



Universitat de Lleida

DEGREE CURRICULUM
**FURTHER ADVANCED
TECHNICAL ANALYSIS**

Coordination: ERAS JOLI, JORDI

Academic year 2019-20

Subject's general information

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

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
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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

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

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

Totals

28 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

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

Adaptations to the contents due to COVID-19

The same as the initial contents, except the last practice session

Adaptations to the methodology due to COVID-19

Since the activities of the subject were almost completed, no adaptation is considered necessary.

Adaptations to the evaluation due to COVID-19

The same evaluation criterion remains

The new percentages relative to each of the 3 parts (confocal microscopy, NMR and chromatography-mass spectrometry) will be the same between them

Activity type	Evaluation activity	Number	Weight rating (%)
Procedure			
Laboratory	Delivery of reports, written or oral tests	1	25
Computer room	Delivery of reports, written or oral tests	1	25
Directed activities	Delivery of work	1	50
total			100