



Universitat de Lleida

DEGREE CURRICULUM  
**INSTRUMENTAL TECHNIQUES II**

Coordination: GARCERA TERUEL, ANA

Academic year 2023-24

**Subject's general information**

<b>Subject name</b>	INSTRUMENTAL TECHNIQUES II			
<b>Code</b>	101654			
<b>Semester</b>	1st Q(SEMESTER) CONTINUED EVALUATION			
<b>Typology</b>	Degree	Course	Character	Modality
	Bachelor's Degree in Biomedical Sciences	4	COMPULSORY	Attendance-based
<b>Course number of credits (ECTS)</b>	6			
<b>Type of activity, credits, and groups</b>	<b>Activity type</b>	PRAEX	PRAULA	TEORIA
	<b>Number of credits</b>	5	0.5	0.5
	<b>Number of groups</b>	4	2	1
<b>Coordination</b>	GARCERA TERUEL, ANA			
<b>Department</b>	EXPERIMENTAL MEDICINE			
<b>Teaching load distribution between lectures and independent student work</b>	Part of the subject will teach as seminars			
<b>Important information on data processing</b>	Consult <a href="#">this link</a> for more information.			
<b>Language</b>	English, Spanish, Catalan, French, German			
<b>Distribution of credits</b>	Completion of three internships, of one month each, in biomedical research laboratories or hospital laboratories. Each of the stays corresponds to 3 ECTS			

# INSTRUMENTAL TECHNIQUES II 2023-24

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## Subject's extra information

Biomedical Science students have coursework entitled *Instrumental Techniques*, which has the following goals:

Familiarity with biomedical research methodologies.

Knowledge and facility using instruments involved in Biomedical research

To acquire these skills, students must do two internships of one month each, at research centres, biomedical and pharmaceutical companies, technical science services, hospital and university research laboratories, genetic

diagnostic laboratories, hospital and private clinic blood banks and clinical and pathology laboratories.

During their internship at the centre, institution or company, the student must collaborate, as a support technician, to apply the work methodology related to the group's research. The goal of the activity is that the student learns laboratory techniques used in biomedical research.

After each rotation:

- The student will prepare a short paper.
- Their Tutor at the institution or research centre will prepare a brief report.

### **The student's paper must include:**

- To detail two techniques used during the internship and the biomedicine application.
- To detail two devices used at internship and the biomedicine application.
- If the rotation is done with a research group, the student must prepare a brief description of the group's lines of research, financing, a list of publications in the last five years with their impact factor, and the number of citations.
- If the rotation is done at a company, the student should describe the R&D department of the company.
- If the rotation is done at the Clinical and Pathology Laboratory of a hospital, the student should describe the department. The population serviced samples processed daily, and the types of samples sent from other centres.

### **The Tutor's report should include** (We will send a template for this report)

- A brief description of the tasks carried out by the student.
- The time and effort dedicated by the student
- If the student showed interest in the research or work done at the centre.
- The student's level of integration into the work of the group.

## Learning objectives

Familiarity with the various methodologies used in biomedical research.

Knowledge and facility using instruments involved in Biomedical research

## Competences

CB1. That students have demonstrated that they have and understand knowledge in an area of study that is based on general secondary education, and is usually found at a level that, while supported by advanced textbooks, also includes some aspects that involve knowledge from the forefront of their field of study

CB2. That students know how to apply their knowledge to their work or vocation in a professional way and possess the skills that are usually demonstrated through the development and defense of arguments and problem solving within their area of study

CE61. Differentiate the technical and methodological means used in Biomedical research

CE66. Recognize the scientific methodology of research.

CE67. Apply scientific methodology in biomedical research. Learn to work in the laboratory by joining a scientific group and participating in all its activities

CE68. Develop work skills and interpersonal relationships in a work environment and know the organization of research centers and biomedical scientific companies.

CG1. Have a correct oral and written expression

CG2 Master a foreign language.

## Subject contents

Become familiar with the different methodologies used in biomedical research. Know and use the equipment and methodologies related to biomedical research

## Methodology

To acquire these skills, students must do three internships of one month each, at research centres, biomedical and pharmaceutical companies, technical science services, hospital and university research laboratories, genetic diagnostic laboratories, hospital and private clinic blood banks and clinical and pathology laboratories.

During their internship at the centre, institution or company, the student must collaborate, as a support technician, to apply the work methodology related to the group's research. The goal of the activity is that the student learns laboratory techniques used in biomedical research.

After each rotation:

- The student will prepare a short paper.
- Their tutor at the institution or research centre will prepare a brief report.

**MANDATORY:** the students must wear in the course of teaching practices:

- Lab coat
- Safety glasses
- Chemical protection gloves

**Personal Protective Equipment (PPE)**, the internship supervisor will indicate the PPE required for each technique.

### General safety standards in laboratory

- Keep the place clean and tidy. The work table/bench must be free of backpacks, folders, coats ...
- Wear closed shoes during the practices
- Wear long hair always collected
- Keep the lab coat fastened to protect against splashes and chemical spills
- Do not wear bracelets, necklaces or wide sleeves that can get caught in equipment, assemblies ...
- Avoid contact lenses since the effect of chemicals is more dangerous if it is inserted between the lens and the cornea.
- Do not eat or drink in the laboratory
- Smoking is forbidden inside laboratories
- Always wash your hands after contact with a chemical and before leaving the laboratory
- Follow the teacher's instructions and ask any questions about safety

## Development plan

Information sessions:

- 1) Explanation of the subject
- 2) Preparation of a CV and explanation of the centres where you can do internships
- 3) Contents and parts of the report

Tutorials:

to find tutors and centres to carry out the internship

Training stay:

During the training stay, students will have a tutor at the centre

The tutor of the centre will be responsible for the learning activities and the achievement of the objectives

Once the stay is over, the tutor will evaluate the student

## Evaluation

Report of the first year 40% of the final grade

Report of the second year 40% of the final grade

Assessment of tutors 15% of the final grade

Itinerary (not to repeat Research Center and variety in the Research areas) 5% of the final grade

### **Alternative evaluation.**

Students may take an alternative evaluation to facilitate work or family reconciliation.

It consists in a single internship that will account for 100% of the grade (Report 85% + 15% Tutor assessment).

## Bibliography

Bibliography

Joseph Sambrook. Molecular cloning: A laboratory manual. Cold Spring Harbor Laboratory Press

Links

[JoVE \(Journal of Visualized Experiments\)](https://www.jove.com/)

<https://www.jove.com/education/1/general-laboratory-techniques>