Universitat de Lleida

DEGREE CURRICULUM

SPECIAL VETERINARY PATHOLOGICAL ANATOMY

Coordination: RAMIREZ RIVERO, GUSTAVO ADOLFO

Academic year 2023-24

SPECIAL VETERINARY PATHOLOGICAL ANATOMY 2023-24

Subject's general information

Subject name	SPECIAL VETERINARY PATHOLOGICAL ANATOMY
Code	100355
Semester	1st Q(SEMESTER) CONTINUED EVALUATION
Typology	

Degree	Course	Character	Modality
Double bachelor's degree: Bachelor's Degree in Veterinary Medicine and Bachelor's Degree in Science and Production	4	COMPULSORY	Attendance-based

Course number of credits (ECTS)	6
Type of activity, credits, and groups	

Activity type	PRACLIN	PRALAB	PRAULA	TEORIA
Number of credits	1.4	1.4	0.2	3
Number of groups	6	4	1	1

Coordination	RAMIREZ RIVERO, GUSTAVO ADOLFO
Department	ANIMAL SCIENCE
Teaching load distribution between lectures and independent student work	Attendance hours: 60 Non-attendance (self-work) hours: 90
Important information on data processing	Consult this link for more information.
Language	Spanish
Distribution of credits	3 theoretical credits 3 practical credits

SPECIAL VETERINARY PATHOLOGICAL ANATOMY 2023-24

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
MOLIN MOLINA, JESSICA	jessica.molin@udl.cat	6	
RAMIREZ RIVERO, GUSTAVO ADOLFO	gustavo.ramirez@udl.cat	11,2	Flexible. Appointment: gustavo.ramirez@udl.cat

Subject's extra information

The subject studies the morphological changes developed in cadaveric, developmental, circulatory, metabolic, inflammatory, parasitic and tumoral alterations in the different organs that form the organic systems of the domestic species.

It is advisable to have previously studied Animal Anatomy, Animal Physiology, Infectious Diseases, Cytology and Veterinary Histology and General Pathology. The students should be informed about of the normal structure of the organs (Anatomy and Cytology and Histology) and the general characteristics of the lesions and its pathogenesis (General Pahtology) that facilitate the learning in the anatomopathological diagnosis. Other subjects such as Microbiology and Parasitology will help to understand the biological causes of these injuries; Physiology and Pathophysiology will help to interpret the functional changes of the animal organism; Immunology will help to understand the injuries caused by immunological reactions.

RESULTS OF LEARNING

1. Reglated and methodical performance of necropsy in mammals.
2. Necropsy report writing. Knowledge in differential diagnosis.
3. Description and identification of injuries/lesions.
4. Pathologic diagnosis. Correct use of pathologic nomenclature.
5. Use of bibliography related to the subject.

For the correct follow-up of the subject and achievement of knowledge, constant work by the student is strongly recommended.

Learning objectives

The subject aims to initiate the student in fundamentals of animal pathology (anatomic), so that they have the necessary scientific bases to carry out an adequate ante- and postmortem diagnosis of the most common and most important diseases of domestic animals through the study of changes or alterations (lesions) in tissues and organs.

OBJECTIVES OF KNOWLEDGE: the student who passes the subject must:

1. Knowi the meaning and the application of the Pathology and the anatomopathological method in Veterinary Science.
2. Know the main mechanisms of the disease.
3. Understand and integrate the aspects related to the etiology of the diseases, and the morphological and pathophysiological changes induced by them
4. Identify and describe the most important lesions that characterize pathological processes in the different organic systems of animals with a veterinary interest.
5. Understand the cause of the lesions affecting these systems, their pathogenesis and their relationship with the symptoms observed in the animal.
6. Assess the usefulness of the anatomopathological studies in the diagnosis of diseases in the domestic animals and their applications in the field of Animal Health and Medicine.
7. Know and use the bibliographic sources in the field of Veterinary Pathology.

OBJECTIVES OF CAPACITY: the student who passes the subject must be able to:

1. Identify and know the different types of injury / lesion patterns.
2. Understand the relationship between etiology, pathogenesis, and injury.
3. Establish a diagnostic judgment.
4. Know the technique of necropsy in different animal species.
5. Differentiate antemortem and postmortem lesions.
6. Know how to obtain and properly conserve tissue samples obtained for anatomopathological studies based on the findings and presumptive diagnosis.
7. Apply the pathologic terminology correctly and understand the systematic elaboration of a pathology report.
8. Write the complete necropsy report correctly, with an adequate description of the findings of interest and make an anatomopathological diagnosis.
9. Recognize properly the diseases of obligate communication and zoonoses.
10. Analyze and solve problems, as well as communicate fluidly, orally and in writing, the information related to the concepts covered in the subject.

Competences

BASIC COMPETENCES

- (GVET) CB1 Get knowledge in an area of study that starts from the base of general secondary education, and is usually found at a level that, although supported by advanced textbooks, also includes some aspects that involve knowledge from the forefront of their field of study
- (GVET) CB2 Apply their knowledge to their job or vocation in a professional way and possess the competencies that are usually demonstrated through the elaboration and defense of arguments and the resolution of problems within their area of study.
- (GVET) CB3 Ability to collect and interpret relevant data (usually within their area of study) to make judgments that include reflection on relevant issues of a social, scientific or ethical nature
- (GVET) CB4 Being able to transmit information, ideas, problems and solutions to a specialized and non-specialized audience
- (GVET) CB5 Know how to develop those learning skills necessary to undertake further studies with a high degree of autonomy

GENERAL COMPETENCES

- (GVET) CG2 The prevention, diagnosis and individual or collective treatment, as well as the fight against animal diseases, whether they are considered individually or in groups, particularly zoonoses.
- (GVET) CG6 Development of professional practice with respect to other health professionals, acquiring skills related to teamwork, efficient use of resources and quality management.
- (GVET) CG7 Identification of emerging risks in all areas of the veterinary profession

SPECIFIC COMPETENCES

- (GVET) CE14 Identify and apply the methods and procedures of clinical examination, complementary diagnostic techniques and their interpretation, as well as identify and apply the principles of necropsy
- (GVET) CE16 Identify and apply the bases in general diagnosis of the different types of injuries and their association with pathological processes
- (GVET) CE17 Know and apply the clinical study of the sick individual and the medical, surgical or hygienic-dietary treatments that it requires, as well as sporadic diseases that affect groups

TRANSVERSAL COMPETENCES

- (GVET) CT1 Acquire adequate oral and written comprehension and expression of Catalan and Spanish
- (GVET) (GVET) CT2 Acquire significant knowledge of a foreign language, especially English
- (GVET) (GVET) CT3 Acquire training in the use of new technologies, including information and communication technologies
- (GVET) CT4 Acquire basic knowledge of entrepreneurship and professional environments
- (GVET) CT5 Acquire essential knowledge of scientific thinking

Subject contents

CONTENTS: THEORY

SECTION 1. DIGESTIVE SYSTEM AND PERITONEUM

Theme 1. **Oral cavity**. Alterations of the development, malformations. Pigmentations. Circulatory disturbances. Inflammation: typology and morphological patterns. Periodontal disease. Hyperplastic processes and neoplasms of the oral cavity. **Salivary glands**. Sialolithiasis. Ranula. Sialodenitis. Neoplasms. **Tonsils**: Inflammations, hyperplastic and tumor lesions.

Theme 2. **Esophagus**.Megaesophagus. Idiopathic hypertrophy. Obstructions. Esophagitis. Neoplasms. **Pre-stomachs of ruminants**. Examination and postmortem alterations. Dilation and ruminal tympanism. Lactoacidosis. Rumenitis. Trauma and foreign bodies. Rarasites. Neoplasms. **Stomach and abomasum.** Examination and postmortem alterations. Alterations of position and volume. Impaction. Foreign bodies. Ulcers. Nonspecific and specific gastritis. Neoplasms

Theme 3. **Intestine.** General considerations. Pathophysiology of intestinal disease: diarrhea. Congenital disorders. Failures of intestinal transit: obstruction, occlusion and paralytic ileus. Ischemia and infarction. Intestinal emphysema. Syndromes of malabsorption and loss of proteins. Types of enteritis: catarrhal, fibrinous, hemorrhagic and granulomatous. Neoplasms

Theme 4. **Enteritis by species.** Main infectious and parasitic diseases of the alimentary tract in the different domestic species.

Theme 5. **Peritoneum.** Abnormal contents. Peritonitis. Neoplasms

SECTION 2. LIVER AND BILIARY SYSTEM. EXOCRINE PANCREAS.

Theme 6. **Liver.** Structure and function. Types of degeneration and hepatocellular necrosis. Morphological classification of liver damage. Liver response to damage. Dysfunction and liver failure. Postmortem alterations. Congenital disorders. Circulatory disorders. Hepatocellular adaptations, intracellular accumulation. Inflammatory liver disease: typology. Viral, bacterial and parasitic hepatitis. Proliferative lesions: hyperplasia and neoplasms.

Theme 7. **Biliary system.** Gallbladder and bile ducts. Cholelithiasis, Cholecystitis, Neoplasms. **Exocrine pancreas.** Cadaveric changes. Development anomalies. Regressive changes: degeneration, atrophy, pancreatic necrosis. Exocrine pancreatic insufficiency. Pancreatitis. Hyperplasias and neoplasias.

SECTION 3. URINARY SYSTEM.

Theme 8. **Kidney.** Macroscopic and microscopic examination. End-stage kidney. Renal failure and uremia. Alterations of the development. Renal vascular pathology: hyperemia, hemorrhages and infarcts. Necrosis: patterns and differentiation. Hydronephrosis. Glomerular disease. Glomerulonephritis. Tubular disease. Tubulointerstitial nephritis: classification and causes. Pyelonephritis. Neoplasms.

Theme 9. **Urinary tract**. Hydronephrosis, Urolithiasis, Inflammatory processes, Neoplasms of the lower urinary system.

SECTION 4: LINFOHEMATOPOYETIC TISSUES.

Theme 10. **Bone marrow.** Sampling and indications for examination. Quantitative disorders. Neoplasms: leukemia. **Thymus.** Lesions associated with thymic development. Atrophy / involution. Vascular disorders. Inflammatory processes. Hyperplasia and neoplasia.

Theme 11.**Spleen**. Atrophy and developmental injuries. Causes of splenomegaly and rupture. Vascular alterations. Inflammation. Proliferative processes: hyperplasia and neoplasms. **Lymph nodes and lymphoid tissue associated with mucous membranes.** Hyperplasia. Lymphadenitis. Parasitic lesions. Neoplasms: lymphomas and metastatic processes. Types of lymphoma in domestic animals: diagnosis, classification and biological behavior.

SECTION 5. REPRODUCTIVE SYSTEM

Theme 12. **Female system.** Alterations of development: aplasia, hypoplasia. Changes in position: uterine torsion, prolapse of the uterus and vagina. Ovarian cysts. Endometrial hyperplasia. Inflammatory processes: oophoritis, salpingitis, metritis, pyometra, vulvovaginitis. Pathology of the mammary gland. **Pathology of the pregnant female**. Embryonic and fetal death: mummification, maceration. Abortion: typology, causes, most common processes in domestic animals.

Theme 13. **Male genital apparatus**. Alterations of sexual development: agenesis, hypoplasia, cryptorchidism, monorchidism. Dystrophies: testicular degeneration, calcification, atrophy. Inflammations: orchitis, epididymitis, balanoposthitis. Prostatic pathology. Neoplasms

SECTION 6. RESPIRATORY SYSTEM

Theme 14. General considerations: morphopathology, differences between species, mechanisms of response to pathogens. **Nasal cavity and nasal sinuses.** Macroscopic exam. Congenital disorders. Amyloidosis. Circulatory disorders: congestion, hyperemia and hemorrhages. Rhinitis and sinusitis: types, main lesions by species. Neoplasms.

Theme 15. **Pharynx, guttural pouches, larynx, trachea.** Development anomalies. Laryngeal paralysis. Hemorrhages. Edema. Inflammation. Neoplasms. **Bronchi**: bronchitis, bronchiolitis and bronchiectasis.

Theme 16. **Lung.** Congenital anomalies Torsion. Ateclectasis, emphysema. Dystrophies: pigmentations and pulmonary calcification (calcinosis). Circulatory disorders: congestion, hemorrhages, pulmonary edema, embolisms and infarcts.

Theme 17. **Pneumonia:** classification. Pathogenesis, phases, evolution. Bronchopneumonia. Interstitial pneumonia. Embolic pneumonia. Granulomatous pneumonia. Neoplasms. Pneumonias by species.

Theme 18. **Pleura and thoracic cavity**. Pneumothorax. Effusions. Pleuritis. Neoplasms

SECTION 7. CARDIOVASCULAR SYSTEM.

Theme 19. **Heart.** Morphological patterns of heart disease, examination of the heart. Heart failure. Malformations.

Theme 20. **Pericardium:** inflammations, alterations in content. **Myocardium.** Cardiomyopathies. Degeneration and necrosis. Myocarditis. Parasitic lesions. **Endocardium.** Degenerative and dystrophic lesions: calcifications, endocardiosis. Endocarditis. Neoplasms.

Theme 21. **Blood vessels.** Arteries. Aneurysm and rupture. Atheromatosis and arteriosclerosis. Veins. Ruptures. Vasculitis. Lymphatic vessels: Lyphagiectasia, Lymphangitis. Vascular neoplasms.

SECTION 8. ENDOCRINE SYSTEM.

Theme 22. General: mechanisms of endocrine disease. **Hypophysis.** Inflammation. Proliferative processes: cysts, neoplasms. **Disorders of the parathyroid. Thyroid** disorders: hypothyroidism, hyperthyroidism. Proliferative processes. **Adrenal glands**: degenerative, inflammatory, hyperplastic and neoplastic processes. Hyperadrenocorticism. **Endocrine pancreas:** diabetes. Neoplasms

SECTION 9. CENTRAL AND PERIPHERAL NERVOUS SYSTEM. ORGANS OF THE SENSES.

Theme 23. **SNC and peripheral.** Typology of nerve cells. Malformations: neural tube closure defects, hydrocephalus, cerebellar hypoplasia, related infectious agents. Circulatory

alterations: hemorrhage, edema, ischemia, infarction. Traumatic injuries. Degenerative processes and dystrophies.

Theme 24. SNC and peripheral. Myelinopathies: leukodystrophies, spongiform encephalomyopathies. Inflammatory processes: meningoencephalitis not purulent, purulent, pyogranulomatous, thrombotic. Infectious and non-infectious causes. Neoplasms of the nervous system. Pathology of the **sense organs.**

SECTION 10. LOCOMOTOR SYSTEM.

Theme 25. **Bones.** Genetic and congenital alterations: skeletal dysplasias, chondrodysplasias, osteopetrosis. Hormonal and nutritional alterations, metabolic bone dystrophies: osteoporosis, rickets, osteomalacia, fibrous osteodystrophy. Osteonecrosis. Inflammatory and infectious diseases. Tumors and bone proliferations.

Theme 26. **Joints.** Developmental disorders: osteochondrosis, hip dysplasia. Degenerative diseases: osteoarthrosis, spondylosis. Inflammatory alterations: arthritis: types, causes. Neoplastic lesions

Theme 27. **Skeletal Muscles, Tendons.** Basic muscle reactions: hypertrophy, atrophy, muscle regeneration. Postmortem changes. Congenital and hereditary alterations: arthrogryposis, congenital muscular hyperplasia, splayleg, dystrophy, malignant hyperthermia. Degenerative myopathies: nutritional myopathies, exercise myopathies. Inflammation: immunomediated, infectious. Muscle tumors.

SECTION 11. TEGUMENTARY SYSTEM.

Theme 28. Structure and function of the skin. Terminology used in dermatopathology. Histological patterns Primary lesions of the skin. Secondary lesions of the skin. Congenital and acquired diseases: ichthyosis, cutaneous asthenia, epidermolysis bullosa, hypotrichosis, dermatosis vegetans. Disorders of epidermal differentiation and keratinization: seborrhea, keratosis, hyperplastic dermatoses. Pigmentary disorders. Hormonal dermatosis.

Theme 29. **Dermatitis** due to physical and chemical causes: burns, photodermatitis. Immunomediated dermatitis. Hypersensitivity reactions: atopy, contact allergy, drug allergy, food allergy, eosinophilic cat dermatitis. Autoimmune dermatitis: pemphigus, pemphigoid, lupus erythematosus. Infectious dermatitis: viral: poxvirus, herpesvirus, papillomavirus. Bacterial dermatitis: superficial and deep pyoderma. Pododermatitis. Fungal and parasitic dermatitis. Cutaneous neoplasms.

CONTENTS: PRACTICES AND SEMINARS

1. **Descriptive pathology:** practical-seminar on the principles of gross pathology description. Key points to make a correct and adequate description of the situation. Morphological diagnosis. Differences between morphological diagnosis, etiological diagnosis, name of the disease and cause / causal agent.
2. **Gross Pathology sessions** with images projected in the classroom. Sessions with digital media (computer, web, etc.).
3. Introduction to the **necropsy technique on** real cases sent to the Veterinary Pathology Diagnosis and Research Service (SIDAVE) of UdL. Sampling for histopathological studies. Interpretation of lesions and patterns of injury "in situ". Writing report of findings
4. **Microscopic study** of necropsy cases carried out by students. Macroscopic-microscopic correlation of lesions.

Methodology

The course will be developed through theoretical sessions, seminars in medium-size groups and practices in small groups, according to the official schedule of the degree and the development plan included in the subject dossier within the Virtual Campus.

THEORY

The aim is acquisition of knowledge about the lesions and injuries that characterize the different pathological processes and diseases on the different body systems in the different domestic animal species. They will be taught every week during the first semester, through the use of audiovisual media (ppt presentations, videos ...) in a dynamic way and requesting the student's interaction. In addition, the teacher will be able to present one or several short cases with images in the class and the students will describe the lesions giving the possible diagnoses and etiological differentials.

The students will be able to get the guides texts and the guides of the class presentations about the topics of the program on the Virtual Campus UdL platform. They will take them into the class (with a previou study is highly recommended) for a correct and active development of the subject.

PRACTICES

They will be developed interspersed between the theory sessions as the units are completed, with the aim of bringing theoretical and practical concepts closer together over time. The different sessions will be held in medium or small groups, depending on the activity to be carried out. Students will have the practical dossier of the subject within the Virtual Campus.

- **Descriptive pathology:** Practical-theoretical seminar on the basis of gross description. Images projected in the classroom. Session with digital media (computer, web, etc.). large group.
- **Morphologic patterns of disease/pathology (gross Pathology):** Visual exposition of pathological processes of domestic species with macroscopic images that students will describe and diagnose. It will be developed in parallel with the theory, so that the student can expand knowledge on the different injuries that characterize the most relevant diseases in domestic animals. Emphasis will be placed on the recognition of injury patterns and their association with the cause / causal agent, in order to create a capacity for diagnostic judgment. Sessions with digital media (computer, web, etc.). Medium group. ***During the 2020-21 academic year, sessions 4 and 5 will be taught IN STREAMING through the Virtual Campus videoconference tool.***
- **Necropsies.** Small groups of students will perform the scheduled necropsies. *Flipped learning* - Student-centered approach, where practice time is spent exploring topics in greater depth, problem solving and creating more learning opportunities. Material about the autopsy protocol will be made available to students, which will be examined prior to the activity. At the end of each autopsy session, each group will briefly and jointly present the findings of the assigned case (“Show & Tell”) and must submit a pathology report describing the findings and presumptive diagnosis, if applicable.
- The previous section will be complemented with **histopathology practices** of the same cases performed at necropsies by the groups, in order to complete the pathology study systematics and achieve a definitive diagnosis, if applicable. Small groups. Microscopy room.

Methodology and development plan of the theory and practical sessions may be altered depending on the current health situation and the measures adopted by the University and / or by the competent health authorities to respond to health emergency situations that may arise during this semester. Please, be aware of changes regarding schedules or classrooms that may come out during this semester to accommodate any changes in the health situation in our area. This notice also applies to changes in the face-to-face or online teaching of activities to respond to health emergencies that may arise during this semester.

Development plan

FIRST SEMESTER

- **Theory:** 1-2 sessions of 2 hours / week (up to 30-32 hours).
- **Practical seminars in histology:** 1 sessions of 2 hours / group.
- **Practical seminars: Descriptive pathology keys:** 1 session of 2 hours / group.
- **Practical seminars: Gross pathology; Clinical cases:** 5 sessions of 2 hours / group
- **Necropsies:** 4 sessions of 3 hours / group.
- **Histopathology from necropsy cases:** 1 session of 2 hours / group.

The schedules of theory and practical sessions, groups of practices and seminars, dates of exams and general calendar of the semester will be delivered to each student by Degree coordination/direction.

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RULES OF THE SUBJECT

1. Several of the practices have been designed with a specific number of participants due to space or material restrictions. **Changes of groups or practices are not allowed, except for those that are justified by a specific certificate or participants are exchanged**, prior notice to the teaching staff.
2. **It is MANDATORY to dress in surgical chlothes or overalls + waterproof boots to access the practices that are carried out in the necropsy room.** Clothing and footwear must be **adequately clean**, without remains of previous visits or practices to farms, especially footwear; **If this requirement is not met, students will not be able to access the practice.**
3. In order to comply with the teaching program, punctuality will be appreciated for each of the practical sessions. **A practical session WILL NOT be computed if more than 30 minutes elapse from the start time**, determined in the official schedule of the degree.
4. If an **ATTEMPT TO COPY** is detected in any of the exams, immediate expulsion will be proceeded, that exam will be **FAILED** and the standard communication procedure will be initiated for the opening of disciplinary process or other possible actions considered by Direction of Studies according to the current regulations of the University.

Evaluation

The contents of the subject are divided into FOUR evaluative BLOCKS:

THEORY I

The evaluation of this block will consist of a written test that will include questions on the contents and development of the classes, with a value of **30% of the final score** of the subject. The test will consist of 30 multiple choice questions (only one valid option among 4 options). The score for each question is 1 point for a correct answer and -0.25 for a wrong answer.

A **4.5 is required as a minimum score to be able to average with the rest of the evaluation activities**. If this minimum is not reached, the student must appear to **recover** the block.

This partial test will be carried out on the date and time established for this purpose in the official academic calendar of the Double Degree.

THEORY II

The evaluation of this block will consist of a written test that will include questions on the contents and development of the classes, with a value of **30% of the final score** of the subject. The test will consist of 30 multiple choice questions (only one valid option among 4 options). The score for each question is 1 point for a correct answer and -0.25 for a wrong answer.

A **4.5 is required as a minimum score to be able to average with the rest of the evaluation activities**. If this minimum is not reached, the student must appear to **recover** the block.

This partial test will be carried out on the date and time established for this purpose in the official academic calendar of the Double Degree.

PRACTICAL BLOCK OF MACROSCOPIC PATHOLOGY

It represents 25% of the final mark. This block includes the contents: Descriptive Pathology practical seminar (x1) + Macroscopic Pathology practical seminars (x5).

The evaluation of this block will be done through a written test that consists of the projection of 20 lesions studied during the course in each apparatus and organic system. The morphological, etiological and/or name of the condition/disease/injury diagnosis must be made. Each question will be scored from 0-1.

The time and date of the practical evaluation test will be indicated in the official academic calendar of the degree. **This test is not re-sitted.**

PRACTICAL BLOCK OF NECROPSIES

It represents 15% of the final mark. This block includes the contents: macroscopic postmortem evaluation sessions in the Necropsy Room (x4) + microscopic postmortem evaluation session (x1). It will be carried out through the "Flipped learning" methodology, a pedagogical approach in which instruction is carried out outside the classroom, the student's autonomous learning is valued and class time is used to carry out activities that involve the development of more complex cognitive processes, in which the help and experience of the teacher are necessary. Skills in performing necropsy, description of lesions, discussion of their relationship with symptoms and pathogenesis, report of findings and determination of presumptive or definitive morphological diagnosis will be evaluated.

This evaluation will be carried out through Rubric (available in Virtual Campus) continuously during the rotation of each group in the Service, considering factors such as attention, participation, attitude, interest, initiative, dedication and the preparation of reports and / or jobs that are requested during the period. **This evaluation is not recoverable.**

Attendance at seminars and practices is highly recommended and essential to be able to carry out the evaluation activities of each one of the blocks. The unjustified absence to the practical sessions will be penalized with 1 points on the final mark of the practical block to which it corresponds, in each case. Similarly, a negative attitude, attendance at other practice groups (unjustifiably, not exchanged by another partner or without notifying), or late or partial attendance at practical sessions will be penalized with 0.5 points, in each case, on the total mark of the practical block of the corresponding practical block.

For those students who pass the practical blocks (grade ≥5), their grades will be valid for **two years**.

FINAL SCORE

To pass the subject it will be essential to obtain a minimum grade of 5 in the total count of activities.

The weighting of each block in the final grade will be: 30% Theory I + 30% theory II + 25% macroscopic pathology + 15% necropsies.

The results obtained will be qualified according to the numerical scale: 0-4.9: Fail; 5.0-6.9: Approved; 7.0-8.9: Notable; 9.0-10: Excellent

In case of not reaching the minimum required mark established in some of the evaluation blocks, but the average of the subject is approved, the subject will be graded in the minutes with a 4.9 (see NORMATIVA DE L'AVALUACIÓ I LA QUALIFICACIÓ DELS APRENENTATGES EN ELS GRAUS I MÀSTERS of the UdL, 2023).

As of 9 in the final grade for the subject, the grade may be weighted to grant honors if deemed appropriate by the teaching staff based on the student's evolution during the semester.

The active participation in the practices and the carrying out of additional activities proposed throughout the semester may represent, at the discretion of the teacher, up to 1 extra point in the final grade for the subject, provided that the subject is passed (minimum 5 points).

The condition of non-show (NP) is reserved for those students who carry out evaluable activities that weigh in a percentage lower than 50% of the overall qualification of the subject (NORMATIVA DE L'AVALUACIÓ I LA QUALIFICACIÓ DELS APRENENTATGES EN ELS GRAUS I MÀSTERS, 2023).

ALTERNATIVE EVALUATION

Following the provisions of the UdL NORMATIVA DE L'AVALUACIÓ I LA QUALIFICACIÓ DELS APRENENTATGES EN ELS GRAUS I MÀSTERS, there is the possibility of carrying out an alternative assessment for those students who, due to necessity and duly justified cause, want to take advantage of the same.

This evaluation will consist of:

• THEORETICAL BLOCK: a single exam at the end of the semester; Same features as the conventional assessment pathway exam. The date and time of the same will be agreed with the teaching staff of the subject.

• PRACTICAL BLOCK MACROSCOPIC PATHOLOGY: single exam at the end of the semester; Same features as the conventional assessment pathway exam. The date and time of the

same will be agreed with the teaching staff of the subject. The material from the seminars taught will be made available to the student, who will carry out their learning independently through the "flipped learning" methodology or inverted learning. Tutoring sessions may be established with the teaching staff in order to resolve possible doubts or questions.

• PRACTICAL BLOCK OF NECROPSIES: attendance at the practical contents of this block is essential to cover and assume the necessary skills by the student and for evaluation, for which they must be carried out. The student will coordinate with the teaching staff in order to find the fit within the designated times for the different groups.

***All the theoretical and practical evaluation tests are planned in face-to-face format.**

Bibliography

BASIC REFERENCES

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King, John M.; Roth-Johnson, Lois; Dodd, David C.; Newsom, Marion E.. THE NECROPSY BOOK: A Guide for Veterinary Students, Residents, Clinicians, Pathologists, and Biological Researchers. The Internet-First University Press (free online access: THE NECROPSY BOOK: A Guide for Veterinary Students, Residents, Clinicians, Pathologists, and Biological Researchers (cornell.edu)

COMPLEMENTARY BIBLIOGRAPHY

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WEB SOURCES

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https://secure.vet.cornell.edu/nst/nst.asp

http://www.fmv.ulisboa.pt/atlas/atlas_ing.htm

http://veterinariavirtual.uab.es/archivopatologia/

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