

# Teaching guide

## IDENTIFICATION DETAILS

Degree:	Biotechnology		
Field of Knowledge:	Science		
Faculty/School:	Experimental Science		
Course:	BIOENGINEERING		
Type:	Compulsory	ECTS credits:	3
Year:	3	Code:	2053
Teaching period:	Sixth semester		
Area:	Biotechnological Process Engineering		
Module:	Biotechnological Tools		
Teaching type:	Classroom-based		
Language:	English		
Total number of student study hours:	75		

## SUBJECT DESCRIPTION

To achieve the above-mentioned knowledge, the subject is structured in three independent modules:

1. Biomaterials and biomimetics
2. Biosensors and Surface functionalization
3. Introduction to Nanotechnology

The combination of the three modules, offers a general picture of diverse scientific areas such as Engineering, Materials Science, Biochemistry or Microelectronics, among others. The course is organized so that the three modules complement and improve each other, highlighting the importance of interdisciplinarity in the present science.

This subject belongs to the module "Biotechnological tools" and it consists of 30 hours of master class and 75 hours

of total student work. Within the curriculum, this subject is related to Fundamentals of Physics and Chemistry, Fundamentals of Biochemistry and Fundamentals of Mathematics. With regard to its relation with subjects of higher courses, it is necessary to emphasize its connection with Bioreactors and with Chemistry and Engineering of Proteins.

## **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 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 foundations and applications of microarrays in biotechnology.

To study biological and biomimetic materials and their biotechnological applications.

## **DISTRIBUTION OF WORK TIME**

CLASSROOM-BASED ACTIVITY	INDEPENDENT STUDY/OUT-OF-CLASSROOM ACTIVITY
35 hours	40 hours