

## 28436 - Animal Experiments II

### Información del Plan Docente

Academic Year	2017/18
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

#### 1.1.Introduction

#### 1.2.Recommendations to take this course

#### 1.3.Context and importance of this course in the degree

#### 1.4.Activities and key dates

### 2.Learning goals

#### 2.1.Learning goals

#### 2.2.Importance of learning goals

### 3.Aims of the course and competences

#### 3.1.Aims of the course

#### 3.2.Competences

### 4.Assessment (1st and 2nd call)

#### 4.1.Assessment tasks (description of tasks, marking system and assessment criteria)

### 5.Methodology, learning tasks, syllabus and resources

#### 5.1.Methodological overview

The learning process that has been designed for this subject is based on the following:

- **Lectures:** Participatory lectures will be taught in the classroom to one group of students.

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- **Practical classes:** Initially, the teacher will make a short explanation of the session and after that, the students will perform the practice under the permanent supervision of the teachers.

### 5.2.Learning tasks

- **Lectures:** Theoretical classes (20 hours) will be taught in the schedule established by the Faculty.

- **Practical classes:** A total of 10 hours of practice, distributed in 6 sessions, will be taught in the Laboratory of Physiology, room of Necropsies, Clinic Hospital or in the Computer room. Dates of the practices will be announced in advance, in such a way that the students choose for the date that best suits them.

### Summary table of teaching-learning activities

ACTIVITY	ATTENDANCE HOURS	FACTOR	SELF STUDY HOURS	TOTAL
Lectures	20	1,5	30	50
Practices	10	1	10	20
Exams			3	3
<b>Total</b>	30		43	<b>73</b>

### 5.3.Syllabus

The program offered to help the student achieve the expected results includes the following activities:

#### PROGRAM OF LECTURES

Lectures are divided into 4 thematic blocks, with the timing and assignment of hours listed below.

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### **VI. MICROBIOLOGY AND DISEASE (5 h)**

- **Unit 1.** Health monitoring and disease prevention. Health monitoring programme in experimental units.
- **Unit 2.** Pathology of common animal laboratory diseases.
- **Unit 3.** Safety in working with infectious animals.

### **VII. ANAESTHESIA, ANALGESIA AND EXPERIMENTAL PROCEDURES (9 h)**

- **Unit 4.** Introduction to methods of anaesthesia. Anaesthetics and analgesics. Choice of anaesthetic agent in relation to animal species and nature of experiment.
- **Unit 5.** Analgesia. Recognition, assessment and control of pain, suffering or distress.
- **Unit 6.** Euthanasia: chemical and physical methods. Disposal of carcasses.
- **Unit 7.** Experimental procedures in surgery. Principles of surgery, facilities, surgical equipment, aseptic techniques, special perioperative considerations. Postoperative care and monitoring.
- **Unit 8.** Refining procedures for the administration of substances. Biological sampling collection.
- **Unit 9.** Experimental procedures in pharmacology, toxicology, microbiology and infectious diseases.

### **VIII. Design and conduct of animal experiments (5 h)**

- **Unit 10.** Experimental design. Guidelines for good design. Choice of the experimental animal and power analysis to calculate the number of animals. Statistical analysis and interpretation of results. Designs applied in animal experimentation.
- **Unit 11.** Animal models (spontaneous, induced).

### **IX. ANALYSIS AND ELABORATION OF SCIENTIFIC LITERATURE (1 h)**

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- **Unit 12.** Analysis and elaboration of scientific literature.

### PROGRAM OF PRACTICAL CLASSES

The program consists of 10 hours of practical activities, distributed into 6 sessions:

Only Practice 3 involves working with live animals. This practice has been subjected to prior evaluation by the Advisory Ethics Committee for Animal Experimentation of the University of Zaragoza (License number PD05/14). The carcasses used in Practice 1 and 4 come from animals which have not expressly been euthanized for the practice.

- **Practice 1.** Necropsy in experimental animals. Technique and sampling. Recognition of macroscopic lesions of organs and tissues in the mouse, rat and rabbit (2 hours).
- **Practice 2.** Workshop on pain recognition (2 hours).
- **Practice 3.** Administration of substances. Sample collection in rabbit (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 ethics committees (1 hour).

### 5.4.Course planning and calendar

#### Calendar of attendance sessions

Dates of delivery of the lectures will be available on the website of the Faculty of Veterinary Medicine (link: <http://veterinaria.unizar.es/>). This link will be updated at the beginning of each academic year.

Dates of delivery of practical classes will be announced in advance, in such a way that the students choose the best date that suits them.

## 5.5. Bibliography and recommended resources

[BB: Bibliografía básica / BC: Bibliografía complementaria]

- [BB] Ciencia y tecnología del animal de laboratorio : formación avanzada de postgrado / Jesús Martín Zúñiga, José M<sup>a</sup> Orellana Muriana, Josep Tur Marí [Alcalá de Henares] : Universidad de Alcalá ; [Madrid] : SECAL, 2008
- [BB] Close, Bryony [et al.] (1996) .? Recommendations for euthanasia of experimental animals: Part 1?. En : Laboratory animals . London. V. 30,n.4, pp.293-316 [Para acceder al texto completo mirar URL]
- [BB] Close, Bryony [et al.] (1997). ? Recommendations for euthanasia of experimental animals: Part 2?. En : Laboratory animals . London. V. 31,n.1, pp 1-32 [Para acceder al texto completo mirar URL]
- [BB] Directiva 2010/63/UE del Parlamento Europeo y del Consejo, de 22 de septiembre de 2010, relativa a la protección de los animales utilizados para fines científicos (1). Diario Oficial de la Unión Europea L 276, 20-10-2010 [Para acceder al texto completo mirar URL]
- [BB] España. Ministerio de la Presidencia. Real Decreto 53/2013, de 1 de febrero, por el que se establecen las normas básicas aplicables para la protección de los animales utilizados en experimentación y otros fines científicos, incluyendo la docencia. Madrid : Boletín Oficial del Estado, 2013. Boletín Oficial del Estado, nº 34, 8 Febrero, 2013 p. 11370-11421 [Para acceder al texto completo mirar URL]
- [BB] Guidelines for the euthanasia of animals / Steven Leary [et al.] [s.l.]: AVMA, 2013 [Para acceder al texto completo mirar URL]
- [BB] ILAR journal . Washington, D.C. : Institute of Laboratory Animal Resources, 1995- [Publicación periódica] [Para acceder al texto completo mirar URL]
- [BB] Laboratory animal medicine / edited by James G. Fox ... [et al.] . 2nd ed. Amsterdam : Academic Press, cop. 2002
- [BB] Laboratory animals . London : Royal Society of Medicine Services, 1967- [Publicación periódica]
- [BB] Morton, D B [et al.] (1993). ?Removal of blood from laboratory mammals and birds: First Report of the BVA/FRAME/RSPCA/UFAW Joint Working Group on Refinement ?. En : Laboratory animals . London. V. 27,n.1, pp 1-22 [Para acceder al texto completo mirar URL]
- [BB] Morton, D B [et al.] (2001). ? Refining procedures for the administration of substances ?. En : Laboratory animals . London. V. 35, n.1, pp 1-42 [Para acceder al texto completo mirar URL]
- [BC] Laboratory animal medicine / edited by James G. Fox ... [et al.] . - 2nd ed. Amsterdam : Academic Press, cop. 2002

### Listado de URL

- [BB ]Guidelines for the euthanasia of animals / Steven Leary [et al.] [s.l.]: AVMA, 2013 [https://www.avma.org/KB/Policies/Pages/Euthanasia-Guidelines.aspx]
- [BB] Close, Bryony [et al.] (1996) .? Recommendations for euthanasia of experimental animals: Part 1?. En : Laboratory animals . London. V. 30,n.4, pp. 293-316 [http://lan.sagepub.com/content/30/4.toc]
- [BB] Close, Bryony [et al.] (1997). ? Recommendations for euthanasia of experimental animals: Part 2?. En : Laboratory animals . London. V. 31,n.1, pp. 1-32 [http://lan.sagepub.com/content/31/1.toc]
- [BB] Directiva 2010/63/UE del Parlamento Europeo y del Consejo, de 22 de septiembre de 2010, relativa a la protección de los animales utilizados para fines científicos (1). Diario Oficial de la Unión Europea L 276, 20-10-2010 [http://eur-lex.europa.eu/legal-content/ES/TXT/?uri=OJ:L:2010:276:TOC]
- [BB] España. Ministerio de la Presidencia. Real Decreto 53/2013, de 1 de febrero, por el que se establecen las normas básicas aplicables para la protección de los animales utilizados en experimentación y otros fines científicos, incluyendo la docencia. Boletín Oficial del Estado, nº 34, 8 Febrero, 2013 p. 11370-11421 [http://www.boe.es/boe/dias/2013/02/08/pdfs/BOE-A-2013-1337.pdf]
- [BB] Morton, D B [et al.] (1993). ?Removal of blood from laboratory mammals and birds: First Report of the BVA/FRAME/RSPCA/UFAW Joint Working Group on Refinement ?. En : Laboratory animals . London. V. 27,n.1, pp 1-22 [http://lan.sagepub.com/content/27/1/1.citation]
- [BB] Morton, D B [et al.] (2001). ? Refining procedures for the administration of substances ?. En : Laboratory animals . London. V. 35, n.1, pp 1-42 [http://lan.sagepub.com/content/35/1.toc]
- European Society of Laboratory Animal Veterinarians (ESLAV) [http://eslav-eclam.org/eslav]
- Federation of European Laboratory Animal Science Associations (FELASA) [http://www.felasa.eu/]
- Guide for the care and use laboratory animals [http://grants.nih.gov/grants/olaw/Guide-for-the-care-and-use-of-laboratory-animals.pdf]
- ILAR Journal [http://ilarjournal.oxfordjournals.org/content/by/year]
- Sociedad Española para las Ciencias del Animal de Laboratorio (SECA) [http://www.secal.es/]

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- Universidad de Zaragoza. Comisión ética asesora para la experimentación animal [<http://cea.unizar.es/>]