

# Teaching guide

## IDENTIFICATION DETAILS

Degree:	Biotechnology		
Field of Knowledge:	Science		
Faculty/School:	Experimental Science		
Course:	INTEGRATED LABORATORY III		
Type:	Compulsory	ECTS credits:	6
Year:	3	Code:	2036
Teaching period:	Sixth semester		
Area:	Work Placement		
Module:	Experimental Methods in Biotechnology		
Teaching type:	Classroom-based		
Language:	English		
Total number of student study hours:	150		

## SUBJECT DESCRIPTION

The Laboratory Course III aims to solidly train the student in basic Molecular, Cellular Biology and Biochemical Engineering techniques in order to consolidate the degree's theoretical contents, as well as to facilitate the student's access to the job market.

The Laboratory III is a compulsory, 150 hours semester course that is taught during the third year of the Biotechnology Degree. This course is part of the subject Practicum, which belongs to the Experimental Methods in

Biotechnology module. The lab work has been designed as real-life, professional experimental situations, in view of the contents of the different subjects taken during the 3rd year of the Biotechnology degree, and it will be held in the University labs. The course is intended to provide the students not only with the basic laboratory skills needed in a biotechnology or a bioscience lab, but also with other personal qualities such as critical thinking, teamwork or experimental accuracy, which are essential in the research practice.

## **SKILLS**

### **Basic Skills**

Students must have demonstrated knowledge and understanding in an area of study that is founded on general secondary education. Moreover, the area of study is typically at a level that includes certain aspects implying knowledge at the forefront of its field of study, albeit supported by advanced textbooks

Students must be able to apply their knowledge to their work or vocation in a professional manner and possess skills that can typically be demonstrated by coming up with and sustaining arguments and solving problems within their field of study

Students must have the ability to gather and interpret relevant data (usually within their field of study) in order to make judgments that include reflections on pertinent social, scientific or ethical issues

Students must be able to convey information, ideas, problems and solutions to both an expert and non-expert audience

Students must have developed the learning skills needed to undertake further study with a high degree of independence

### **General Skills**

To acquire firm theoretical, practical, technological and humanistic training needed to develop professional activity.

To have acquired the ability for analytical, synthetic, reflective, critical, theoretical and practical thought.

To be able to plan time effectively.

To foster a concern for knowledge as a key tool in the personal and professional growth process of a student.

To develop capacity for and a commitment to learning and personal development.

To develop oral and written communication skills.

To understand the fundamental laws and principles of physics, mathematics, chemistry and biology as the foundation for the mental structure of a biotechnician.

To acquire the skills needed for experimental work: design, preparation, the compilation of results and the obtainment of conclusions, understanding the limitations of an experimental approach.

## Specific skills

To understand the mathematical and physical foundations of the basic instrumental techniques of use in a biotechnology experimentation laboratory.

To be able to apply the most widely used instrumental techniques in a biotechnology experimentation laboratory: chromatography, electrophoresis, absorption, cytometry, purification and quantification of macromolecules, centrifugation, etc.

To work suitably in a laboratory with biological material (bacteria, fungi, viruses, animal and plant cells, plants and animals) and with regard to the safety, handling and disposal of biological waste.

To be able to design and suitably execute an experimental protocol based on theoretical knowledge in a host of subjects.

To be familiar with and apply the rules and general principles of health and safety in laboratories.

To organise and suitably plan work in the laboratory.

To identify and define laboratory instruments and materials.

To be able to describe, quantify, analyse and critically assess the results of experiments performed in the laboratory.

To be able to approach a subject by means of rigorous, profound and comprehensive thought.

Capacity for written and oral communication of the knowledge acquired.

To be able to apply the theoretical knowledge acquired for solving problems and practical cases linked to the various subjects.

To be able to assess the knowledge acquired.

## DISTRIBUTION OF WORK TIME

CLASSROOM-BASED ACTIVITY	INDEPENDENT STUDY/OUT-OF-CLASSROOM ACTIVITY
70 hours	80 hours