

**COURSE DATA****Data Subject**

Code	43095
Name	Methods of laboratory work in physiology
Cycle	L
ECTS Credits	6.0
Academic year	2022 - 2023

Study (s)

Degree	Center	Acad. year	Period
3127 - Physiology	Faculty of Medicine and Odontology	1	Second term
	Doctoral School		Second term

Subject-matter

Degree	Subject-matter	Character
3127 - Physiology	1 - Methodology for research in physiology	Obligatory
		Optional

Coordination

Name	Department
	190 - Physiology

SUMMARY

This course has been designed to know and work on the experimental bases on which current research is based in Physiology laboratories. That is why it is eminently practical in nature and focuses on the most common cellular and molecular biology techniques and methodologies used in biomedical research laboratories.



PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

It is recommended to have taken the subjects of Biology, Biochemistry, Physiology and Chemistry.

OUTCOMES

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- Students can apply the knowledge acquired and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study.
- Students are able to integrate knowledge and handle the complexity of formulating judgments based on information that, while being incomplete or limited, includes reflection on social and ethical responsibilities linked to the application of their knowledge and judgments.
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- Be able to integrate new technologies in their professional and/or research work.
- Be able to access to information tools in other areas of knowledge and use them properly.
- To acquire a critical attitude that allows you to make reasoned judgments and defend them with rigor and tolerance.
- Assess the need to complete the scientific training, in languages, computer science, ethics, etc., attending conferences or courses and/or carrying out complementary activities, self-evaluating the contribution that the performance of these activities implies for their comprehensive training.
- To manage the use of laboratory techniques taking into account the basic principles of quality control, risk prevention, safety and sustainability.
- Select the appropriate commercialized instrumentation for the study to be carried out and apply the knowledge to use it correctly.

LEARNING OUTCOMES

To use scientific instruments and know and apply good laboratory practices.

To apply the scientific method in solving experimental work.

To work with information sources, both traditional and through new Internet technologies.



To synthesize and communicate scientific information.

To acquire sufficient knowledge to allow the student, in her future research work in the field of Physiology, to carry out an adequate treatment of experimental data, both with the limitation of errors associated with direct and indirect measurements.

DESCRIPTION OF CONTENTS

1. Recombinant DNA technology

- Introduction to the basic techniques of molecular biology.
- Transformation of E. coli bacteria with recombinant DNA.
- Cultivation of bacteria transformed into solid and liquid media.
- Methods of purification and analysis of plasmid DNA.

2. Basic techniques of animal and human cell culture

- Introduction to the basic techniques of cell biology.
- In vitro animal cell culture.
- In vitro animal cell transfection methods.
- Vital tests using fluorescence microscopy.

3.

WORKLOAD

ACTIVITY	Hours	% To be attended
Laboratory practices	32,00	100
Tutorials	4,00	100
Theory classes	4,00	100
Other activities	2,00	100
Development of individual work	24,00	0
Study and independent work	22,00	0
Readings supplementary material	10,00	0
Preparation of evaluation activities	22,00	0
Preparing lectures	5,00	0
Preparation of practical classes and problem	5,00	0
Resolution of case studies	20,00	0
TOTAL	150,00	



TEACHING METHODOLOGY

- Theoretical classes of participatory master class.
- Practical laboratory classes. They include introductory seminars, carrying out the practices with the follow-up and support of the teacher and carrying out a memory or a written test about them.
- Debate and directed discussion on the practices carried out.
- Face-to-face and electronic tutoring with teachers

EVALUATION

Evaluation system:

- Written exam consisting of 20-25 multiple choice questions: evaluation up to 10 points.

Attendance at 80% of the practices is compulsory.

Minimum passing grade: 5 points.

REFERENCES

Basic

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Additional

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