1. OVERVIEW

Subject Area	Basic Sciences II
Degree	Bachelor's Degree in Veterinary Medicine
School/Faculty	Biomedical and Health Sciences
Year	First
ECTS	6 ECTS
Type	Core
Language(s)	Spanish
Delivery Mode	On-campus
Semester	Second semester

2. INTRODUCTION

Basic Sciences II is a core subject area worth 6 ECTS, taught in the second semester of the first year of the Bachelor's Degree in Veterinary Medicine. This subject area and Basic Sciences I (taught in the first semester of the first year of the Bachelor's Degree in Veterinary Medicine, also worth 6 ECTS) comprise the broader subject area of Basic Sciences (chemistry, biochemistry, physics, biology and genetics), worth a total of 12 ECTS.

This subject area aims to provide students with the biological, genetic and biotechnological foundations to serve as the basis for understanding and acquiring knowledge in other subject areas of the Bachelor's Degree in Veterinary Medicine, as well as in their professional career.

3. SKILLS AND LEARNING OUTCOMES

Basic skills (CB, by their acronym in Spanish):

- CB1: Show knowledge and understanding of an area of study, building on the foundation of general secondary school education. At this level, and perhaps with the support of more advanced textbooks, students should be able to demonstrate awareness of the latest developments in their field of study (Knowledge Acquisition).

Cross-curricular skills (CT, by their acronym in Spanish):

- CT2: Independent learning. Employ appropriate strategies needed to search for, analyse, evaluate and manage information from different sources, and to learn and put into practice what has been learnt independently.
- CT3: Teamwork: Collaborate actively with other people, departments and/or organisations to reach common goals, value and incorporate contributions from the rest of the group members and create a good working environment.

General skills (CG, by their acronym in Spanish):

- CG2: Prevent, diagnose and treat animal diseases, particularly zoonoses, both individually and as part of a team.

Specific skills (CE, by their acronym in Spanish):

- CE1c: Knowledge and application of the principles and bases of the morphology, taxonomy, bionomics and systematics of animal and plant species of veterinary interest.
- CE2g: Knowledge and application of the molecular and genetic principles and foundations of biological processes.
- CE2h: Knowledge and application of the principles and foundations of biogenetics and population genetics.

Learning outcomes (RA, by their acronym in Spanish):

- RA1: Explain the evolutionary origin, significance and limitations of biological diversity (zoological and botanical) including the mechanisms of evolutionary change.
- RA2: Apply the concept of biological species and the basic principles of biological classification (taxonomy, phylogeny and systematics) and use the nomenclature of zoology and botany.
- RA3: Describe the foundations of molecular biology, taking into account the structure of living beings and their life processes.
- RA4: Study the principles of biotechnology and define it as a concept, outlining its applications to genetics and future possibilities in veterinary science.
- RA5: Analyse the principles of genetics as applied to veterinary medicine, its implications, and the genetic basis and applications of crossbreeding.
- RA6: Identify factors affecting the genetic structure of populations and quantitative traits of economic interest.
- RA7: Consider the primary applications of molecular genetics.

The following table shows how the skills developed in the subject area relate to the intended learning outcomes:

Skills (CE)	Learning outcomes (RA, by their acronym in Spanish)
CE1c	RA1
CE1c	RA2
CE1c	RA3
CE2g	RA4
CE2h	RA5
CE2g, CE2h	RA6
CE2g, CE2h	RA7

4. CONTENT

The subject area is divided into 3 units:

UNIT 1: BIOLOGY

UNIT 2: GENETICS

UNIT 3: BIOTECHNOLOGY

PRACTICALS

5. TEACHING/LEARNING METHODS (MD, by their Spanish acronym)

The types of teaching/learning methods are as follows:

- MD1: Lecture / Web conference
- MD3: Problem-based learning
- MD5: Collaborative learning
- MD6: Learning based on workshop/lab teaching

6. LEARNING ACTIVITIES

The types of learning activities, plus the amount of time spent on each activity, are as follows:

Learning activity	Number of total hours	Number of hours on campus
AF1: Master lectures	32	32
AF2: Group activities	6	1.5
AF3: Case studies and problem-solving	6	3
AF4: Oral presentations	2	2
AF5: Independent working	69	0
AF6: Workshops and/or labs and/or simulation	16	16
AF8: Drafting reports or concept maps	7	0
AF10: Tutorials	10	5
AF11: Assessment tests	2	2
TOTAL	150	61.5

7. ASSESSMENT

The assessment methods, plus their weighting in the final grade for the course, are as follows:

Assessment system	Weighting
SE1: On-campus theory exams	60%
SE3: Skills and abilities assessment	20%
SE4: Case study/problem	10%
SE5: Oral presentations	10%

On Canvas, when you open the subject area, you can see all the details of your assessment tasks, including the deadlines and assessment procedures for each task.

Two on-campus theory exams will take place during the semester: one in the middle and one at the end of the semester. Both exams will have the same weighting for the final grade.

At the professor's discretion, an oral exam may be arranged to make up for the justified absence of an exam.

8. BIBLIOGRAPHY

The works of reference for following up this subject area are:

- Benito, C. 360 problemas de genética resueltos paso a paso. Ed. Síntesis
- Cummings, MR; Klug, WS; Spencer, CA. Conceptos de genética. Ed. Pearson Educacion.
- Soler, M. Evolución. La base de la Biología. Proyecto Sur de Ediciones.
- Kenneth, V. Vertebrados, anatomía comparada, función y evolución. Ed. Interamericana, McGraw-Hill
- Mader, S. Biología. Ed. Interamericana, McGraw-Hill.
- Nicholas, FW. Genética Veterinaria. Ed. Acribia
- Rueda, J; Linacero, MR; Toro, MA. Genética y biotecnología de plantas y animales. Ed. Sintesis

The recommended bibliography is indicated below:

- Campbell, KH; McWhir J; Ritchie, WA; Wilmut, I. Sheep cloned by nuclear transfer from a cultured cell line.
- Darwin, C. El origen de las especies.
- Goodall, Jane. En la senda del hombre
- Harari, YN. Sapiens (de animales a dioses)
- Quammen, D. The Song of the Dodo.
- Rosas, A. La evolución del género Homo