1. OVERVIEW

Subject Area	Biological Agents I
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

Biological Agents I 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 Biological Agents II (taught in the first semester of the second year of the Bachelor's Degree in Veterinary Medicine, also worth 6 ECTS), comprise the broader subject area of Biological Agents, worth a total of 12 ECTS.

This subject area aims to provide students with the biological, taxonomical and veterinary-related foundational knowledge of the most significant viral and bacterial infectious agents in animal health. This will 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).

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.

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

- 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.

- CT5: Analysis and Problem-solving. Assess information critically, address complex situations by breaking them down into their various parts, identify patterns, and consider other alternatives, approaches and perspectives in order to reach the best solutions and effective arrangements.

Skills Specific to the Degree:

- CE1: Knowledge and application of the principles and foundations of:
  c) the morphology, taxonomy, bionomics and systematics of animal and plant species of veterinary interest.
- CE2. Knowledge and application of:
  g) the molecular and genetic principles and foundations of biological processes.

- CE3. Knowledge and application of the principles and foundations of:
  a) the study of microorganisms and parasites that affect animals, and of those that are of industrial, biotechnological or environmental use.
  b) the immune response.

- CE6. Knowledge and application of:
  h) pharmacotherapy.

- CE7. Knowledge and application of:
  c) zoonoses and public health.

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

- RA1. Identify the most important bacterial agents in veterinary medicine, in terms of both their prevalence and their pathogenic significance, with special regard to zoonotic species.
- RA2. Identify the most important viral agents in veterinary medicine, both in terms of their prevalence and their pathogenic significance, with special regard to zoonotic species.
- RA3. Describe the morphological, biological, metabolical and genetic nomenclature and characteristics of bacteria and viruses.
- RA4. Describe the morphological, biological, metabolical and genetic nomenclature and characteristics of bacteria.
- RA5. Distinguish the immunological mechanisms triggered by virus-related infections.
- RA6. Identify the effect that the main physical, chemical and antimicrobial agents have on bacteria and viruses, as well as their resistance and possible consequences for human health.

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, RA2, RA3
CE2g	RA3
CE3a	RA1, RA2, RA3
CE3b	RA4, RA5
CE6h	RA6
CE7c	RA1, RA2

4. CONTENT

The subject area has been divided into three units that will be taught by means of lectures ("Topic, T"), practicals (labs, workshops; "Practical, P"), theory and practical lessons (TP) and working groups (case studies and cooperative learning; "Working Groups, WG"). The duration of T will be 1-2h; of P, 2h; of TP, 2h and of WG, 2h.

UNIT 1. BACTERIOLOGY

UNIT 2. VIROLOGY

UNIT 3. IMMUNOLOGY AND THERAPEUTICS

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

The types of teaching/learning methods are as follows:

- MD1: Lecture / Web conference
- MD2: Case studies
- 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:

On campus:

Learning activity	Number of total hours	Number of hours on campus
AF1: Master lectures	20	20
AF2: Group activities	8	2
AF3: Case studies and problem-solving	5	2
AF4: Oral presentations	2	2
AF5: Independent working	68	0
AF6: Workshops and/or labs and/or simulation	30	30
AF9: Research	10	0
AF10: Tutorials	5	2
AF11: Assessment tests	2	2
TOTAL	**150**	**60**

7. ASSESSMENT

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

On campus:

Assessment system	Weighting
Activity 1. Partial Theory Exam 1 (March)	30%
Activity 2. Partial Theory Exam 2 (May)	30%
Activity 3. Partial Practical Exam 1	12.5%
Activity 4. Partial Practical Exam 2	12.5%
Activity 5. Research Working Groups	10%
Activity 6. Oral presentation	5%

On the Virtual Campus, 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.
Lab work, synchronous workshops, complex simulations, case studies and theory exams take place on campus and attendance is compulsory. Practical exams will take place at the end of the practicals.
To pass the subject area, you must achieve a grade equal to or above 5.0 in each partial theory exam and partial practical exam, and must also have submitted Activities 5 and 6 as indicated in the table. Additionally, you must have completed all online lab assignments (Labster) in order to pass the subject area (Activity 5).
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 on the subject area are:

- Mosselman & Lienaux. “Manual of veterinary microbiology”. Alpha Editions, 2020
- MacLachlan & Dubovi. “Fenner's Veterinary Virology”. Academic Press (2ªed.), 2016
- McVey, Kennedy & Chengappa. “Veterinary Microbiology” John Wiley & Sons, 2013.
- Williams. “A Manual of Bacteriology” Maven Books, 2020