



Information about the subject

Degree: Bachelor of Science Degree in Veterinary Medicine

Faculty: Faculty of Veterinary Medicine and Experimental Sciences

Code: 1260210 **Name:** Veterinary Parasitology

Credits: 6,00 **ECTS Year:** 2 **Semester:** 1

Module: Module of Common Basic Training

Subject Matter: Biological Agents of Interest in Veterinary Medicine **Type:** Compulsory

Department: Animal Production and Public Health

Type of learning: Classroom-based learning

Languages in which it is taught: Spanish

Lecturer/-s:

1262A	<u>Jose Sansano Maestre</u> (Responsible Lecturer)	jose.sansano@ucv.es
	<u>Iris Garcia Bacete</u>	iris.garcia@ucv.es
1262B	<u>Jose Sansano Maestre</u> (Responsible Lecturer)	jose.sansano@ucv.es
	<u>Iris Garcia Bacete</u>	iris.garcia@ucv.es



Module organization

Module of Common Basic Training

Subject Matter	ECTS	Subject	ECTS	Year/semester
Statistics	6,00	Biometrics and Statistics	6,00	1/1
Biology	6,00	Animal and Plant Biology	6,00	1/1
Biochemistry	6,00	Biochemistry	6,00	1/2
Animal Anatomy	18,00	Animal Anatomy I and Embryology	6,00	1/1
		Animal Anatomy II	6,00	1/2
		Animal Cytology and Histology	6,00	1/2
Animal Physiology	12,00	Animal Physiology I	6,00	2/1
		Animal Physiology II and Immunology	6,00	2/2
Genetics	6,00	Genetics	6,00	1/2
Animal Domestication	6,00	Animal Domestication (Ethnology, Ethology and Animal Welfare)	6,00	1/2
Biological Agents of Interest in Veterinary Medicine	12,00	Veterinary Microbiology	6,00	2/2
		Veterinary Parasitology	6,00	2/1
Veterinary Medicine and Society	6,00	Veterinary Regulations and Legislation, Social Morality and Professional Deontology	6,00	5/1



Physics and Chemistry	6,00	Physico-chemical fundamentals of veterinary medicine	6,00	1/1
-----------------------	------	--	------	-----

Recommended knowledge

Not established.

Learning outcomes

At the end of the course, the student must be able to prove that he/she has acquired the following learning outcomes:

- R1 The student distinguishes the different groups of parasites of veterinary interest, using the taxonomy and systematics of the parasites studied in the subject.
- R2 The student knows the general, structural and biological characteristics of the main groups of parasite organisms of veterinary interest.
- R3 The student knows how to use different parasitological working techniques in the laboratory.
- R4 The student is able to write a comprehensible and organized text on various aspects of parasitology in the veterinary field.
- R5 The student understands the different aspects of the parasite-host relationship in order to explain the epidemiology, pathogenesis and prevention of the diseases they cause both in domestic animals and in the human species (zoonoses).
- R6 The student looks for bibliographic information from different sources and knows how to analyse it with a critical and constructive spirit in order to produce documents on veterinary parasitology, through teamwork.



Competencies

Depending on the learning outcomes, the competencies to which the subject contributes are (please score from 1 to 4, being 4 the highest score):

BASIC		Weighting			
		1	2	3	4
CB1	Students must show that they have and understand knowledge in a field of study that is based on general secondary education on a level that, although supported by advanced text books, includes also some aspects that involve knowledge belonging to the vanguard of their field of study.			X	

GENERAL		Weighting			
		1	2	3	4
CG6	Developing professional practice, acquiring skills related to teamwork, with an efficient use of resources and quality management.			X	
CG7	Identifying emerging risks in all areas of the veterinary profession.				X

SPECIFIC		Weighting			
		1	2	3	4
E15	Knowing and applying principles and bases of the study of microorganisms and parasites that affect animals and those who have an industrial, biotechnological or environmental application.				X

TRANSVERSAL		Weighting			
		1	2	3	4
T1	Capacity of analysis, synthesis, implementation of knowledge for problem-solving and decision-making.			X	



T4	Mastering fluency in oral and written mother tongue communication, listening and responding effectively using a language appropriate to audience and context.				X
T6	Using information technology to communicate, share, search for, collect, analyze and manage information, especially related to the veterinarian practice.	X			
T8	Efficient and effective work, both independently and as a member of a multidisciplinary team or unit, showing respect, appreciation and sensitivity to the work of others.	X			
T10	Ability to learn, to research, and to be aware of the need to keep knowledge updated, and attending training programs.	X			



Assessment system for the acquisition of competencies and grading system

Assessed learning outcomes	Granted percentage	Assessment method
R1, R2, R5	40,00%	Written assessment of acquired knowledge and skills. The test may consist of a series of open-ended questions or multiple-choice questions about the theoretical contents of the module and/or practical exercises (problem-solving).
R1, R2, R3	35,00%	Evaluation of the practical laboratory work, which must demonstrate the competences acquired by the student and his or her ability to use them to solve the different situations and problems that arise in a laboratory; this assessment may consist of one of the following methods, or a combination of several of them: an individual written test, the individual or group performance of a laboratory experience, the delivery of an individual or group report on the work carried out in the laboratory.
R4, R5, R6	10,00%	Evaluation of group work through a system of continuous assessment throughout the course based on the delivery of assignments the objectives and content of which will be proposed by the teacher.
R4, R5, R6	15,00%	Evaluation of activities in which the student must do some research individually and structure information related to each of the topics through a system of continuous assessment throughout the course based on the delivery of papers, the objectives and contents of which will be proposed by the teacher.

Observations

El examen teórico consta de 70 preguntas tipo test de con cuatro posibles respuestas de las que solo una es verdadera. **Será imprescindible obtener una calificación de 5 para aprobar el examen**

El examen práctico consistirá en la observación de 10 preparaciones al microscopio en la que el alumno deberá reconocer, mediante el uso del microscopio, el género del parásito y su taxonomía



básica en un periodo de 30 minutos.

Para poder presentarse a la evaluación final de la asignatura será IMPRESCINDIBLE haber cursado el 80% de las sesiones presenciales. Aquellos alumnos que no cumplan el requisito no podrán presentarse a ninguna de las convocatorias establecidas.

Aquellos alumnos que, por una causa justificada (véase artículo 10 de la normativa vigente <https://www.ucv.es/documentos/normativa/documento11.html>), no puedan asistir a la evaluación de la asignatura en la fecha oficial de exámenes, podrán someterse a la evaluación final de la asignatura mediante un examen oral o escrito, según criterio del profesor.

En todas las evaluaciones escritas que se lleven a cabo en la asignatura se tendrá en cuenta la ortografía, de manera que por cada falta ortográfica se restarán 0,1 puntos de la nota final hasta un máximo de 2 puntos.

En segundas y sucesivas matrículas, las notas obtenidas en las diferentes partes se guardarán indefinidamente. Si hubiera actividades nuevas todos los alumnos deberían realizarlas.

MENTION OF DISTINCTION:

According to Article 22 of the Regulations governing the Evaluation and Qualification of UCV Courses, the mention of "Distinction of Honor" may be awarded by the professor responsible for the course to students who have obtained, at least, the qualification of 9 over 10 ("Sobresaliente"). The number of "Distinction of Honor" mentions that may be awarded may not exceed five percent of the number of students included in the same official record, unless this number is lower than 20, in which case only one "Distinction of Honor" may be awarded.

Learning activities

The following methodologies will be used so that the students can achieve the learning outcomes of the subject:

- M1 On-site training activity aimed primarily at acquiring knowledge acquisition skills. It is characterised by the fact that students are spoken to. Also called master class or exposition, it refers to the oral presentation made by the teacher, (with the support of blackboard, a computer and a projector for the display of texts, graphs, etc.), in front of a group of students. They are expository, explanatory or demonstrative sessions of contents. The size of the group is determined by the limit or physical capacity of the classroom; therefore, it is a single group.



- M2 On-site training activity aimed primarily at obtaining knowledge application and research skills. Knowledge is built through interaction and activities. The activity consists of supervised monographic sessions with shared participation (teachers, students, experts). The size of the group is variable, from one large group to various small groups, with a minimum of 6 students to ensure interaction. The evaluation will be based on follow-up records kept by the teacher. Participation and the development of the capacity to problematize should be taken into account.
- M4 On-site training activity in groups that takes place in the classroom. It includes working with documents and formulating ideas without handling animals, organs, objects, products, or corpses (e.g., work with articles or documents, clinical case studies, diagnostic analyses, etc.). It would correspond to "Animal-free supervised practical work", type e1, from the European evaluation of EAEVE. The size of the group is variable, in a range of 10 to 20 students.
- M5 On-site training activity in groups that takes place in the Computer Lab where the computer is used as support for learning. It includes work with computer models, specific software, Web queries, etc. It would correspond to "Animal-free supervised practical work", type e1, from the European evaluation of EAEVE. The size of the group is variable, in a range of 10 to 20 students.
- M6 On-site training activity in groups carried out in the laboratory. It includes the sessions where the students develop laboratory experiments, make dissections or use the microscopes for the study of histological or histopathological samples actively and autonomously, under the supervision of the professor. It also includes work with healthy animals, objects, products, corpses (e.g., animal handling, bacteriological practices, physiology or biochemistry, meat inspection, etc.). It would correspond to the "Supervised practical non-clinical animal work" type e2 of the European evaluation of EAEVE. The size of the group is variable, in a range of 10 to 20 students.
- M8 A set of on-site training activities carried out by the teacher to provide personalised attention to the student or in small groups with the aim of reviewing and discussing the materials and topics presented in classes, seminars, readings, carrying out projects, etc. The aim is to ensure a truly comprehensive education of the student rather than a mere transfer of information. It is, therefore, a personalized assistance relationship in which the tutor assists, facilitates and guides one or more students in the learning process.
- M9 Set of processes that attempt to evaluate the learning outcomes of students expressed in terms of acquired knowledge, capacities, skills or abilities developed and manifested attitudes. It covers a wide range of activities that can be developed for students to demonstrate their training (e.g. written, oral and practical tests, projects or assignments). It also includes the Official Calls.



- M10** Autonomous training activity, including activities and coursework, bibliographic searches. The results obtained from unsupervised group and teamwork will be evaluated, with particular attention paid at the time of evaluation to the acquisition of specific knowledge development skills through group work.
- M11** Autonomous training activities related to personal study, or the preparation of individual course assignments. The individual preparation of readings, essays, problem solving, papers, reports, etc. will be evaluated through presentations or submissions during theoretical classes, practical classes, seminars and/or tutorials. The evaluation of the submitted papers will consider the structure of the paper, the quality of the documentation, originality, spelling and presentation.

IN-CLASS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
Theoretical lessons (TL) M1	R1, R2, R5	44,00	1,76
In-Classroom Practice (ICP) M4	R4, R6	2,00	0,08
Laboratory Practice (LP) M6	R1, R2, R3	12,00	0,48
Evaluation (Ev) M9	R1, R2, R4, R5	2,00	0,08
TOTAL		60,00	2,40

LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
Group work M10	R4, R5, R6	30,00	1,20
Individual work M11	R1, R2, R5	60,00	2,40
TOTAL		90,00	3,60



Description of the contents

Description of the necessary contents to acquire the learning outcomes.

Theoretical contents:

Content block	Contents
INTRODUCTION TO VETERINARY PARASITOLOGY	<p>Unit 1. Parasitism and other biological associations. Origin and evolution of parasitism. Diffusion of parasitism in nature. Classes of parasites and hosts. Taxonomy and Systematics</p> <p>Unit 2. Parasitism and the environment. Parasites and hosts as components of biocenosis. Biological cycles. Parasitic biocenosis.</p> <p>Unit 3. Influence of parasitic life on the organization and physiology of parasites. Morphological and biological adaptations.</p> <p>Unit 4. Parasitic specificity. The host response against parasitic invasion. Zoonosis</p>
VETERINARY ENTOMOLOGY	<p>Unit 5. Phylum Arthropoda. Parasitic arthropods: general characteristics. Classification.</p> <p>Unit 6. Class Insecta (I): general characters and classification. Lice (Phthiraptera); fleas (Siphonaptera).</p> <p>Unit 7. Class Insecta (II): Diptera (Nematocera and Brachycera). Unit 8. Insecta class (III): Diptera (Cyclorrhapha).</p> <p>Unit 9. Class Arachnida: general characters and classification. Mites and ticks (Acarina).</p> <p>Unit 10. Parasitic crustaceans: Class Maxillopoda; Class Malacostraca.</p> <p>Topic 11. Pentastomids</p>



PHYLUM PLATYHELMINTHES

Unit 12 Phylum Platyhelminthes: general characters and classification. Monogeneous class: general characters.

Unit 13. Class Trematoda: general characters and classification. Families Fasciolidae and Dicrocoeliidae.

Unit 14. Class Trematoda: Families Schistosomatidae, Paramphistomatidae and others.

Unit 15. Class Cestoda: morphological and biological characteristics. Classification of the most important cestodes in Veterinary Medicine. Order Pseudophyllidea: general characters. Genus Diphylobothrium.

Unit 16. Order Cyclophyllidea (I): general characters and classification. Families Anoplocephalidae, Dilepididae, Davaineidae, Hymenolepididae, and Thysanosomidae.

Unit 17. Order Cyclophyllidea (II). Taeniidae and Mesocestoididae families.

PHYLUM NEMATODA

Unit 18. Phylum Nematoda. Parasitic nematodes: morphological and biological characteristics. Classification of the most important nematodes in Veterinary Medicine.

Unit 19. Class Adenophorea. Order Trichocephalida Superfamilies Trichuroidea and Trichinelloidea. Order Dioctophymatida: Superfamily Dioctophymatoidea.

Unit 20. Subclass Secernentea. Order Rhabditida: Superfamily Rhabditoidea. Order Oxyurida: Superfamily Oxyuroidea.

Unit 21. Order Spirurida. Superfamilies Spiruroidea, Physalopteroidea and Filarioidea.

Unit 22. Order Ascarida. Superfamily Ascaridoidea.

Unit 23. Order Strongylida. Superfamilies Trichostrongyloidea and Strongyloidea. Strongyles of ruminants.

Unit 24. Pig and bird strongyles.

Unit 25. Equine strongyles.

Unit 26. Family Ancylostomatidae.

Unit 27. Bronchopulmonary nematodes. Family Dictyocaulidae and Superfamily Metastrongyloidea.

Unit 28. Other parasitic helminths: Phylum Acanthocephala. Phylum Annelida

PARASITIC PROTOZOA

Unit 29. Protozoa: generalities and systematics.

Unit 30. Phylum Amoebozoa and Phylum Ciliophora

Unit 31. Phylum Metamonada (flagellated);

Unit 32: Infraphylum Apicomplexa;



VETERINARY MYCOLOGY

Unit 33. Generalities and systematics.

Unit 34. Mycosis-causing fungi

Organization of the practical activities:

	Content	Place	Hours
PR1.	VETERINARY ENTOMOLOGY	Laboratory	2,00
PR2.	PLATHELMINTHES	Laboratory	2,00
PR3.	NEMATODA	Laboratory	2,00
PR4.	PROTOZOA	Laboratory	2,00
PR5.	CUALITATIVE DIAGNOSIS	Laboratory	2,00
PR6.	CUANTITATIVE DIAGNOSIS	Laboratory	2,00

Temporary organization of learning:

Block of content	Number of sessions	Hours
INTRODUCTION TO VETERINARY PARASITOLOGY	3,00	6,00
VETERINARY ENTOMOLOGY	5,00	10,00
PHYLUM PLATYHELMINTHES	6,00	12,00
PHYLUM NEMATODA	8,00	16,00
PARASITIC PROTOZOA	6,00	12,00
VETERINARY MYCOLOGY	2,00	4,00



References

BASIC BIBLIOGRAPHY

- DWIGHT D. BOWMAN. Georgis parasitología para veterinarios Madrid, Elsevier , 2011.
- FOREYT W.J. Veterinary parasitology: reference manual. -Ames : : Blackwell, 2001 .
- HIEPE T., LUCIUS, R., GOTTSTEIN B. Parasitología general: con principios de inmunología, diagnóstico y lucha antiparasitaria -Barcelona : : Acribia , 2010.
- MATTHEWS B.E. An Introduction to Parasitology, Reino Unido : Cambridge University Press , 2003.
- URQUHART. Parasitología veterinaria. Acribia 2012.

COMPLEMENTARY BIBLIOGRAPHY

- CRUZ-REYES A, CAMARGO-CAMARGO B. Glosario de términos en parasitología y ciencias afines -México : Plaza y Valdés , 2001.
- FRONTERA CARRIÓN, E. M. Patología parasitaria porcina: en imágenes-Zaragoza : Servet , 2009.
- EIRAS J C Métodos de estudio y técnicas laboratoriales en parasitología de peces. - Zaragoza : Acribia , 2002.
- EUZÉBY J. Los parásitos de las carnes: epidemiología, fisiopatología, incidencias zoonóticas; -Zaragoza : Acribia , D.L. 2000.
- HENDRIX C M., ROBINSON E. Diagnostic parasitology for veterinary technicians . -St. Louis, Missouri : Elsevier , 2012.
- MEANA MAÑÉS A., ROJO VÁZQUEZ, F. Q&A sobre parasitología equina: libros de preguntas y respuestas. Zaragoza: Servet , 2010.
- MEHLHORN, H. Arthropods as vectors of emerging diseases. . Berlín; : Springer , 2012.
- PÉREZ TORT, G., IGLESIAS M F., MAS J. Atlas de parasitología en pequeños animales, Buenos Aires : Intermédica , 2008.
- VALCÁRCEL SANCHO F. Atlas de parasitología ovina. -Zaragoza : Servet , 2009.
- VAN DIJK, J. E. , GRUYS E., MOUWEN J. M. V. M. Color atlas of veterinary pathology : general morphological reactions of organs and tissues. Edinburgh. Saunders Elsevier , 2008.
- WALL R., SHEARER D. Ectoparasitología: biología, patología y control. Zaragoza Acribia , 2010.



Addendum to the Course Guide of the Subject

Due to the exceptional situation caused by the health crisis of the COVID-19 and taking into account the security measures related to the development of the educational activity in the Higher Education Institution teaching area, the following changes have been made in the guide of the subject to ensure that Students achieve their learning outcomes of the Subject.

Situation 1: Teaching without limited capacity (when the number of enrolled students is lower than the allowed capacity in classroom, according to the security measures taken).

In this case, no changes are made in the guide of the subject.

Situation 2: Teaching with limited capacity (when the number of enrolled students is higher than the allowed capacity in classroom, according to the security measures taken).

In this case, the following changes are made:

1. Educational Activities of Onsite Work:

All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject will be made through a simultaneous teaching method combining onsite teaching in the classroom and synchronous online teaching. Students will be able to attend classes onsite or to attend them online through the telematic tools provided by the university (videoconferences). In any case, students who attend classes onsite and who attend them by videoconference will rotate periodically.

In the particular case of this subject, these videoconferences will be made through:

☒ Microsoft Teams

☒ Kaltura



Situation 3: Confinement due to a new State of Alarm.

In this case, the following changes are made:

1. Educational Activities of Onsite Work:

All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject, as well as the group and personalized tutoring, will be done with the telematic tools provided by the University, through:

☒ Microsoft Teams

☐ Kaltura

Explanation about the practical sessions:



2. System for Assessing the Acquisition of the competences and Assessment System

ONSITE WORK

Regarding the Assessment Tools:

☒ The Assessment Tools will not be modified. If onsite assessment is not possible, it will be done online through the UCVnet Campus.

☐ The following changes will be made to adapt the subject's assessment to the online teaching.

Course guide		Adaptation	
Assessment tool	Allocated percentage	Description of the suggested changes	Platform to be used

The other Assessment Tools will not be modified with regards to what is indicated in the Course Guide.

Comments to the Assessment System: