

66860 - Experimental Models of disease

Syllabus Information

Academic year: 2024/25

Subject: 66860 - Experimental Models of disease

Faculty / School: 105 - Facultad de Veterinaria

Degree: 617 - Master's in Global Health: Integration of Environmental, Human and Animal Health

ECTS: 6.0

Year: 1

Semester: Second semester

Subject type: Optional

Module:

1. General information

The main objective of this subject is that students learn about the usefulness of *in vivo* and *in vitro* models in biomedical sciences, especially in the field of Global Health. To this end, this subject will describe numerous *in vivo* and *in vitro* models for the study of physiological and pathological processes, which are fundamental for the generation of new therapeutic agents.

These approaches and objectives are aligned with the following SDGs of the United Nations 2030 Agenda (<https://www.un.org/sustainabledevelopment/es/>): Goal 3 (Objective 3.B Support R&D for vaccines and essential medicines and Objective 3.D Strengthen health risk management) and Objective 4 Goal 4.7 Promote Global Education for Sustainable Development).

2. Learning results

This subject will help students to become familiar with the main models, both *in vivo* and *in vitro*, used in the field of clinical research, within the wide range of existing pathologies. Students will know the advantages and disadvantages of each and which is more interesting to use in each situation. They will also learn about the future prospects and the broad possibilities of mathematical simulation models. Finally, they will be able to analyse the use of models in scientific articles.

Upon completion of the subject, the student will be able to:

- Explain the importance of models in the field of biosanitary research.
- Assess the ethical implications of using some of the models.
- Identify the basic laboratory tools to obtain *in vitro* models that are applicable to their study.
- Describe the different methods to obtain an animal model.
- Interpret results of a model characterization.
- Design a scientific study using research models.
- Describe future prospects for alternative models to animal (mathematical and simulation).
- Critically assess scientific articles using research models.

3. Syllabus

The theoretical program will be divided into thematic blocks. First, there will be an introductory block, and then each block will deal with different types of diseases, addressing the *in vitro* and *in vivo* models most commonly used in each case:

- Block 1. General introduction to research models
- Block 2. Neurodegenerative and motor diseases
- Block 3. Digestive system diseases
- Block 4. Cancer models
- Block 5. Cardiocirculatory diseases
- Block 6. Renal diseases
- Block 7. Mitochondrial diseases
- Block 8. Other models

4. Academic activities

The dates and locations of the different sessions will be communicated in advance to enrolled students.

Master classes:

They will take place during the second four-month period of the academic year at the Faculty of Veterinary.

Presentation and exposition of works:

During the teaching period, students will contact the professor who has presented the topic of their interest to select their work.

Deadline for submission of written work: until the last week of the academic year.

Personal presentation of work in class: last week of the academic year.

Written test:

Upon the end of the classes.

5. Assessment system

Objective written **test** on the entire program developed during the term. The test may contain multiple-choice questions and/or short questions, which must be answered briefly. It will account for 85% of the final grade.

-Active participation: Students will prepare a summary of one of the lectures (randomly assigned to each student). It will account for 5% of the final grade.

-Presentation of a review work. The presentation will be individual and based on a scientific article (or several) to be selected by the student from among those proposed by the faculty. It will be performed in front of the class and a board of examiners. It is mandatory and will account for 10% of the final grade.

In order to pass the subject through this assessment method, it will be necessary to obtain a grade equal to or higher than 50% of the maximum grade.

Students who do not opt for continuous evaluation or who do not pass the subject by this method, are entitled to a **global test** consisting of a written test that assesses the theoretical contents. In order to pass the subject through this global test, it will be necessary to obtain a grade equal to or higher than 50%.

6. Sustainable Development Goals

3 - Good Health & Well-Being

4 - Quality Education