



## Information about the subject

**Degree:** Bachelor of Science Degree in Veterinary Medicine

**Faculty:** Faculty of Veterinary Medicine and Experimental Sciences

**Code:** 1262509 **Name:** Surgical pathology of the musculoskeletal system of small animals

**Credits:** 6,00 **ECTS Year:** 5 **Semester:** 1

**Module:** Module of elective courses

**Subject Matter:** Intensifications per animal group **Type:** Elective

**Department:** -

**Type of learning:** Classroom-based learning

**Languages in which it is taught:** Spanish

### Lecturer/-s:

|       |                                                                  |                 |
|-------|------------------------------------------------------------------|-----------------|
| OPV04 | <u>Claudio Ivan Serra Aguado</u> ( <b>Responsible Lecturer</b> ) | ci.serra@ucv.es |
|       | <u>Vicente Jose Sifre Canet</u>                                  | vj.sifre@ucv.es |



## Module organization

### Module of elective courses

| Subject Matter                     | ECTS  | Subject                                                           | ECTS | Year/semester                                           |
|------------------------------------|-------|-------------------------------------------------------------------|------|---------------------------------------------------------|
| Intensifications per animal group  | 24,00 | Specialisation in Clinic of Wild and Exotic Animals               | 6,00 | 5/1                                                     |
|                                    |       | Specialisation in the Equine Clinic                               | 6,00 | This elective is not offered in the academic year 23/24 |
|                                    |       | Specialisation in treatment of small animals                      | 6,00 | 5/1                                                     |
|                                    |       | Surgical pathology of the musculoskeletal system of small animals | 6,00 | 5/1                                                     |
| Animal Reproduction and Production | 30,00 | Fighting bull                                                     | 6,00 | This elective is not offered in the academic year 23/24 |
|                                    |       | Reproductive Technology                                           | 6,00 | This elective is not offered in the academic year 23/24 |
|                                    |       | Specialisation in animal production                               | 6,00 | 5/1                                                     |
|                                    |       | Specialisation in animal research                                 | 6,00 | This elective is not offered in the academic year 23/24 |
|                                    |       | Specialisation in aquaculture                                     | 6,00 | This elective is not offered in the academic year 23/24 |



|         |       |                                              |      |                                                         |
|---------|-------|----------------------------------------------|------|---------------------------------------------------------|
| Feeding | 12,00 | Microbiology in Food                         | 6,00 | This elective is not offered in the academic year 23/24 |
|         |       | Quality management in the agri-food industry | 6,00 | This elective is not offered in the academic year 23/24 |

## Recommended knowledge

- To have notions of anatomy
- To have notions of physiology
- To have notions of general pathology
- To have notions of companion animal clinics
- To have notions of diagnostic techniques I and II
- To have notions of surgery I and II



## 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 searches bibliographic information from different sources and knows how to analyse it with a critical and constructive spirit.
- R2 The student knows and understands the concepts and terminology presented in the module.
- R3 The student knows the basic concepts of surgical biology.
- R4 The student correctly applies the principles of asepsis and antisepsis.
- R5 The student is able to propose a treatment for a joint pathology.
- R6 The student is able to propose a treatment for a muscle-tendinous pathology.
- R7 The student is able to propose a treatment for a neurological problem.
- R8 The student is able to write documents on surgery and surgical pathology, working in a team.
- R9 The student argues according to rational criteria based on his or her work.



## 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 |
| CB2   | Capacity to apply knowledge to work or occupation in a professional way and have the competences that are proved by preparing and arguing topics and problem-solving in their specific field of study. |           |   | X |   |
| CB3   | Capacity to gather and interpret relevant data usually within their specific field of study and capacity to make judgments that include reflection on relevant social, scientific or ethical issues.   |           |   |   | X |
| CB4   | Capacity to communicate information, ideas, problems and solutions at specialist and non-specialist levels.                                                                                            |           | X |   |   |
| CB5   | Capacity to develop those learning skills needed to undertake further studies with a high degree of autonomy.                                                                                          |           |   |   | X |

| GENERAL |                                   | Weighting |   |   |   |
|---------|-----------------------------------|-----------|---|---|---|
|         |                                   | 1         | 2 | 3 | 4 |
| CG0     | Capacity to speak well in public. |           |   | X |   |

| SPECIFIC |                                                                                                                                  | Weighting |   |   |   |
|----------|----------------------------------------------------------------------------------------------------------------------------------|-----------|---|---|---|
|          |                                                                                                                                  | 1         | 2 | 3 | 4 |
| E24      | Knowing and applying methods and procedures of clinical examination, additional diagnostic techniques and their interpretation.  |           | X |   |   |
| E25      | Knowing and applying imaging diagnostic and radiation biology.                                                                   |           |   | X |   |
| E27      | Knowing and applying recognition and diagnosis of different types of injuries and their association with pathological processes. |           |   | X |   |



|     |                                                                                                                                                                   |   |   |   |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|
| E28 | Knowing and applying the clinical study of patients and medical, surgical or hygienic-dietary treatments required, as well as sporadic diseases affecting groups. | X |   |   |
| E29 | Knowing and applying diagnosis.                                                                                                                                   |   | X |   |
| E30 | Knowing and applying surgical techniques used in veterinary.                                                                                                      |   |   | X |
| E31 | Knowing and applying animal anesthesia and resuscitation.                                                                                                         | X |   |   |

| TRANSVERSAL |                                                                                                                                                                                                                                                             | Weighting |   |   |   |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---|---|---|
|             |                                                                                                                                                                                                                                                             | 1         | 2 | 3 | 4 |
| T1          | Capacity of analysis, synthesis, implementation of knowledge for problem-solving and decision-making.                                                                                                                                                       |           |   |   | X |
| T2          | Understanding and applying the scientific method to professional practice including evidence-based medicine.                                                                                                                                                |           |   | X |   |
| T3          | Basic knowledge of the veterinary profession: legal, economic, administrative, planning and time management issues and the veterinarians' society together with the importance of monitoring quality, standardization and protocols of veterinary practice. | X         |   |   |   |
| T4          | Mastering fluency in oral and written mother tongue communication, listening and responding effectively using a language appropriate to audience and context.                                                                                               |           | X |   |   |
| T5          | Knowledge of a second language, preferably English, especially technical vocabulary of veterinary science.                                                                                                                                                  |           | X |   |   |
| T6          | Using information technology to communicate, share, search for, collect, analyze and manage information, especially related to the veterinarian practice.                                                                                                   |           | X |   |   |
| T7          | Ability to adapt to new situations, self-critical ability, being aware of personal limitations and understanding when and where seeking and obtaining advice and professional help.                                                                         |           | 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 |   |
| T9          | Keeping an ethical behaviour in the exercise of given responsibilities toward the profession and society.                                                                                                                                                   |           |   | X |   |



T10 Ability to learn, to research, and to be aware of the need to keep knowledge updated, and attending training programs.

x

T11 Ability to work in an international context, appreciating diversity and multiculturalism, through the knowledge of foreign cultures and customs.

x



## Assessment system for the acquisition of competencies and grading system

| Assessed learning outcomes         | Granted percentage | Assessment method                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| R1, R2, R3, R5, R6, R8, R9         | 15,00%             | Evaluation of the use of the practical lessons in the classroom, of problems or computer science, seminars and tutorials, by means of participation, computer-supported problem solving and the elaboration of the corresponding reports.                                                                                                                                                                                                                                                                        |
| R1, R2, R3, R4, R5, R6, R7, R8, R9 | 20,00%             | 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. |
| R1, R2, R3, R4, R5, R6, R7, R8, R9 | 20,00%             | Evaluation of practical work in a clinic through which the student must demonstrate the competences acquired and the ability to use them to solve the different situations and problems that arise in a clinic; this assessment may involve one of the following methods, or a combination of several of them: a written individual test, the individual or group performance of a clinical experience, the delivery of an individual or group report on the work carried out in the laboratory.                 |
| R1, R2, R3, R5, R6, R7, R8, R9     | 20,00%             | 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.                                                                                                                                                                                                                                                                                                               |





|                                   |        |                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| R1, R2, R3, R4, R5, R6,<br>R7, R9 | 25,00% | 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

### 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.



- M3 On-site group-work training activity oriented toward problem solving under the supervision of a teacher. 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, to differentiate it from a master class.
- 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.
- M7 On-site training activity that is defined as the clinical practical work developed in the Veterinary Clinical Hospital or clinical centres ascribed to the University, as well as itinerant clinical practices, mainly with ruminants, equids, pigs, birds and aquatic animals. Also included are necropsies, surgical workshops and training in clinical examination techniques or diagnosis with healthy patients. In these practical sessions the student will always work with animals, which can be healthy (e.g. propaedeutic or obstetrics) or clinical cases (individual or collective), including a protocol or work scheme, being supervised by a teacher and assuming the provision of a service. This type of training corresponds to type e3 of the EAEVE European evaluation called "Clinical Training" (strictly hands-on)". The size of the group will be 5 students or fewer.
- 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.
- M12 On-site training activity consisting of an independent clinical rotation with a final assessment of competencies, in university veterinary hospitals, itinerant clinics, farms, pilot plants, departments with devices intended for practical teaching in the degree of veterinary, as well as stays in veterinary slaughterhouses, companies and external agencies in the veterinary or related fields.



## IN-CLASS LEARNING ACTIVITIES

|                                | LEARNING OUTCOMES                     | HOURS         | ECTS        |
|--------------------------------|---------------------------------------|---------------|-------------|
| Theoretical lessons (TL)<br>M1 | R2, R3, R4, R5, R6, R7                | 60,00         | 2,40        |
| Seminars (S)<br>M3             | R2, R3, R4, R5, R6, R7, R9            | 40,00         | 1,60        |
| Laboratory Practice (LP)<br>M6 | R3, R4, R5, R6, R7                    | 25,00         | 1,00        |
| Tutorial<br>M8                 | R2, R3, R4, R5, R6, R7, R9            | 5,00          | 0,20        |
| Evaluation (Ev)<br>M9          | R1, R2, R3, R4, R5, R6, R7,<br>R8, R9 | 5,00          | 0,20        |
| <b>TOTAL</b>                   |                                       | <b>135,00</b> | <b>5,40</b> |

## LEARNING ACTIVITIES OF AUTONOMOUS WORK

|                        | LEARNING OUTCOMES      | HOURS        | ECTS        |
|------------------------|------------------------|--------------|-------------|
| Group work<br>M10      | R1, R5, R6, R7, R8, R9 | 7,50         | 0,30        |
| Individual work<br>M11 | R1, R8, R9             | 7,50         | 0,30        |
| <b>TOTAL</b>           |                        | <b>15,00</b> | <b>0,60</b> |



## Description of the contents

Description of the necessary contents to acquire the learning outcomes.

### Theoretical contents:

| Content block            | Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DU-1 ARTICULAR PATHOLOGY | <p>Chapter 1. Approaches to the main joints<br/>Chapter 2. Degenerative joint disease (osteoarthritis)<br/>Chapter 3. Arthritis/polyarthritis<br/>Chapter 4. Shoulder joint pathology<br/>Chapter 5. Elbow joint pathology<br/>Chapter 6. Hip joint pathology<br/>Chapter 7. Stifle joint pathology<br/>Chapter 8. Carpus/tarsus joint pathology<br/>Chapter 9. Temporomandibular joint pathology<br/>Chapter 10. Main myopathies in dogs and cats<br/>At the introduction of the subject will be explained the content and the students will be assigned with the topics on which they will be evaluated.</p> <p><b>COMPETENCIES: CB2, CB3, CB4, CB5, CG0, CG2, CG5, CG6, T1, T2, T3, T4, T5, T6, T7, T8, T9, T10, E23, E24, E25, E27, E28, E29, E30, E31</b></p> |
| DU-2. NEUROLOGY          | <p>Chapter 11. Neurolocalization<br/>Chapter 12. Seizures<br/>Chapter 13. Head tilt and nystagmus<br/>Chapter 14. Tremors, involuntary movements and paroxysmal alterations<br/>Chapter 15. Tetraparesis and paraparesis<br/>Chapter 16. Monoparesis<br/>Chapter 17. Exercise intolerance and collapse<br/>Chapter 18. Anal and vesical disfunction</p> <p><b>COMPETENCIES: CB2, CB3, CB4, CB5, CG0, CG2, CG5, CG6, T1, T2, T3, T4, T5, T6, T7, T8, T9, T10, E23, E24, E25, E27, E28, E29, E30, E31</b></p>                                                                                                                                                                                                                                                        |



## DU-3. Traumatology

Chapter 19. Basis of traumatology I  
Chapter 20. External fixation and coaptation  
Chapter 21. Internal fixation  
Chapter 22. Fractures of the metaphysis and epiphysis I  
Chapter 23. Fractures of the metaphysis and epiphysis II  
Chapter 24. Diaphyseal fractures I  
Chapter 25. Diaphyseal fractures II  
Chapter 26. Oncology and amputations  
Chapter 27. Mandible and maxilla  
Chapter 28. Angular limb deformities  
Chapter 29. Regenerative medicine

**COMPETENCIES: CB2, CB3, CB4, CB5, CG0, CG2, CG5, CG6, T1, T2, T3, T4, T5, T6, T7, T8, T9, T10, E23, E24, E25, E27, E28, E29, E30, E31**



## Organization of the practical activities:

|       | Content                       | Place    | Hours |
|-------|-------------------------------|----------|-------|
| PR1.  | orthopedic examination        | Hospital | 2,00  |
| PR2.  | general joint (artrocentesis) | Hospital | 2,00  |
| PR3.  | approaches to forelimb joints | Hospital | 4,00  |
| PR4.  | approaches to hindlimb joints | Hospital | 4,00  |
| PR5.  | neurologic examination        | Hospital | 2,00  |
| PR6.  | external fixation             | Hospital | 2,00  |
| PR7.  | internal fixation             | Hospital | 2,00  |
| PR8.  | bandages                      | Hospital | 2,00  |
| PR9.  | approaches I (forelimb)       | Hospital | 4,00  |
| PR10. | approaches II (hindlimb)      | Hospital | 4,00  |
| PR11. | implants 3D                   | Hospital | 2,00  |
| PR12. | implants 3D                   | Hospital | 2,00  |
| PR13. | implants 3D                   | Hospital | 2,00  |
| PR14. | implants 3D                   | Hospital | 4,00  |



## Temporary organization of learning:

| Block of content         | Number of sessions | Hours |
|--------------------------|--------------------|-------|
| DU-1 ARTICULAR PATHOLOGY | 30,00              | 60,00 |
| DU-2. NEUROLOGY          | 7,50               | 15,00 |
| DU-3. Traumatology       | 30,00              | 60,00 |

## References

- Tobias KM, Johnston SA. Veterinary Surgery. Small Animal. 2nd Ed. Elsevier & Saunders. Missouri (USA). 2018.
- Fossum TW. Small Animal Surgery. 5th Ed. Mosby Elsevier. Missouri (USA). 2018
- Slatter D. Tratado de Cirugía en Pequeños Animales (4 vol). 3rd Ed. Elsevier. USA. 2003.
- Piermatei D, Flo G, DeCamp C. Handbook of Small Animal Orthopedics and Fracture Repair. 4th Ed Saunders. USA 2006.
- Johnson KA. Piermate's Atlas of surgical Approaches to the Bones and Joints of the dog and cat. 5th Ed. Hardcover; USA 2013.
- Monnet E. Small animal soft tissue surgery. Hardcover, USA 2013.
- Sharp N, Wheeler S. Small animal spinal disorders: Diagnosis and Surgery. 2nd Ed, Hardcover. 2005.
- Montavon PM, Voss K, Longley-Hobbs SJ. Feline orthopedic surgery and musculoskeletal disease. 1st Ed. Saunders-Elsevier, USA, 2009.
- Johnson AL, Dunning D. Atlas of orthopedic surgical procedures of the dog and cat. Saunders-Elsevier, USA, 2005,
- Johnson AL, Houlton JEF, Vannini R. AO Principles of fracture management in the dog and cat. AO publishing, Clavadelstrasse, Switzerland, 2005





## 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:

1. For the adaptation of the practical sessions between 1 and 10, it is planned to generate digital content for each practice, where the teacher shows the student the procedures that would be carried out in the practical session. Simultaneously, the different procedures would be verbally commented step by step. These practices can be viewed by the students on the platform and discussed with the teacher in case of any doubt in a joint online seminar.

2. For the adaptation of the practical sessions between 11 and 14, it is planned to provide the students with both the computer program and the radiographic and CT images made on the cadavers so that the students can carry out the stipulated surgical planning, and after that Through a joint online seminar, expose the different therapeutic options and resolve doubts



that arose during said planning.

## 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: