Universidad Zaragoza

Academic Year/course: 2023/24

28436 - Laboratory Animal Science - II

Syllabus Information

Academic year: 2023/24
Subject: 28436 - Laboratory Animal Science - II
Faculty / School: 105 - Facultad de Veterinaria
Degree: 451 - Degree in Veterinary Science
ECTS: 3.0
Year:
Semester: Second semester
Subject type: Optional
Module:

1. General information

The Animal Experimentation II subject provides students with complementary knowledge to that of other subjects of the degree, but limited to the species used in experimentation.

The general objective of the subject is to study the main pathologies and sanitary controls in the animal species used in experimentation, the most appropriate anesthetic, analgesic and euthanasic protocols in each one of them, to know how to carry out a good experimental design and development, as well as the guidelines for its publication.

Upon completion of the degree and having also studied Animal Experimentation I, the student will have sufficient autonomy to perform the competences attributed by the regulations for personnel who direct and design procedures with experimental animals.

In general terms, it addresses SDGs 4 and 5 as well as Objectives 8.3, 16.6 and 9.5.

2. Learning results

The student, in order to pass this subject, must demonstrate that:

1. Is able to know the most common pathologies in experimental animals and the fundamentals for the establishment of controls that guarantee a high sanitary quality of laboratory animals.
2. Is able to know, describe and apply the main anesthetic, analgesic and euthanasic procedures in the main species of laboratory animals and their influence on animal welfare and experimental results.
3. Is able to know how experimental procedures are planned, developed and supervised in the main areas of research.
4. Is able to apply refinement to the main experimental procedures in surgery and to the procedures for administering substances and obtaining biological samples.
5. Is able to apply statistical methods to experimental design.
6. Is capable of knowing the information that a scientific article in the field of animal experimentation should contain.

3. Syllabus

The program offers the students help to achieve the expected results and comprises the following activities:

PROGRAM OF THEORETICAL CLASSES

Distributed in 4 thematic blocks, with the chronology and allocation of hours detailed below.

VI. MICROBIOLOGY AND DISEASES (5 h)

- Topic 1. Health monitoring and disease prevention. Sanitary controls in animal experimentation centres.
- Topic 2. Pathology of laboratory animals.
- Topic 3. Safety in working with infectious agents (animals).

VII. ANESTHESIA, ANALGESIA AND EXPERIMENTAL PROCEDURES (9 h)

- Topic 4. Introduction to anesthesia methods. Anesthetics and choice of anesthetic agent.
- Topic 5. Analgesia. Recognition, assessment and control of pain.
- Topic 6. Euthanasia: chemical and physical methods.
- Topic 7. Experimental procedures in surgery. Introduction, facilities, preoperative planning, animal handling, surgical procedures (material and techniques). Post-surgery care.
- Topic 8. Administration of substances and routes. Obtaining biological samples.
- Topic 9. Experimental procedures in pharmacology, toxicology, microbiology and infectious diseases.

VIII. DESIGN AND DEVELOPMENT OF EXPERIMENTS WITH ANIMALS (5 h)

Topic 10. Experimental design. Steps for a good design. Species selection and group size. Analysis of the results. Applied designs in animal experimentation.

- Topic 11. Animal models (spontaneous, induced).

IX. SCIENTIFIC LITERATURE ANALYSIS AND PRODUCTION (1 h)

- Topic 12. Analysis and production of scientific literature.

PRACTICAL CLASS PROGRAM

10 hours of practical activities, distributed into 6 sessions.

Only practice 3 involves work with live animals. This practice has been subjected to prior evaluation by the Ethical Advisory Committee for Animal Experimentation of the University of Zaragoza (Ref. PD05/14). The carcasses used in practice 1 and 4 are from animals that have not been euthanized specifically for the practice.

- Practice 1. Substance administration in mice. Necropsy in experimental animals. Protocol and sample collection. (2 hours).

- Practice 2. Pain recognition workshop (2 hours).
- Practice 3. Substance administration. Obtaining samples in rabbits (1 hour).
- Practice 4. Surgical procedures in experimental surgery (2 hours).
- Practice 5. Workshop on experimental design of procedures (2 hours).
- Practice 6. Evaluation of procedures by Animal Experimentation Ethics Committees (1 hour).

4. Academic activities

- Theoretical classes: There will be 20 hours of theoretical classes for a group of students in the classroom, during the timetable established by the centre.
- Practical classes: There will be a total of 10 hours of practice, distributed into 6 practices, in the Physiology laboratory, Necropsy room, Clinical Hospital or in computer classrooms. The dates of the practical classes will be announced sufficiently in advance, so that students can choose the group corresponding to the date that is most convenient for them.

5. Assessment system

The assessment system consists of a global test in which both theoretical and practical knowledge will be evaluated. It will consist of a written test with of 30 multiple-choice questions. Each test question will have 4 options, of which 1, 2, 3 or 4 will be correct. Marking all the correct options for that question will be assessed with the maximum mark for that question, i.e. 1 point; marking only some of the correct options will be assessed with a mark lower than the maximum mark, i.e. less than 1 point; marking any of the incorrect options in a question will be assessed with 0 points. The grade will range from 0 to 10 and to pass the subject it will be necessary to obtain at least a grade of 5 points.