



## DEGREE CURRICULUM

# GENERAL PATHOLOGY AND PROPEDEUTICS

Coordination: MOLIN MOLINA, JESSICA

Academic year 2023-24

# GENERAL PATHOLOGY AND PROPEDEUTICS 2023-24

## Subject's general information

Subject name	GENERAL PATHOLOGY AND PROPEDEUTICS			
Code	100317			
Semester	1st Q(SEMESTER) CONTINUED EVALUATION			
Typology	Degree			
	Double bachelor's degree: Bachelor's Degree in Veterinary Medicine and Bachelor's Degree in Science and Production	2	COMPULSORY	Attendance-based
Course number of credits (ECTS)	6			
Type of activity, credits, and groups	Activity type	PRALAB	PRAULA	TEORIA
	Number of credits	1.4	1.6	3
	Number of groups	4	2	1
Coordination	MOLIN MOLINA, JESSICA			
Department	CIÈNCIA ANIMAL			
Teaching load distribution between lectures and independent student work	Hores presencials: 60 Hores no presencials: 90			
Important information on data processing	Consult <a href="#">this link</a> for more information.			
Language	Catalan and Spanish			

# GENERAL PATHOLOGY AND PROPEDEUTICS 2023-24

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
AQUILUE GIMENEZ, BEATRIZ PILAR	beatriz.aquilue@udl.cat	4	
MOLIN MOLINA, JESSICA	jessica.molin@udl.cat	6,8	
RAMIREZ RIVERO, GUSTAVO ADOLFO	gustavo.ramirez@udl.cat	1	

## Subject's extra information

To be able to properly follow the content of the course a general knowledge on veterinary anatomy and physiology is needed.

## Learning objectives

**Objective of knowledge: The student that passes the subject has to:**

Know, from a general point of view, the main mechanisms that comprise the disease. For that reason, the students needs to understand and integrate different aspects related to the etiology of the disease, the morphologic and physiopathologic alterations related to pathologic processes and the functional alterations and clinical manifestations induced by them. Additionally, the student will know how to perform a general physical examination in different species, as well as to detect clinical signs and interpret them.

**Objectives of capacity: The student that passes the subject has to be able to:**

- Know and correctly apply the proper terminology of General Anatomic Pathology, Nosology and Physiopathology.
- Know and understand the modifications of shape, structure and function of animal organs and tissues.
- Classify the lesions into their main category. To know and understand the morphological characters that allow lesion identification and differentiation
- Know, understand and analyze the pathogenesis implicated in the development of the different lesions and diseases.
- Correlate aetiology, pathogenesis and lesion.
- Know and understand the current general concept of health and disease.
- Know the generalities of causes, mechanisms, symptoms and signs and the different ways the disease can progress in time.
- Perform a physical general examination on different animal species and to detect clinical signs associated to the disease.
- Describe the causes of the functional disorders of organs and systems and to explain their mechanisms of pathogenicity.
- Describe the causes of the functional disorders of organs and systems and to explain their mechanisms of pathogenicity.
- To interpret a hemogram, a basic clinical chemistry profile and a urinalysis.

## Competences

### Basic competences

- (GVET-GCPA) CB1. To get knowledge in an area of study that starts from the basis of general secondary education, and is usually found at a level that, although supported by advanced textbooks, also includes some aspects that involve knowledge beyond the state-of-the-art of this field of study
- (GVET-GCPA) CB2. To 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 problem solving within their area of study.
- (GVET-GCPA) CB3. The 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-GCPA) CB4. To be able to transmit information, ideas, problems and solutions to a specialized and non-specialized audience
- (GVET-GCPA) CB5. To know how to develop those learning skills necessary to undertake further studies with a high degree of autonomy
- (GCPA) CB9. To use the basic working methodologies related to the disciplines mentioned
- (GCPA) CB10. To recognize and know how to apply the basic techniques of livestock experimentation and know how to interpret their results.

### General competences

- (GVET) CG1. Hygiene control, inspection and technology for the production and processing of food for human consumption from primary production to the consumer.
- (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 profesión.
- (GCPA) CG1 Identify animals and their products, as well as their importance in society and the food chain.
- (GCPA) CG2 Use the knowledge of basic sciences (biology, physics, biochemistry, physiology, mathematics, statistics, economics, ...) to understand animal processes and their involvement in livestock systems.
- (GCPA) CG3 Analyze the strategies of animal production as a whole with the aim of optimizing production.
- (GCPA) CG4 Manage animal production systems.

### Specific competences

- (GVET) CE10. To identify and apply the principles and basis of Nosology.
- (GVET) CE11. To describe the pathogenesis and to identify general structural and functional alterations of cells, tissues, organs and systems.
- (GVET) CE14 To 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. To identify and apply the bases in general diagnosis of the different types of injuries and their association with pathological processes
- (GVET) CE17 To 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
- (GVET) CE33 To identify and apply good hygiene practices, hazard analysis and critical control points in the inspection of establishments and products of veterinary interest
- (GVET) CE44.To address emergencies and first aid in veterinary medicine.
- (GVET) CE45 To recognize when euthanasia is necessary and carry it out humanely using the appropriate method
- (GCPA) CE17 To optimize animal production taking into account the response mechanisms of organism against pathogens to achieve animal welfare.
- (GCPA) CE18 To recognize animal welfare as a primary factor in production. Describe the different animal diseases, individual and collective, and their preventive measures. Sample collection and submission.

### Transversal competences

- (GVET-GCPA) CT1. To acquire an appropriate understanding and oral and written Catalan and Spanish
- (GVET-GCPA) CT2. To acquire a significant command of a foreign language, especially English.
- (GVET-GCPA) CT3. To train in the use of new technologies and information and communication technologies
- (GVET-GCPA) CT4. To acquire basic knowledge of entrepreneurship and professional environments
- (GVET-GCPA) CT5. To acquire essential notions of scientific thought
- (GCPA) CT6. To analyze specific situations, define problems, make decisions and implement action plans in the search for solutions.
- (GCPA) CT7. To apply acquired knowledge to real situations, properly managing available resources.
- (GCPA) CT8. To interpret studies, reports, data and analyze numerically.
- (GCPA) CT9. To select and manage written and computerized sources of information related to professional activity.
- (GCPA) CT11. To manage individual and team work
- (GCPA) CT12. To acquire a holistic training.
- (GCPA) CT14. To know and apply the scientific method to professional practice

## Subject contents

### THEORETICAL CONTENTS

#### NOSOLOGY AND INTRODUCTION TO CLINICAL PROPAEDEUTICS

1. **Nosology.** General concept and definition of disease. Etiology, pathogenesis, general anatomic pathology, physiopathology, clinical signs and symptoms. Classification of the disease. Diagnostic, prognostic and treatment. Classification of the diseases.
2. **Introduction to clinical propaedeutics** – Concept of propaedeutics. General methods of examination: inspection, palpation, percussion and auscultation. Complementary methods of exploration. Normal behaviour of animals during physical examination and subjection methods in different species.

#### GENERAL ANATOMIC PATHOLOGY

1. **Cellular pathology** – Adaptive changes. Reversible and irreversible lesion. Cellular death. Necrosis and apoptosis. Morphologic patterns of necrosis. Physiological and pathological cellular and tissular deposits.
2. **Haemodynamic alterations** - Oedema. Hiperemia/congestion. Concept of hemostasis. Haemorrhage. Thrombosis and embolism. Ischemia and infarct. Definition and classification of shock.
3. **Inflammation and tissue repair** - General concepts. Acute inflammation. Chronic inflammation. Regeneration and tissue repair.
4. **Immune system** - General concepts and main cell types involved. Hypersensitivity reactions and autoimmune diseases.
5. **Neoplasia** – General concepts and definitions. Morphopathological characteristics of benign and malignant tumours. Molecular basis of neoplastic lesions: oncogens, tumor suppressor genes and genes that regulate cellular cycle and apoptosis. Propagation. Local invasion. Metastasis. Tumoral immunity. Physical, chemical and viral-induced neoplastic lesions. Paraneoplastic syndromes.

#### PATHOPHYSIOLOGY

1. **Pathophysiology of the digestive system** – Pathophysiology of mastication, salivary secretion and deglutition. Pathophysiology of the stomach of monogastric animals. Pathophysiology of the stomach of ruminants. Pathophysiology of the intestine. Hepatic and pancreatic insufficiency.
2. **Physiopathology of the urinary system** – Pathophysiology of the micturition. Renal insufficiency.
3. **Pathophysiology of the cardiovascular system** – Cardiac insufficiency/congestive heart failure. Arrhythmias and valvular disease. Shock.
4. **Pathophysiology of the blood and haematopoietic system** - Erythrocytic system. Leukocytic system. Hemostasis. Plasmatic system.
5. **Pathophysiology of the respiratory system** – Defensive mechanisms of the respiratory system and perturbations in the respiratory mechanisms. Respiratory insufficiency. Pathophysiology of the pleura and peritoneum.

### PRACTICAL CONTENTS

#### BLOCK 1: GENERAL ANATOMIC PATHOLOGY

There will be 4 practical sessions oriented to identification, nomenclature and interpretation of macroscopic and microscopic pathological changes related to the theoretical content.

1. Images of adaptive changes, necrosis and cellular / tissular physiological and pathological deposits.
2. Images of lesions related to hemodynamic alterations.
3. Images of acute and chronic inflammatory lesions.
4. Images of neoplastic lesions.

#### BLOCK 2: PROPAEDEUTICS

1. Seminar on equine general physical examination.
2. Practical session: general physical examination in horses (external).
3. Seminar on general physical examination of ruminants.
4. Practical session: general physical examination in sheep (external).
5. Seminar on general physical examination in dogs/cats
6. Practical sessions: general physical examination in dogs (UQD-Torrelameu).

To perform propaedeutics practical sessions the following material will be needed: stethoscope, lab coat/surgical pajama, boilersuit and waterproof boots

#### BLOCK 3: PATHOPHYSIOLOGY

1. Seminar on physiopathology of thermoregulation, hydroelectrolytic and acid-base balance.
2. Seminar on biochemical markers of digestive, hepatic and urinary disease.
3. Seminar on clinical cases of digestive and urinary disease.
4. Seminar on interpretation of alterations in hemogram and clinical cases of cardiovascular disease.
5. Seminar oral presentation of a clinical case (work group- P4).

## Methodology

### Observations

The course will be developed through theoretical sessions, seminars in medium groups and practices in small groups, according to the official schedule of the Double Degree and the Development Plan available at the subject's folder within the Virtual Campus.

1. Theoretical lectures: participative lectures of 2h duration oriented to transmit the basic knowledge of each topic included on the theoretical content of the subject. Depending on the current health situation the theoretical lectures will be taught on site or in a virtual format, through the Virtual Campus videoconference tool.
2. Practical lessons: Practice sessions are aimed at the application, reinforcement and expansion of the different theoretical knowledge acquired, so they will be carried out interspersed between the corresponding theory sessions. During these sessions, active learning will be stimulated through activities that involve gamification, learning based on

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problem solving, group work and discussion. Depending on the activity and current health situation, practical lessons will be on site or online. Please, be aware of the Development plan of the subject on Virtual Campus.

All material of the course will be available for the students in the space of the subject on Virtual campus.

## Development plan

The schedule of theoretical and practical lessons, groups of practices and seminars, and general schedule of the semester will be provided to each student by the Double Degree Direction/Coordination. The Development plan of the subject will be available in the resources folder on Virtual Campus.

Theoretical lectures: 1-2 sessions of 2h / week (afternoon)

Seminars and practical sessions of clinical propaedeutics: 6 sessions of 1.5 - 2.5h /group

Practical sessions of macroscopic and microscopic pathology: 4 session of 2 h / group

Seminars and practical sessions of physiopathology: 5 sessions of 2h /group

Seminar oral presentation of a clinical case in powerpoint (team work): 1 session 2h / group

**\* 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.**

## RULES OF THE SUBJECT

**N1.** No changes of groups in practices or seminars are allowed except those well justified by means of a certificate or those by mutual exchanged participants, prior notification by email to the responsible person of the activity.

**N2** Depending on the practical activity and the instructions from the professor in charge it is required to bring necessary material (esthetoscope) and to wear a clean surgical pajamas/lab coat, boilersuit and impermeable boots to access the activity. Failure to meet this requirement will allow students not to enter into practice.

**N3.** In order to be able to comply with the teaching program, it will be appreciated to be on time for each theoretical and practical session. You will not be able to access to a practical session if you arrive 15 minutes later from the start time.

**N4.** If a copy attempt is detected in any of the exams, action will be taken in accordance with the provisions of the **NORMATIVA DE L'AVUACIÓ I LA QUALIFICACIÓ DELS APRENTATGES EN ELS GRAUS I MÀSTERS** de la UdL (2023).

## Evaluation

The contents of the subject are divided into **SIX evaluative BLOCKS**:

### **T1 & T2: THEORETICAL BLOCK 1 & 2 (30% each)**

The evaluation of each of these blocks will consist of a written test including questions on the contents and development of the theoretical lessons, each one representing 30% of the final mark of the subject. Each test will consist of 30 test (one valid answer among 4 options) and/or short answer questions.

A **minimum mark of 4.5** on each of these blocks (T1 & T2) is required to pass the subject. Otherwise, the failed parts will have to be recovered on the established dates for that purpose within the official academic schedule for the Double Degree.

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

### **P1-3: PRACTICAL BLOCKS 1, 2 & 3 (10% each):**

Each of these blocks represents **10% of the final mark of the subject**. The content of each block includes:

- P1: General Anatomic Pathology
- P2: Propaedeutics
- P3: Pathophysiology

The evaluation of each of these blocks will consist of a written test including short answer or test questions.

Each of the tests will be carried out on the date and time established for this purpose in the official academic calendar of the Double Degree. **These tests cannot be re-sitted.**

### **P4: PRACTICAL BLOCK 4 (10%):**

This block includes the contents encompassed in the different parts of the subject: general pathology, propaedeutics and pathophysiology. It will be carried out by performing a group work (clinical case presentation). The evaluation of the work will be carried out through Rubric (available in virtual campus) considering different criteria, individually or by group, among which are included: power point content, oral presentation, ability to solve questions posed and evaluation by the groupmates. **This evaluation is not recoverable.**

Attendance at seminars and practices is highly recommended and essential to be able to sit and perform the evaluation activities of each of the blocks. The unjustified absence to the practical sessions will be penalized with -1 point 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 corresponding practical block.

For those students who pass the practical blocks with a minimum mark of 4/10, their grades will be valid for **2 years**, if the teaching project does not change. Repeating students can renounce their previous grade and retake the evaluation of the practical blocks, but in this case the final grade will be the one obtained most recently.

## **FINAL SCORE**

**To pass the subject it will be essential to obtain a minimum grade of 5 in the final score.**

The final score will be calculated as follows: 30% T1 + 30% T2 + 10% P1 + 10% P2 + 10% P3 + 10% P4

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 (T1&T2), but the average of the subject is approved, the subject will be graded in the minutes with a 4.9 (see **NORMATIVA DE L'AVUACIÓ I LA QUALIFICACIÓ DELS APRENTATGES EN ELS GRAUS I MÀSTERS** of the UdL, 2023).

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 0.5 extra point in the final grade for the subject, provided that the subject is passed (minimum 5 points).

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

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

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(NORMATIVA DE L'AVUACIÓ I LA QUALIFICACIÓ DELS APRENTATGES EN ELS GRAUS I MÀSTERS, 2023).

## ALTERNATIVE EVALUATION

Following the provisions of the UdL NORMATIVA DE L'AVUACIÓ I LA QUALIFICACIÓ DELS APRENTATGES 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 (written test) at the end of the semester, including questions of the entire content of the subject. This block will represent 60% of the final score. The test will be divided in two parts, requiring a minimum score of 4.5 in each part to pass the subject. The date and time of the exam will be agreed with the teaching staff of the subject.
- **PRACTICAL BLOCK:** a single exam at the end of the semester, including questions of the entire practical content of the subject. This block will represent 30% of the final score. Assistance to external practices of propaedeutics (x3) and to the seminar of clinical case presentations (block P4) is essential to cover and assume the necessary skills by the student and for evaluation, for which they must be carried out. The taught material of all other seminars and practices will be made available to the student, who will carry out their learning independently through the "flipped learning" methodology or inverted learning.
- **TEAM WORK (P4):** Carrying out this activity, which represents 10% of the final score of the subject, is essential to cover and demonstrate that the necessary competencies have been assumed by the student and for evaluation, for which it must be carried out. The student will coordinate with the teaching staff to find the fit within the designated times for the different groups.

## Second-chance examination

The second-chance examination of theory will be carried out at the end of the course at established dates for that purpose on the official academic calendar of the Double Degree. There will be no second-chance examination of the practical parts of the subject.

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

## Bibliography

### Basic bibliography

ROBBINS & COTRAN. 2015 Pathologic Basis of Disease, 9th ed, by Kumar, Abbas, and Aster. Saunders Elsevier, Professional Edition.

ZACHARY JF, McGAVIN MD. 2017. Pathological basis of Veterinary Disease. 5th ed. Elsevier-Mosby.

CHEVILLE, N. F. 2006. Introduction to Veterinary Pathology. Ed. Blackwell Publishing, Oxford, UK.

VAN DJICK, J.E., GRUYS, E., MOUWEN, J. M. V. M. (2007). Color Atlas of Veterinary Pathology. 2ª ed. Saunders-Elsevier.

CEBRIÁN YAGÜE, L. M.; PASTOR MESEGUER, J.; RAMOS ANTÓN, J. J.; FERRER MAYAYO, L. H. 2005. La exploración clínica del ganado vacuno.

ervet, Zaragoza.

RADOSTITIS M.; MAYHEW IG.; HOUSTON DM. 2000. Veterinary clinical examination and diagnosis. WB Saunders. London. SMITH, BP. Large animal internal medicine. 2008. 4ª Ed. Ed. Mosby.

DUNLOP, RH. 2007. Fisiopatología Veterinaria. Acribia.

ETTINGER, S. J. and FELDMAN, E. C. 2010. Textbook of Veterinary Internal Medicine. 7th ed, Saunders

McPHEE, S.J. and HAMMER, D. G. 2009. Pathophysiology of Disease. An introduction to clinical Medicine. 6th edition. Prentice-Hall International Inc.

SMITH, BP. 2008 Large animal internal medicine. 4ª Ed. Ed. Mosby.

### Digital resources

<http://vet.uga.edu/vpp/noahsarkive/>

<https://www.askjpc.org/vspo/>

<http://handresen.perulactea.com/fisiopatologia-veterinaria/>

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

<https://www.3tres3.com/atlas/>