

Academic Year/course: 2022/23

28412 - Laboratory Animal Science - I

Syllabus Information

Academic Year: 2022/23

Subject: 28412 - Laboratory Animal Science - I

Faculty / School: 105 - Facultad de Veterinaria

Degree: 451 - Degree in Veterinary Science

ECTS: 3.0

Year:

Semester: First semester

Subject Type: Optional

Module:

1. General information

1.1. Aims of the course

The Laboratory Animal Science I course provides students with basic knowledge about animal experimentation. The subject of Laboratory Animal Science I together with other subjects such as Embryology and Anatomy, Biology and Biochemistry, Cytology and Histology and Ethnology and Animal Welfare, Genetics, Animal Physiology and Deontology, Legal Veterinary and Bioethics provide basic knowledge and skills for other subjects from other modules of the Degree in Veterinary Science.

The general goal of the course is to study the characteristics (physiological, genetic, behavioral, etc.) of the main animal species used in animal experimentation, as well as the legislation regulating their housing and care.

These approaches and objectives are aligned with the following Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda (<https://www.un.org/sustainabledevelopment/es/>), in such a way that the acquisition of the results course provides training and competence to contribute to some extent to your achievement:

Goal 3: Health and Well-being (Goal 3.B Support for R&D of vaccines and essential medicines.Goal 3.D. Reinforcement of health risk management))

Goal 4: Quality education (Goal 4.4 Increased skills to access employment)

Goal 9: Industry, innovation and infrastructure (Goal 9.5 Increased scientific research, technological capacity)

Goal 12: Responsible production and consumption (Goal 12.5 Prevention, reduction, recycling and reuse of waste)

Goal 16. Peace, justice and strong institutions (Goal 16.10. Access to information and fundamental freedoms)

1.2. Context and importance of this course in the degree

The subject of Laboratory Animal Science I allows students to acquire basic knowledge on various aspects related to the field of animal experimentation that will be necessary to take the subject of Laboratory Animal Science II in the 4th year of the Degree in Veterinary Science.

1.3. Recommendations to take this course

The student must have taken all the first year subjects of the degree and be enrolled in the subjects that may have been pending in that year.

Solid knowledge of animal anatomy and histology, biology, as well as ethnology and animal welfare is required.

2. Learning goals

2.1. Competences

On successful completion of this course, students will be able to:

- Explain current Spanish and international legislation on animal experimentation.
- Explain alternative methods to the use of research animals.
- Explain the anatomical, physiological, reproductive, genetic and behavioral characteristics of the main animal species used in animal experimentation.

- Describe the general characteristics of housing, feeding and care of the main animal species used in animal experimentation.
- Describe the main indicators of health and disease in animal species used in animal experimentation.
- Carry out basic handling of small experimental animals.

2.2. Learning goals

If students complete the course successfully, they should be able to

- Know, understand and explain the current Spanish and international legislation on animal experimentation.
- Know and explain the generalities, objectives and current situation of alternative methods to the use of animals in research.
- Recognize and explain the anatomical, physiological, reproductive, genetic and behavioral characteristics of the main animal species used in animal experimentation.
- Describe the general characteristics of housing, feeding and care of the main animal species used in animal experimentation.
- Describe the main indicators of health and disease in animal species used in animal experimentation.
- Carry out the basic handling of the small experimental animals.

2.3. Importance of learning goals

They allow you to know some basic aspects related to the field of animal experimentation that you will need to take the subject of "Laboratory Animal Science II" in the 4th year of the Degree in Veterinary Science.

3. Assessment (1st and 2nd call)

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

The student must demonstrate that has achieved the intended learning outcomes by means of the following assessment tests:

A global test of the subject, which will take place on the date determined by the Centre, and which will consist of 2 independent tests.

Test 1. Theoretical examination. The theoretical knowledge will be assessed by means of a written test consisting of 20 multiple-choice and 10 short questions.

Passing this test will accredit the achievement of learning outcomes 1, 2, 3, 4 and 5. The grade will be 0 to 10 and will represent 80% of the student's final grade in the subject.

Test 2. Evaluation of the practices. The acquisition of abilities and skills in the execution of the different practices of laboratory or computer room will be assessed. In addition, practice 1 and 2 will be assessed by means of a written test consisting of 2 short questions. Practice 3 will be evaluated through participation in a forum that will be open to students in Moodle platform. Successful completion of these tests shall be evidence of achievement of learning outcome 6.

Each practice will be graded from 0 to 1 point, being able to obtain up to 3 points in test 2, and will suppose 20% of the final grade of the student in the subject.

The final grade of the subject will be made by means of the **weighted sum** of the grades obtained in the theoretical and practical parts, where the **theoretical part will suppose an 80% and the practical part a 20%.**

Valuation criteria and requirement levels

In order to pass the course, it will be necessary to pass, separately, the 2 evaluation tests.

Test 1. Theoretical examination. The exam will consist of 20 multiple choice questions and 10 short questions corresponding to the theory topics. Each multiple choice question will have 4 options, of which 1, 2, 3 or 4 of these options will be the correct ones. Marking all the correct options in that question will be rated with the maximum grade for that question, i.e. 1 point; marking only some of the correct options will be rated with a grade lower than the maximum, i.e. less than 1 point; marking some of the incorrect options in a question will be rated with 0 points. The maximum number of points for multiple-choice questions is 20. Each short answer question will be scored on a maximum of 2 points. The maximum number of points for short questions is 20. In order to pass this test, it will be essential to obtain a total score of at least 20 points out of a maximum of 40 points, which will be equivalent to a 5 in the decimal rating.

Test 2. Evaluation of the practices. In order to pass the practical part of the course, it must first be demonstrated that the necessary skills and abilities have been acquired for the correct execution of the practices summoned throughout the different sessions. This will be done through the direct observation of the student's work by the teacher.

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

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

-Theory sessions: Participatory lectures will be taught in the classroom to a group of students.

-Practical sessions: 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.

4.2. Learning tasks

- **Theory sessions:** Theory sessions (24 hours) will be taught in the schedule established by the Faculty.
- **Practice sessions:** Practical sessions (6 hours) will be taught in the Laboratory of Physiology or in the Computer room, distributed in 3 sessions of 2 hours. The dates will be announced in advance, so that the students choose the date that best suits them.

4.3. Syllabus

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

PROGRAM OF THEORY SESSIONS

Theory sessions are divided into 5 thematic blocks, with the timing and assignment of hours described below.

I. ETHICS AND LEGISLATION (2 h)

- **Theme 1.** Ethical principles of animal experimentation. The principle of the Three R's. Ethics committees of animal experimentation. Objectives and functions.
- **Theme 2.** Legislation on animal experimentation. European, national and regional legislation.

II. ALTERNATIVES TO USE OF ANIMALS (2 h)

- **Theme 3.** Overview of alternative methods in animal studies. Experimentation "in vitro".

III. BIOLOGY, HUSBANDRY AND MAINTENANCE OF LABORATORY ANIMALS (15 h)

- **Theme 4.** Comparative anatomy and physiology of the laboratory animals.
- **Theme 5.** Breeding and reproduction of laboratory animals.
- **Theme 6.** Behavior and welfare of laboratory animals. Stress and recognition of signs of stress and suffering. Environmental enrichment.
- **Theme 7.** Facilities and environment. Types of facilities for laboratory animals.
- **Theme 8.** Factors affecting animal experiments: genetic standardization.

-Theme 9. Factors affecting animal experiments: microbiological standardization. Types of barrier and protected areas.

- **Theme 10.** Nutrition and feeding regimes. Types of diets.

IV. LABORATORY ANIMAL HEALTH (2 h)

- **Theme 11.** Health status and diseases prevention.
- **Theme 12.** Practical aspects of monitoring health and disease.

V. OCCUPATIONAL HEALTH AND BIOSAFETY AT WORK WITH EXPERIMENTAL ANIMALS (3 h)

- **Theme 13.** Health and safety of staff.
- **Theme 14.** Cleaning and disinfection of facilities.
- **Theme 15.** Proper waste and animal carcasses disposal procedures.

PROGRAM OF PRACTICAL SESSIONS

The program consists of 6 hours of practical activities, divided into 3 sessions of 2 hours. Practices involving the use of animals have been subjected to prior evaluation by the Advisory Ethics Committee for Animal Experimentation of the University of Zaragoza (License number PD03/15).

- **Practice 1.** Basic techniques of handling and restraining rodents: rat and mouse. Identification and sexing.

- **Practice 2.** Basic techniques of handling and restraining of lagomorphs used for animal experimentation: rabbit. Recognition of the main anatomical structures of small laboratory animals.

Practice 3. Discussion of animal experimentation from a social perspective.

4.4. Course planning and calendar

Conducted lectures dates 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.

Conducted practice dates will be announced in advance, so that the students choose the best date that suits them. The approximate dates of the practices will be as follows:

Practice 1: Third week of October

Practice 2: Fourth week of October

Practice 3: During November

4.5. Bibliography and recommended resources

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=28412>