



Universitat de Lleida

DEGREE CURRICULUM  
**FURTHER ADVANCED  
TECHNICAL ANALYSIS**

Coordination: ERAS JOLI, JORDI

Academic year 2020-21

## Subject's general information

<b>Subject name</b>	FURTHER ADVANCED TECHNICAL ANALYSIS			
<b>Code</b>	101644			
<b>Semester</b>	ANUAL CONTINUED EVALUATION			
<b>Typology</b>	<b>Degree</b>	<b>Course</b>	<b>Character</b>	<b>Modality</b>
	Bachelor's Degree in Biotechnology	3	OPTIONAL	Attendance-based
<b>Course number of credits (ECTS)</b>	3			
<b>Type of activity, credits, and groups</b>	<b>Activity type</b>	PRALAB	PRAULA	TEORIA
	<b>Number of credits</b>	0.5	1.6	0.9
	<b>Number of groups</b>	4	2	1
<b>Coordination</b>	ERAS JOLI, JORDI			
<b>Department</b>	CHEMISTRY			
<b>Important information on data processing</b>	Consult <a href="#">this link</a> for more information.			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
CANELA GARAYOA, RAMON	ramon.canela@udl.cat	,7	
EGEA NAVARRO, JOAQUÍN	joaquim.egea@udl.cat	2,2	
ERAS JOLI, JORDI	jordi.eras@udl.cat	2,4	
VILARÓ JORDANA, FRANCISCA	francesca.vilaro@udl.cat	,8	

## Learning objectives

This optional subject is aimed at students of the last Degree courses that already have theoretical-practical knowledge of instrumental analysis techniques. It intends to provide the student with a practical knowledge of specific techniques of special relevance in the field of Biotechnology.

- Have a methodological knowledge for each chosen instrumental technique.
- Know how to manipulate the samples and instruments associated with each technique correctly.
- Know how to interpret the information provided by each instrumental technique.

## Significant competences

### General competences

The graduate in Biotechnology must:

- Be able to seek and use selectively the sources of information necessary to reach the training objectives.
- Interpret scientific-technical information with a critical sense, and be able to make presentations based on this information.
- Be able to make comprehensible written and oral reports about the work carried out, with justification based on the theoretical and practical knowledge obtained (UdL strategic competence).
- Work as a team, with a multidisciplinary vision and with the capacity to make a rational and effective distribution of tasks among the members of the team.
- Use information and communication tools and techniques for data analysis and the preparation of oral and written reports and other training and professional activities (UdL Strategic Competence)
- Know and use the scientific and technical vocabulary proper to the different fields of Biotechnology.
- Work in the laboratory applying quality and good practice criteria.
- Use the scientific method to analyze data and design experimental strategies with biotechnological applications.
- Be able to develop a professional activity in accordance with the regulations of safety and respect for the environment and with ethical criteria.
- Acquire selection criteria for the most appropriate analytical techniques for each practical case.

### Specific competences (according to the Plan of Studies document)

- Be able to use experimental techniques for molecular, cellular and physiological analysis.
- Know and know how to apply techniques for the analysis of molecular structures and for the detection and quantification of metabolites and macromolecules.

- Know and know how to apply the techniques of sound analysis and interpretation of results.
- Be able to design the protocol of a specific biotechnology process with the practical requirements necessary to carry it to practice and its assessment parameters.
- Know how to work and be able to work in a biotechnology laboratory.

## Subject contents

Using confocal microscopy

Determination of metabolites by GC-MS.

NMR experiments in the study of chemical reactions and plant metabolites.

Determination of metabolites by HPLC-MS.

## Methodology

**Due to the exceptionality at the beginning of the 2020-2021 academic year, the methodology will be adapted to the guidelines set by the academic authorities. Thus, a significant part of the contact hours of the theory part can be done in non-contact mode. As for the problem and practice sessions, it is initially envisaged that they will be carried out in person. In the event that circumstances do not make it possible, alternatives would be implemented in a non-contact mode.**

Assessment Type of activity Student work	Total time Description Hours ECTS	Classroom activity		Objectives
		Student Non-present		
		Hours	Hours	
Laboratory understand phenomena, measure ... 15	Laboratory Laboratory (Medium Group) 2 50	Laboratory (Medium Group) 15	Study and Make memory 50	Execution of the practice:
Computer room understanding phenomena, measuring ... 15	Computing classroom practice (Medium group) 13	Studying and Realizing Memory 13	10	Execution of the practice: 10
Guided activities work, etc. 28	Student work (individual or group) 75			Carry out a bibliographic, practical 3
	Totals	45	75	

The approach of the subject is basically practical, the weight of the theory sessions is minimal and it is reduced to a few explanations about the analytical technique that will be used.

The sessions will be carried out in the laboratory, when the preparation of the sample is necessary. In the room of the analysis equipment to obtain and / or observe the results, and in the computer room to process the results with the appropriate software.

## Evaluation

**The evaluation tests can be face-to-face, semi-face-to-face or mixed. The modalities in case of non-face-to-face tests will be the appropriate ones among those that are included in the section of Test and questionnaires of the Virtual Campus.**

Type of activity rating	Evaluation activity		Weight	
	Procedure	Number	(%)	
Laboratory	Delivery of memos, written or oral tests	1	25	
Computer room	Delivery of memos, written or oral tests	1	25	
Guided activities	Delivery of work	1	50	
Total			100	