Exploratory Methods

Code: 102677
ECTS Credits: 9

2025/2026

Degree	Type	Year
Veterinary Medicine	OB	2

Contact

Name: Rafaela Cuenca Valera

Email: rafaela.cuenca@uab.cat

Teachers

Rafaela Cuenca Valera

Mariano Domingo Alvarez

Yvonne Espada Gerlach

Jordi Franch Serracanta

Ignacio Marco Sanchez

Alberto Jesús Marco Valle

David Prandi Chevalier

Joaquim Segales Coma

Jaime Miguel Martorell Monserrat

Jorge Martinez Martinez

Oscar Cabezón Ponsoda

Rosa Novellas Torroja

Teaching groups languages

You can view this information at the end of this document.

Prerequisites

It is essential to have completed the first year of degree and have acquired the knowledge of Morphology I, Morphology II, Biochemistry and Animal Management and have learned how to approach animals.

It is highly recommended to be taking Pathology. It is advisable to have adequate knowledge of Physics to understand and know the physical bases of the different image techniques.

Objectives and Contextualisation

The subject of Exploratory Methods is a second course subject and therefore, it is included in the basic initial subjects of the Veterinary degree. It is essential and essential for later clinical studies. It teaches the bases to elaborate the clinical history and to carry out the handling and the subjection with security of the animals. Also teaches the general and detailed exploration of animals, the collection of samples, their processing and interpretation, the application of imaging techniques in order to obtain the necessary information to be able to issue clinical trials that will be taught in the following courses of degree. Provides the basic methodology to perform an ordered, systematic and complete necropsy of the animal.

The specific objectives are that the student knows:

1. Clinical exploration methods and procedures: collection of clinical symptoms and their interpretation, biological sampling, processing and interpretation
2. The foundations of the different imaging techniques and radiobiology and the interpretation of images
3. The systematic realization of a necropsy

Competences

- Analyse, synthesise and resolve problems and make decisions.
- Collect, preserve and issue all types of samples with the corresponding report.
- Demonstrate knowledge of English to communicate both orally and in writing in academic and professional contexts.
- Diagnose the most common diseases using different general and instrumental techniques.
- Have basic knowledge of the profession, and in particular of the organisation and functions of professional practice.
- Make clinical records and accurate and complete clinical exploration of animals.
- Perform a necropsy, including a record of the injuries found, sample taking and storage and posterior transport.
- Perform basic analytical techniques and interpret the clinical, biological and chemical results, and interpret the results of tests generated by other laboratories.
- Properly evaluate the nutritional status of animals and know how to advise others on breeding and feeding principles.
- Treat and handle animals in a safe and humanitarian manner, and instruct other people to properly employ these techniques.
- Work effectively in single or multidisciplinary teams and show respect, appreciation and sensitivity for the work of others.

Learning Outcomes

1. Analyse, synthesise and resolve problems and make decisions.
2. Apply the necropsy technique in accordance with the case to be resolved (necropsies of pets, livestock, wildlife and forensic necropsies).
3. Define and describe clinical trials.
4. Demonstrate knowledge of English to communicate both orally and in writing in academic and professional contexts.
5. Evaluate an animal's state of nutrition by means of clinical exploration, and classify the same in pathological cases.
6. Gather a summary of the animal.
7. Identify basic imaging diagnosis techniques and interpret the images obtained (X-ray, echography, NMR, CT, gammagraphy...).
8. Perform analytical techniques on different biological liquids from animals, obtain results and interpret them with regard to the clinical status of the animal.
9. Present a questionnaire to the owner/carer of an animal about its clinical background.
10. Properly perform necropsy of a mammal and a bird and take samples.
11. Recognise the behaviour of each animal species, as well as how it defends itself and examine it without suffering or causing damage.

12. Recognise the current regulations on radioprotection and the correct use of the aforesaid diagnostic technique.
13. Select and manipulate the sample in accordance with the diagnostic test required (blood, urinary and body liquid biopathology, histopathology, microbiology, virology, molecular biology, toxicology...).
14. Work effectively in single or multidisciplinary teams and show respect, appreciation and sensitivity for the work of others.

Content

The learning process of the contents of the subject is done in an integrated way when attending the theoretical classes and the practical sessions. The subject is structured in four large blocks that are distributed independently each one of them and sometimes overlapping in time.

BLOCK 1. (Direct Methods)

- Introduction to Clinical Propaedeutics.
- Direct clinical examination methods.
- Complementary methods of clinical examination
- Handling and fastening of animals.
- General exploration of the animal.
- Exploration of the digestive system.
- Exploration of the respiratory system.
- Exploration of the circulatory system.
- Exploration of the urinary tract.
- Exploration of the reproductive system.
- Exploration of the musculoskeletal system.
- Exploration of the nervous system.
- Exploration of the eye and ear structures.

BLOCK 2. (Biopathology)

- Haematology and blood biochemistry.
- Biopathology of biological liquids.
- Hepatic function tests.
- Pancreatic and gastrointestinal function tests.
- Renal function tests and urine analysis.
- Function tests of the thyroid glands and parathyroid glands.
- Functional tests of the adrenal glands.

BLOCK 3. (Imaging diagnostics)

- Ultrasound: fundamentals of ultrasound interpretation and abdominal ultrasound bases.
- Introduction to Radiology in Small Animals: Foundations of Radiology I.
- Introduction to Radiology in Small Animals: Foundations of Radiology II.
- Radioprotection and radiobiology
- Chest radiation: bases, technique and interpretation of the radiology of the heart and large vessels, pulmonary vascularization, lung, mediastinum and pleural cavity.
- Radiology of the abdomen: bases, technique and interpretation of the radiology of the liver, spleen, gastrointestinal and geno-urinary.
- Bone radiology: Basis of bone radiation, technique and positioning. Bone development; ossification nuclei. Bases of differentiation between inflammation, infection, neoplasia.
- Basis of the radiology of exotic animals.
- Bases of computerized tomography.
- Bases of the magnetic resonance.
- Bases of the scintigraphy.

BLOCK 4. (Necropsies)

- It is a practical block of necropsy protocols for birds and mammals.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Biopathology Practices	8	0.32	1, 8, 14
Direct Methods Practices (PLABEsp examination with animals)	22	0.88	1, 3, 9, 6, 11, 14, 5
Direct Methods Practices (PVG wild animals)	5	0.2	1, 3, 9, 6, 11, 14, 5
Imaging Practices (PLAB)	7.5	0.3	1, 7, 12, 14
Imaging Practices (PLABEsp ultrasonography with teaching animals)	1.5	0.06	1, 7, 14
Imaging Practices (PLABEspc at FHCV)	15	0.6	1, 7, 9, 12, 14
Imaging Practices (seminars)	4	0.16	1, 12, 14
Master classes	36	1.44	3, 7, 9, 8, 6, 11, 12, 5
Necropsy Practices (PLABEsp)	12	0.48	1, 2, 10, 14
Type: Autonomous			
Non-directed work and Study	110	4.4	1, 3, 7, 12

A combined teaching methodology will be used, with theoretical teaching as lectures and practical teaching. In this way bases will be given so the students will have to extend with the reading and consultation of the suitable bibliography. The teaching material used in the subject will be available on the Virtual Campus platforms and Moodle classrooms.

Theoretical teaching. Master classes

The lectures will be taught with schematic aids in power point so that the student can follow the explanations. The necessary and basic information will be given so that, afterwards, the knowledge and learning can be completed with the consultation of suitable texts. Each class will begin with a script and with the teaching objectives of the subject.

Theoretical teaching. Flipped class and team-based learning collaborative

The theoretical teaching of the Imaging diagnosis block taught by David Prandi and the theoretical block of Biopatology will follow the flipped class and Team-Based Learning Collaborative (TBLC) systems. The students will have teaching material available before the classroom session, and they will have to prepare it in order to be able to carry out group-learning activities led by the teacher in the classroom.

Practical teaching

The practical sessions serve to apply and determine the knowledge that the students have acquired in the theory. The student will develop the ability to observe and the skill to integrate knowledge.

During the Direct Methods and Image practices, the student has contact and works with live animals. In these practices, the student learns to perform a careful physical examination of animals of different species, knowing the appropriate approach measures to avoid injuries, as well as the technique of collecting samples of biological fluids and their analysis (Biopathology), learn to perform and interpret the different image techniques (Image) and finally learns to perform necropsies in corpses (Necropsies).

Block 1. Direct methods

The practical classes will consist, on the one hand, in exploratory sessions in the Exploration Room with three species: horse, cow and dog. Firstly, the basic handling of the different animal species will be taught, as well as theapplication of the appropriate subjection methods for their exploration. Subsequently, the exploration of the different organs and systems of each one of the species will be taught. On the other hand, a practical session of five hours during one whole morning will taught the basic handling and exploration of wild animals. The student will have to choose one of the options offered, consisting each one in a visit to a wildlife rescue center.

Block 2. Biopathology

The practices will take place in the laboratory. The first one will teach the operation of a clinical analysis laboratory, with special emphasis on veterinary hematology. In the second, the student will study the normal characteristics of the blood of different animal species from cytology preparations. In the third practice, the student will perform a urinalysis, and finally in the fourth, and again through cytology preparations, the student will learn the characteristics of normality of different biological fluids, as well as the alterations observable to the microscope of the most common pathologies of these liquids.

Block 3. Imaging diagnosis

In Imaging practices, ultrasound studies in teaching animals will be carried out, followed by practices at the Hospital Clínico Veterinario (HCV) with real patients who have to undergo imaging tests (ultrasound, radiography, resonance ...). In these practices, the positioning, processing of images, and interpretation with the description of the images will be learned, as well as an initial approach to differential diagnoses andcollection of samples for cytological or histopathological diagnosis.

In the seminars and also in the HCV practice, radioprotection measures will be learned. In the seminars the students will learn, through images how to recognize the normal radiological anatomy of pet animals, and exotic animals and some of the most common pathologies.

The practical teaching of the Imaging diagnostic block taught by David Prandi will follow the flipped class and Team-Based Learning Collaborative (TBLC) systems. The students will have teaching material available before the classroom session, and they will have to prepare it in order to be able to carry out group-learning activities led by the teacher in the classroom.

Block 4. Necropsies

Necropsy practices will teach the correct way to perform necropsies in different domestic species: a monogastric mammal (pig), a polygastric mammal (sheep) and a bird (chicken). In addition to learning the specific technique in each one of the species, the student will learn to evaluate the macroscopic characteristics (form, consistency, color, etc.) of the different organs and tissues of fresh corpses that, in more advanced courses, will serve as a basis to identify macroscopic lesions. Likewise, the student will also learn the sampling methodology for the different laboratory diagnoses after necropsy: histopathology, microbiology, virology and toxicology.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Continuous evaluation Block 2 (Biopathology)	3%	0	0	1, 8, 13, 14
Continuous evaluation Block 4 (Necropsy)	7%	0	0	2, 10, 14
Practical exam Block 1 (Direct methods)	20%	0.5	0.02	1, 3, 4, 9, 8, 6, 11, 13, 14, 5
Written exam Block 3 (Imaging)	20%	1	0.04	1, 3, 4, 7, 9, 12, 14
Written exam (Blocks 1, 2 and 3)	50%	2.5	0.1	1, 3, 7, 9, 6, 12

General rules

This subject does not contemplate the single evaluation system.

It is necessary to pass each of the practical and theoretical exams separately to pass the course. The failure of one of the practical or theoretical exams will represent the failure of the subject.

Those who do not pass any of the practical or theoretical exams will have the opportunity to recover them during the exam period at the end of the semester.

Whoever does not appear for any of the theoretical calls for Block 1 and 2 and/or Block 3 will be considered non-evaluable.

In case of failure of the subject, only during the following academic year will be kept the grades of the approved blocks. Therefore, to keep the mark for the image block, you must have passed both theoretical and practical exams. The blocks of direct methods and biopathology form a unit, so in order to keep the grade, the theoretical exam and the two practical exams must be passed. However, logically, it is understood that the person will have to enroll in the entire subject.

Theoretical teaching

Evaluation BLOCK 1 (Direct methods) and Evaluation BLOCK 2 (Biopathology). It corresponds to 25% of the total final grade for the subject.

The written exams will allow evaluating the integration of theoretical knowledge with those acquired in the practical sessions of the subject, the ability to relate concepts and analysis and, ultimately, show the final maturity of the person.

There will be a written exam of the contents of the theoretical classes that will have to be passed in order to take the average with the other parts of the subject in order to pass it. The exam will consist of 50 multiple choice multiple choice questions with only one valid answer and four options. Unanswered questions will subtract points (every nine unanswered questions will subtract one point. If there areless than nine or more than nine unanswered questions, it will subtract proportionally).

Evaluation BLOCK 3 (Imaging). It corresponds to 25% of the total final grade for the course.

In the written exam, the ability to integrate the theoretical and practical knowledge achieved by the person will be evaluated. The exam will consist of multiple choice questions, with a single valid answer and four possible

answers, which must be passed in order to take the average with the other parts of the subject in order to pass it. It will suppose 2/3 of the global mark of the theory of image.

The topics in this block, taught by David Prandi, will be available online in the form of videos with which people will have to interact before the corresponding face-to-face class. This previous interaction will constitute 20% of the theoretical score corresponding to these topics.

These topics will be evaluated continuously during their teaching and, with a theoretical exam, which will mean 1/3 of the overall theoretical mark of the image. The grade obtained will be included in the theoretical exam for the other topics in the block in proportion to the total number of topics in the block.

In the event of failing any of the theory parts, the person will have to attend the recovery of the entire theoretical image block.

Evaluation BLOCK 4 (Necropsies). There is no theoretical exam for this block.

Practical teaching

Evaluation BLOCK 1 (Direct methods). It corresponds to 20% of the total final grade for the course.

An individual test will be carried out. All students must demonstrate before the animals that they have integrated and achieved the practical knowledge studied. Ten questions will be asked (four about the dog, three about the horse and three about the cow) that correspond to the objectives, or a part of them, of the practice script. To pass it is necessary to obtain a 5 out of 10. However, if the grade obtained in one species is 0, the exam will be considered failed, even if the grade for the other two species adds 5 or more points). It is necessary to pass this evaluation to be able to do the average with the other parts of the subject to pass it.

Evaluation BLOCK 2 (Biopathology). It corresponds to 3% of the final grade for the subject.

There will be a continuous evaluation during the practices and an image interpretation test, in the form of a short question written exam, where the theoretical and practical knowledge achieved by the person will be evaluated.

Evaluation BLOCK 3 (Image). It corresponds to 20% of the total final grade for the course.

An image interpretation test will be done, in the form of a short question written exam, where the theoretical and practical knowledge achieved by the person will be evaluated, which represents 85% of the practical evaluation of 2/3 of block 3. Students must pass this evaluation.

Evaluation BLOCK 4 (Necropsies). It corresponds to 7% of the final grade for the course. The completion of this internship is compulsory.

During the last practice it will be a test to evaluate all the contents of the practices.

Bibliography

BLOCK 1 (Direct Methods)

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- Chastain, C.B. (2023). Concise Textbook of Large Animal Handling. A Practical Handbook. CRC Press, Boca Raton, USA.
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- Pérez, M., Ramos, J., Ferrer, L. (2006). Exploración y Patología Ocular en Pequeños Rumiantes. Servet, Zaragoza.
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BLOCK 2 (Biopathology)

- Cerón, J. J. et al. Veterinary Clinical Pathology. Anintegrated undergraduate course. (2007). Compobell, S. L. Murcia. España.
- Valenciano A. C. abd Cowell, R. L. Cowell and Tyler's Diagnostic Cytology and Hematology of the dog and cat. (2019). 5th ed. Mosby
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BLOCK 3 (Imaging)

- Agut A. Diagnóstico por imagen en pequeños animales. Multimédica Ediciones Veterinarias, Barcelona, 2025
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Webs

The Vet Site http://vet74.weebly.com/index.html

Kansas State University website http://www.vet.ksu.edu/depts/VMTH/radiology/

UAB Veterinary Radiology website http://minnie.uab.es/~veteri/21274/webrx/index.htm

BLOCK 4. (Necropsies)

- Unitat Docent d'Anatomia patològica-UAB (1998). Necropsia del gos. Videogravació.
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- Majó N. (2001). Necròpsia d'un au.

Software

This course does not require a syllabus.

Groups and Languages

Please note that this information is provisional until 30 November 2025. You can check it through this link. To consult the language you will need to enter the CODE of the subject.

Name	Group	Language	Semester	Turn
(PAUL) Classroom practices	1	Catalan	second semester	morning-mixed
(PAUL) Classroom practices	2	Catalan	second semester	morning-mixed
(PAUL) Classroom practices	3	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	1	Catalan/Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	2	Catalan/Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	3	Catalan/Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	4	Catalan/Spanish	second semester	morning-mixed

(PLAB) Practical laboratories	5	Catalan/Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	6	Catalan/Spanish	second semester	morning-mixed
(SEM) Seminars	1	Catalan	second semester	morning-mixed
(SEM) Seminars	2	Catalan	second semester	morning-mixed
(SEM) Seminars	3	Catalan	second semester	morning-mixed
(SEM) Seminars	4	Catalan	second semester	morning-mixed
(SEM) Seminars	5	Catalan	second semester	morning-mixed
(SEM) Seminars	6	Catalan	second semester	morning-mixed
(TE) Theory	1	Catalan/Spanish	second semester	morning-mixed