



UNIVERSIDAD
COMPLUTENSE
MADRID



Bachelor's Degree

Faculty of Chemical Sciences

Biochemistry

Syllabus

COURSE TYPE	ECTS
Compulsory Core Courses	60
Compulsory Courses	132
Elective Courses	30
Bachelor's Degree Final Project	18
Total	240

FIRST YEAR	ECTS
Biology	12
General Biochemistry	6
Statistics and Calculus	6
Physics for Biosciences	6
General Biology Laboratory	6
General Chemistry Laboratory	6
Chemistry	12
Techniques of Biochemical Analysis I	6

SECOND YEAR	ECTS
Biosynthesis of Macromolecules	6
Enzymology	6
Structure of Biological Membranes	6
Protein and Nucleic Acid Structure	9
Laboratory of Biochemistry and Molecular Biology I	9
Laboratory of Biochemistry and Molecular Biology II	6
Regulation of Metabolism	6
Cell Signalling	6
Techniques of Biochemical Analysis II	6

THIRD YEAR	ECTS
Clinical Biochemistry	6
Fundamentals of Bioreactors Design	6
Fundamentals of Biochemical Engineering	6
Genetic Engineering	6
Immunology	6
Integrated Laboratory of Biomedical Applications	6
Integrated Laboratory of Biotechnology	6
Clinical Microbiology, Parasitology and Virology	6
Molecular Pathology	6
Biotechnological Processes	6

FOURTH YEAR	ECTS
Biophysics and Bioinformatics	6
Integrated Laboratory of Biophysics and Bioinformatics	6
Five Elective Courses	30
Bachelor's Degree Final Project	18

ELECTIVE COURSES	ECTS
Environmental Biochemistry	6
Developmental Biochemistry	6
Pharmacological and Toxicological Biochemistry	6
Food Biotechnology	6
Environmental Biotechnology	6
Clinical and Pharmaceutical Biotechnology	6
Plant Biotechnology	6
History of Biochemistry	6
Applied Immunology	6
Industrial Microbiology	6
Neurochemistry	6
Current Topics of Biochemistry and Molecular Biology	6

PARTICIPATION CREDITS	ECTS
Any Course	6

Knowledge acquired

- Concepts and principles of Biochemistry.
- Physical principles involved in a biological process.
- Chemical transformations involved in a biological process.
- Molecular mechanisms of metabolism.
- Transmission of genetic information at molecular and cellular level.
- Molecular basis of pathologies.
- Biochemical experimental methodology.
- Handling of chemical and biological materials in a laboratory.
- Laboratory waste processing.
- Recognition of tissues, cells and subcellular organelles.
- Levels of protein structural organization.
- Enzyme kinetics and enzyme regulation mechanisms.
- Nucleic acids and genome organization.
- Isolation and quantification of biological macromolecules.
- Molecular mechanisms involved in physiologic processes.
- Structure analysis of biological macromolecules.
- Biotechnological applications.
- Use of scientific literature for data and information analysis.
- Relationship of Biochemistry with other scientific areas.
- Ethical, social, economic and environmental implications of biochemical activity.

Professional opportunities

Graduates from our Bachelor's Degree are wellqualified to knowledge disseminate at different levels, both in secondary and higher education. Regarding scientific research, they can further specialize in Biochemistry, Molecular Biology or other interdisciplinary field of study. Additionally, our degree qualifies students to develop a professional career in different areas of the healthcare sector such as Clinical Analysis, Biochemistry, Microbiology, Parasitology or Immunology. In the productive sector, these professionals are in demand for positions in management and business related to Molecular Biosciences.



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Grados UCM



Bachelor's Degree Biochemistry

Field of Knowledge: Biochemistry and Biotechnology

Faculty of Chemical Sciences

Campus de Moncloa

quimicas.ucm.es

For further information: www.ucm.es/estudios/grado-bioquimica

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