



Universitat de Lleida

DEGREE CURRICULUM  
**FURTHER ADVANCED  
TECHNICAL ANALYSIS**

Coordination: ERAS JOLI, JORDI

Academic year 2021-22

## 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>	Degree	Course	Character	Modality	
	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	1.2	0.4	0.9
	<b>Number of groups</b>	4	2	1	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	,3	
EGEA NAVARRO, JOAQUÍN	joaquim.egea@udl.cat	2,2	
ERAS JOLI, JORDI	jordi.eras@udl.cat	2	
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VILARÓ JORDANA, FRANCISCA	francesca.vilaro@udl.cat	,8	

## Subject's extra information

Laboratory practices are of utmost importance in this course, so they are mandatory, i.e., to pass the course it is a requirement to have performed the practices and submit the corresponding report.

## 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.

## Competences

CG1 Be able to selectively search and use sources of information necessary to achieve the training objectives.

CG4 Know and properly use the scientific and technical vocabulary typical of the different areas of Biotechnology.

CG5 Work in the laboratory applying quality criteria and good practice.

CG7 Use the scientific method to analyze data and design experimental strategies with biotechnological applications.

CG11 Acquire criteria for choosing the most appropriate analytical techniques for each specific practical case.

CE26 Be able to use experimental techniques for analysis at the molecular, cellular and physiological level.

CE27 Know and know how to apply techniques for the analysis of molecular structures and for the detection and quantification of metabolites and macromolecules.

CE28 Know and know how to apply the techniques of omic analysis and interpretation of the results.

CE35 Know the operation 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 Hours	Classroom activity		Objectives
		Student Non-present		
		Hours	Hours	
Laboratory understand phenomena, measure ... 15	Laboratory Laboratory (Medium Group) 15 2	Laboratory (Medium Group) Study and Make memory 50		Execution of the practice:
Computer room understanding phenomena, measuring ... 13	Computing classroom practice (Medium group) 13	Studying and Realizing Memory		Execution of the practice: 10
Guided activities work, etc. 75	Student work (individual or group) 75			Carry out a bibliographic, practical 3
	Totals	45	75	
28				

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.**

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Type of activity rating	Evaluation activity	Number	Weight
	Procedure		(%)
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