of health and illness, including genetic and environmental influences. The program integrates transversal knowledge from genetics, biochemistry, microbiology, physiology, cellular biology or statistics to provide an overview of the causes of pathology and the tools available to study, diagnose and treat it. Several aspects of clinical disorders at a molecular and cellular level are addressed

In addition, this degree is an excellent platform to develop a research career in the field of biology and biomedicine.

What will you study?

Subjects	ECTS
Basic training	66
• Mathematics	
• Chemistry	
• Physics	
• Biology	
• Human Anatomy	
• Biochemistry	
• Physiology	
Compulsory	156
Optional	6
Final Research Project	12

Curriculum

First year: 60 ECTS

First semester	ECTS
Cytology	6
Chemistry	6
Introduction to Biomedicine	6
Anatomy	6
Applied Mathematics	6

Second semester	ECTS
Statistics	6
Laboratory and Biomedical Instrumentation	6
Biochemistry	6
Histology	6
Biophysics	6

Second year: 60 ECTS

First semester	ECTS
Molecular Genetics	6

Human Physiology I	6
Metabolism	6
Human Physiology II	6
Cell Biology	6

Second semester ECTS

Genetic analysis	6
Microbiology	6
Clinical Microbiology	6
Nutrition	6
Cell Biology of the pathology	6

Third year: 60 ECTS

First semester ECTS

Cancer Biology	6
Neurobiology	6
Molecular endocrinology Molecular and Cell Signaling	6
Genetic Bases of Diseases	6
Integrated Biomedicine	6

Second semester ECTS

Immunology	6
Development Biology	6
Pharmacology	6
Pathophysiology	6
Integrated Biomedicine	6

Fourth year: 60 ECTS

First semester ECTS

Experimental design and data analysis	6
Analytic Biochem & Clinical Analysis	6
Diagnostic and Image Techniques	6
Optional I	6
Integrated Biomedicine	6

Second semester ECTS

Optional 2	6
Practicum I	6
Practicum II	6
Final research project	12

Where will you be able to work?

- Resident internal biologist (BIR or other IR laboratory specialties that can be created).
- Clinical laboratories.
- Pharmaceutical industry or veterinary industry: production of medications, vaccines and diagnostic tests.
- Agri-food industry: safe food production in the health field.
- Other industries: biotechnology, products and equipment of biomedical laboratory.
- Biomedical research.
- Institutes of public health.
- Health problem monitoring agencies.
- Medication use control agencies.
- Business services and advice on products for diagnosis or biomedical research.

Labour insertion: 83,90% of UB graduates are working three years after graduating (AQU, 2017).

Where will you study?

- Campus Diagonal
Facultat de Biologia
Av. Diagonal, 643
08028 Barcelona
934 021 086
- Campus Clínic
Facultat de Medicina i Ciències de la Salut
Casanova, 143
08036 Barcelona
934 035 258
- Campus de Bellvitge
Facultat de Medicina i Ciències de la Salut
Feixa Llarga, s/n
08907 Hospitalet de Llobregat
934 034 752

Marine Sciences

ECTS: 240

The degree in Marine Sciences aims to train transdisciplinary professionals in this field. Students will receive extensive and rigorous training in Geology and Biology, in other basic sciences, as well as in aspects of law and the economy related to the sea. In addition, they will be introduced in the use of advanced tools, with a prominent practical component, taking advantage of the amount of research centers, companies and administrations with activities related to the sea that exist in Barcelona and its surroundings. All of this will enable them to adapt to a highly changing working environment.

The activity sectors related to the degree are the food sector, the energetic sector (prospecting and exploitation of renewable and non-renewable energy resources), the management, planning and actions on the coast, the marine environment and its conservation, the operational oceanography and the scientific research and teaching, among others. Graduates will be able to incorporate themselves into private and public companies, administrations, research centers and international organizations.

What will you study?

Subjects	ECTS
Basic Training	60
• Biology	12
• Geology	12
• Physics	12
• Mathematics	12
• Chemistry	12
Compulsory	150
Optional	18
Final Research Project	12

Curriculum

First year: 60 ECTS

First semester	ECTS
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Introduction to Marine Science	6
Biology I	6
Geology I	6
Mathematics I	6
Chemistry I	6

Second semester	ECTS
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Biology II	6
Geology II	6
Mathematics II	6
Chemistry II	6
Physics I	6

Second year: 60 ECTS

First semester	ECTS
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Physics II	6
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Marine Microbiology	6
Marine Geology	6
Oceanographic Chemistry	6
Statistics	6

Second semester ECTS

Descriptive oceanography	6
Marine Botany	6
Marine Zoology	6
Economics	6
Applied remote sensing	6

Third year: 60 ECTS

First semester ECTS

Oceanographic Dynamics	6
Marine Biogeochemistry Biologic	6
Oceanography Marine Animals	6
Physiology	6
Environments and Sedimentary Marine Processes	6

Second semester ECTS

Marine Ecology	6
Conservation of species and habitats	6
Cartography of Marine Habitats	6
Coastal Sedimentary Dynamics	6
Geological Risk and Marine Resources	6

Fourth year: 60 ECTS

First semester ECTS

Oceans and climate change	6
Human impact in marine environment	6
Fishing	6
Regulatory Framework and Integrated Marine Management	6
Introduction to Final Research Project	6

Second semester ECTS

Optional	18
Marine Protected Areas	3

Big Marine Vertebrates	3
Genetics of Marine Organisms	3
Marine Pollution and Ecotoxicology	3
Advanced Statistics	3
3D representation in Marine Sciences	3
Numerical Modeling in Oceanography	3
Instrumentation and Advanced Technologies for Marine Research	3
Analysis of river basins	3
Sedimentology of Carbonates and Marine Evaporites	3
Marine renewable energies	3
Coastal engineering	3
Oceanic Engineering	3
Risks in Oceanographic Engineering	3
Practicum	3
Final research project	12

Where will you be able to work?

- Public companies
 - International Agencies
 - Consulting
 - Cooperation for development
 - Energetic, natural resources, infrastructures and marine companies
 - Ocean governance
 - Freelance
 - NGOs
 - Underwater cartography
 - Dragging
 - Studies of environmental impact
 - Infrastructures and coastal and marine facilities
 - Underwater intervention
 - Navigation (support)
 - Operational oceanography
 - Protected marine areas
 - National and international advice and consultancy
 - Assessment, mitigation and correction of natural and anthropogenic impacts
 - Conservation of species and habitats
 - Natural heritage
- Other fields: natural resources, research, teaching, biotechnology...

Courses in English

Incoming students at the faculty of biology have the possibility of taking either bachelor, master or Lab training courses. We recommend a minimum course load of 15 ECTS for one semester or 30 ECTS for the whole year. Here it follows information about the different possibilities you have.

Bachelor's courses (subjects) in English

You can take any subject in Catalan/Spanish. But if you don't speak it, we also have a few courses in English which are:

Cytology	1st semester
Cell Biology	1st semester
Laboratory III (few places available)	1st semester
Cancer Biology	1st semester
Genetic Engineering	1st semester
Transgenesis and Animal Breeding	1st semester
Design and Evaluation of Bioactive Molecules	2nd semester
Immunology	2nd semester
Molecular Genetics	1st semester
Developmental Biology	2nd semester
Neurogenetics of Behaviour	2nd semester
Research project Development	2nd semester
Genetic diseases	2nd semester
Molecular Genetics	1st semester
Plant physiology & biochemistry	1st semester

Masters

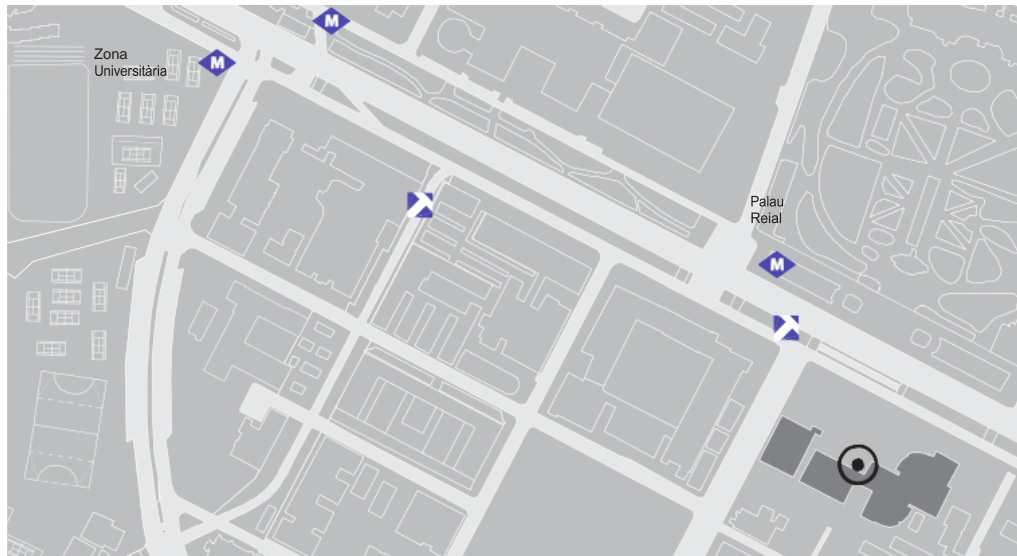
The Faculty of Biology offers 15 official Master programmes:

Advanced Immunology
Environmental Agrobiology
Advanced Microbiology
Erasmus Mundus in Leading International Vaccinology Education (LIVE)
Aquaculture
Genetics and Genomics
Biodiversity
Integrative physiology
Bioinformatics and Biostatistics
Neurosciences
Bioinformatics for health sciences
Oceanography and Marine Environmental Management
Biological Anthropology
Plant Biology, Genomics and Biotechnology
Ecology, Environmental Management and Restoration

Master's courses (subjects) in English

Master programmes have a wide offer of courses taught in English and we have a master fully in English: the Msc in Genetics and genomics. Exchange students have to take into account that Bachelor courses in our faculty are four years long in contrast with most Bachelors in Europe of three years, so a Master course would correspond to the fifth year of studies. This makes sometimes difficult that an incoming Bachelor student in his/her 2nd/3rd year of studies has an academic background long enough to follow Master courses correctly.

Where will you study?



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Diagonal, 643
08028 Barcelona
934 021 086
www.ub.edu/biologia





FACULTAT
DE
BIOLOGIA

Educational offer 2018-2019

More information at

www.ub.edu/biologia

www.ub.edu/ori-bio (International Students)



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UNIVERSITAT DE
BARCELONA