Universidad Zaragoza

Academic Year/course: 2023/24

68403 - Medical research models

Syllabus Information

Academic year: 2023/24
Subject: 68403 - Medical research models
Faculty / School: 104 - Facultad de Medicina
Degree: 530 - Master's in Introduction to Medical Research
ECTS: 6.0
Year: 1
Semester: First semester
Subject type: Compulsory
Module:

1. General information

Every researcher must follow the scientific method in his work. For this, it is essential to have a broad knowledge of the available research models, and to understand the usefulness and difficulty of each one in order to make the correct choice when considering the materials and methods in your research project. This course offers an overview of the models used in both basic science (laboratory) and applied science (clinical trials), focusing on the aspects that make the transition between the two possible. It is oriented in an eminently practical way so that at the end of it the student is able to outline a research project or clinical trial, including the definition of the hypothesis and objectives, the choice of the most appropriate methodology, expected benefits of the project, the identification of potential ethical problems and sources of funding.

The student will have the computer tools of the library of the University of Zaragoza.

2. Learning results

The student, to pass this subject, must demonstrate the following results...
... will be able to list, classify and describe the research models used in the laboratory for biomedical research and will be able to describe specific applications.
... will be able to list, describe and categorize the research models used in clinical research, and will be able to describe specific applications.
... will know the basic ethical standards regarding experimentation on humans and animals.
... will be able to design biomedical research projects or clinical trials, at an initiate level.
Note: One of the main conditions for the success of a research work is knowing how to correctly identify the most appropriate methodology for the problem and the particular context in which the research is carried out. In the same way, the researcher must be able to analyze the methodology used in scientific papers, to assess its validity.

3. Syllabus

Definitions and types of models.
Experimental designs for laboratory research
Clinical essays
Research Animal Models
Research with advanced cell models
Research work in test/calibration laboratories and its application to medical research models.
How to research at the University of Zaragoza, using the Research Support Services.
Research models in aging.
Bone regeneration, search for biomarkers and anti-inflammatory nutrition.
Genomic targeting.
Cornelia de Lange syndrome as a research model for rare diseases.
Models in enzyme deficiencies.
translational research
Utility of genetic studies
Translational Research: A Biologist's View
Omic sciences in medicine and pharmacometabolomics

4. Academic activities

Program of lessons and lectures
From basic research to clinical research in medicine
Types of Research in Medicine. How to choose the appropriate method?

Animal experimentation models. Legal and ethical considerations.
Ex-vivo research models: isolated organs and tissues
Cell cultures. Methodology. Primary crops. Continuous cell lines. Advantages and disadvantages of experimentation based on cell cultures.
Animal models in cancer research
Research models in aging
Investigation of Lange Syndrome as a rare disease model.
Utilities of flow cytometry in Medical Research
The clinical trial as a model of medical research

Task in Moodle: The student must work from a previous research project in which they will identify the model and type of research proposed, the existing alternatives in the literature to solve the same questions and the reason for the choice.

Visits to research centers.

Hours: Monday to Thursday / From 4 to 8 pm:
Days: 9, 13, 14, 15, 16, 20, 21, 22, 23 November.

Answer exam

Visits to research centers.

Hours: Monday to Thursday / From 4 to 8 pm:
Days: 9, 13, 14, 15, 16, 20, 21, 22, 23 November.

Exam of test or short answers on November 23

Presentation of the task before December 1, 2023

5. Assessment system

To assess the learning outcomes of this module we use three assessment tools:
- Teacher's report, assessing the student's attendance, attitude and participation: 30% of the final grade.
- Universal test exam or short questions: 40% of the final mark.
- Individual work (Task in Moodle): 30% of the final mark.

In accordance with the provisions of article 5 of RD 1125/2003 (BOE September 18), the results obtained by the student will be graded based on the following numerical scale from 0 to 10, with expression of a decimal, to which he may add its corresponding qualitative qualification:
0-4.9: Suspense (SS)
5.0-6.9: Pass (AP)