Information about the subject

Degree: Bachelor of Science Degree in Veterinary Medicine

Faculty: Faculty of Veterinary Medicine and Experimental Sciences

Code: 1260206 **Name:** Physiopathology and general integrated Pathology II

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

Module: Module of Clinical Sciences and Animal Health

Subject Matter: Alterations in Structure and Function, and Fundamentals of Diagnosis **Type:**

Compulsory

Department: Veterinary Medicine and Surgery

Type of learning: Classroom-based learning

Languages in which it is taught: Spanish

Lecturer/-s:

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Module organization

Module of Clinical Sciences and Animal Health

Subject Matter	ECTS	Subject	ECTS	Year/semester
Alterations in Structure and Function, and Fundamentals of Diagnosis	36,00	Clinical diagnostic techniques I (Clinical Propedeutics)	6,00	3/1
		Clinical Diagnostic Techniques II (Imaging Diagnosis)	6,00	3/1
		Histopathology and General Pathological Anatomy	6,00	2/1
		Physiopathology and general integrated Pathology I	6,00	2/1
		Physiopathology and general integrated Pathology II	6,00	2/2
		Special pathological anatomy	6,00	2/2
Pharmacology and Therapeutics	12,00	Pharmacology and Toxicology	6,00	3/1
		Pharmacotherapy, preventive medicine and veterinary hygiene	6,00	5/1
Clinical Sciences and Animal Health	60,00	Clinic and health in equines	6,00	3/2
		Clinic and health in water animals	6,00	5/1
		Clinic and health in wild and exotic animals	6,00	3/2

Clinical Sciences and Animal Health	Clinic and health on the farm I	6,00	4/1
	Clinic and health on the farm II	6,00	4/2
	Epidemiology	6,00	3/1
	Pet Clinic	6,00	3/2
	Reproduction and Obstetrics	6,00	3/1
	Veterinary Surgery I	6,00	3/2
	Veterinary Surgery II	6,00	4/1

Recommended knowledge

Previous requirements: To have slight knowledge of Biology, Anatomy, Biochemistry and Physiology.

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 is familiar with the physiopathology of the main vital systems.

R3 The student is able to establish a diagnostic plan.

R4 The student knows how to use different working techniques in the laboratory and interpret the results.

R5 The student is able to collect biological samples.

R6 The student is able to write documents on physiopathology and general pathology, working as a team.

R7 The student argues according to rational criteria based on his or her work.

R8 The student knows and understands the concepts and terminology presented in the module of Integrated General Pathology and Physiopathology II.

R9 The student is able to solve problems related to the contents of the module.

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	

GENERAL		Weighting			
		1	2	3	4
CG2	Understanding and applying prevention, diagnosis and individual or collective treatment , and control of animal diseases, individually or in groups, with special attention to zoonoses.				x
CG6	Developing professional practice, acquiring skills related to teamwork, with an efficient use of resources and quality management.			x	
CG7	Identifying emerging risks in all areas of the veterinary profession.	x			

SPECIFIC		Weighting			
		1	2	3	4
E22	Knowing and applying principles and bases of nosology.				x
E23	Knowing and applying principles and bases of the description and pathogenesis of general alterations of the structure and function of cells, tissues, organs and systems.				x

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		
E26	Knowing and applying necropsy.		x		
E27	Knowing and applying recognition and diagnosis of different types of injuries and their association with pathological processes.				x
E29	Knowing and applying diagnosis.			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	
T6	Using information technology to communicate, share, search for, collect, analyze and manage information, especially related to the veterinarian practice.		x		
T8	Efficient and effective work, both independently and as a member of a multidisciplinary team or unit, showing respect, appreciation and sensitivity to the work of others.			x	
T10	Ability to learn, to research, and to be aware of the need to keep knowledge updated, and attending training programs.			x	

Assessment system for the acquisition of competencies and grading system

Assessed learning outcomes	Granted percentage	Assessment method
R1, R2, R3, R7, R8, R9	40,00%	Written assessment of acquired knowledge and skills. The test may consist of a series of open-ended questions or multiple-choice questions about the theoretical contents of the module and/or practical exercises (problem-solving).
R1, R2, R3, R4, R6, R7, R8, R9	10,00%	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.
R2, R3, R4, R5, R6, R7, R8, R9	10,00%	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.
R2, R3, R4, R5, R6, R7, R8, R9	10,00%	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, R4, R6, R7, R8, R9	10,00%	Evaluation of group work through a system of continuous assessment throughout the course based on the delivery of assignments the objectives and content of which will be proposed by the teacher.
R1, R2, R3, R4, R5, R6, R7, R8, R9	20,00%	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

The written test represents 40% of the final grade. For this, an exam will be developed on theoretical knowledge. The theoretical exam will consist of multiple choice and / or short questions. **Failure to pass the theoretical part will make it impossible to pass the course.**

Attendance at practices is considered compulsory. During the practical sessions the Teacher will control the attendance and the attitude of each student. Factors such as attention, degree of participation and interest shown during practice will be taken into account. The practical evaluation will include any aspect related to the practices carried out during the academic year. **The evaluation of the practical activities constitutes 30% of the final grade. The favorable result of the evaluation of the practices will be an indispensable requirement to pass the course.**

The evaluation of the autonomous and team work contributes 30% of the final grade. The students, divided into groups of approximately 5 people, will present a scientific article selected by themselves. The Professor will value the presentation of the article, and the involvement of all the members of the group. The clinical cases will be worked with the work team, but will be solved individually during the seminar of the same.
This subject cannot be assessed through a single assessment.
The use of artificial intelligence (AI) tools is subject to the lecturer's discretion, who may establish specific limits or conditions depending on the training or assessment activity.

Overall evaluation:
For the final grade, the results of the different evaluation activities are weighted. To pass the course, it will be necessary to obtain, as a minimum, a grade equal to or greater than 50 points out of 100 in the first 4 sections and in the final grade of the course.

Award Criteria for grade with Honors: At the discretion of the teacher, an honor enrollment can be awarded for every 20 students (not for a fraction of 20; except for the first 20 students). Only honors may be awarded on the first call of the student's first year of enrollment in the subject.

Review of exams: after the publication of the notes, the student will have the exam review times published on the intranet to review their exam, unless specifically indicated otherwise by the teaching staff, outside these hours the exams cannot be shown. Those students who for various reasons do not attend the evaluation on the official date of the calls, may carry out the extraordinary evaluation through an oral exam.

MENTION OF DISTINCTION:
In accordance with the regulations governing the assessment and grading of subjects in force at UCV, the distinction of "Matrícula de Honor" (Honours with Distinction) may be awarded to students who have achieved a grade of 9.0 or higher. The number of "Matrículas de Honor" (Honours with Distinction) may not exceed five percent of the students enrolled in the group for the corresponding academic year, unless the number of enrolled students is fewer than 20, in which case a single "Matrícula de Honor" (Honours with 9 Distinction) may be awarded. Exceptionally, these distinctions may be assigned globally across different groups of the same subject. Nevertheless, the total number of distinctions awarded will be the same as if they were assigned by group, but they may be distributed among all students based on a common criterion, regardless of the group to which they belong. The criteria for awarding "Matrícula de Honor" (Honours with Distinction) will be determined according to the guidelines stipulated by the professor responsible for the course, as detailed in the "Observations" section of the evaluation system in the course guide.

Learning activities

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

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

M2 On-site training activity aimed primarily at obtaining knowledge application and research skills. Knowledge is built through interaction and activities. The activity consists of supervised monographic sessions with shared participation (teachers, students, experts). The size of the group is variable, from one large group to various small groups, with a minimum of 6 students to ensure interaction. The evaluation will be based on follow-up records kept by the teacher. Participation and the development of the capacity to problematize should be taken into account.

M4 On-site training activity in groups that takes place in the classroom. It includes working with documents and formulating ideas without handling animals, organs, objects, products, or corpses (e.g., work with articles or documents, clinical case studies, diagnostic analyses, etc.). It would correspond to "Animal-free supervised practical work", type e1, from the European evaluation of EAEVE. The size of the group is variable, in a range of 10 to 20 students.

M5 On-site training activity in groups that takes place in the Computer Lab where the computer is used as support for learning. It includes work with computer models, specific software, Web queries, etc. It would correspond to "Animal-free supervised practical work", type e1, from the European evaluation of EAEVE. The size of the group is variable, in a range of 10 to 20 students.

M6 On-site training activity in groups carried out in the laboratory. It includes the sessions where the students develop laboratory experiments, make dissections or use the microscopes for the study of histological or histopathological samples actively and autonomously, under the supervision of the professor. It also includes work with healthy animals, objects, products, corpses (e.g., animal handling, bacteriological practices, physiology or biochemistry, meat inspection, etc.). It would correspond to the "Supervised practical non-clinical animal work" type e2 of the European evaluation of EAEVE. The size of the group is variable, in a range of 10 to 20 students.

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" (strickly 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.

IN-CLASS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
Theoretical lessons (TL) M1	R1, R2, R3, R6, R7, R8, R9	60,00	2,40
Seminars (S) M2	R1, R2, R3, R4, R6, R7, R8, R9	10,00	0,40
Problem-solving Practice (PSP) M4	R1, R7, R9	4,00	0,16
Laboratory Practice (LP) M6	R2, R3, R4, R5, R7, R8, R9	12,00	0,48
Clinical Practice (CP) M7	R2, R3, R4, R5, R7, R8, R9	4,00	0,16
Tutorial M8	R1, R2, R6, R7, R8, R9	3,00	0,12
Evaluation (Ev) M9	R1, R2, R3, R4, R5, R6, R7, R8, R9	5,00	0,20
TOTAL		**98,00**	**3,92**

LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
Group work M10	R1, R2, R3, R4, R6, R7, R8, R9	12,00	0,48
Individual work M11	R1, R2, R3, R4, R5, R6, R7, R8, R9	40,00	1,60
TOTAL		**52,00**	**2,08**

Description of the contents

Description of the necessary contents to acquire the learning outcomes.

Theoretical contents:

Content block	Contents
DU 1.- CARDIOVASCULAR SYSTEM PATHOPHYSIOLOGY	Lecture 1. Pathophysiology of cardiac insufficiency. Etiology and pathophysiological mechanisms that start up it. Lecture 2. Pathophysiologyof endocardium and pericardium. Endocardiosis. Endocarditis. Cardiac murmurs. Congenital and acquired alterations of pericardium. Lecture 3. Pathophysiologyofthe myocardium. Dilated cardiomyopathy. Hypertrophic cardiomyopathy.Restrictive cardiomyopathy. Lecture 4. Arterial and Venous pathophysiology. Hypo and hypertension. Lecture 5. Acute circulatory pathophysiology: Shock. Pathophysiology and consequences on different systems. **COMPETENCES: CB2, CG2, T1, T2, T4, T6, T8, T10, E23, E27, E29**
DU 2.- RESPIRATORY SYSTEM PATHOPHYSIOLOGY	Lecture 6. Respiratory failure. Alterations in ventilation, perfusion and diffusion. Lecture 7. Defensive respiratory mechanisms and pathophysiological consequences of respiratory failure. Preparation and purification of inspired air. Changes in the frequency, depth and rate of breathing. Hypoxia. Hypercapnia. Hypocapnia. Cyanosis. Lecture 8. Pathophysiology of airspace. Pathophysiology of the nose, sinuses, larynx, pharynx and trachea. Lecture 9. Pathophysiology of the mediastinum, diaphragm and Pleural space. Pleuritis and pleural effusion. Pneumothorax. Pathologies of the mediastinum and diaphragm. **COMPETENCES: CB2, CG2, T1, T2, T4, T6, T8, T10, E23, E27, E29**

DU 3.- THE URINARY SYSTEM PATHOPHYSIOLOGY	Lecture 10. Pathophysiology of diuresis, main clinical manifestations. Syndromes of polyuria, polydipsia, oliguria and anuria. Voiding. Lecture 11. Acute renal failure and chronic renal failure. Classification. Etiology. Pathogenesis and pathophysiological consequences. Lecture 12. Pathophysiology of the urinary tract. Pathology of the ureters, bladder and urethra. **COMPETENCES: CB2, CG2, T1, T2, T4, T6, T8, T10, E23, E27, E29**
DU 4.- THE DIGESTIVE SYSTEM PATHOPHYSIOLOGY	Lecture 13. Pathophysiology of the mouth, pharynx, esophagus and salivary glands. Disorders prehension, mastication and salivation. Dysphagia. Lecture 14. Pathophysiology of the gastrointestinal system in small animals. Vomiting and disorders of the motor function, secretory and mucosal barrier; Diarrheal syndrome. Maldigestion and malabsorption syndrome. Osmotic diarrhea. Altered vascular permeability Diarrhea; Tenesmus and constipation. Lecture 15. Pathophysiology of equine digestive system. Colic syndrome. Lecture 16. Pathophysiology of the digestive tract of ruminants. Pathophysiology of forestomachs. Lecture 17. Pathophysiology of the liver. Alterations of biliary, vascular, metabolic and detoxifying function; Hepatic laboratory examination. Serum enzymes and functional tests. Lecture 18. Pathophysiology of the exocrine pancreas. Acute Pancreatitis. Exocrine pancreatic insufficiency. Lecture 19. Pathophysiology peritoneum. Study of different biological fluid. **COMPETENCES: CB2, CG2, T1, T2, T4, T6, T8, T10, E23, E27, E29**
UD 5. – CANCER PATHOPHYSIOLOGY	Lecture 20. Introduction to oncology. Pathogenic mechanisms and biological behavior. Paraneoplastic syndromes. **COMPETENCES: CB2, CG2, T1, T2, T4, T6, T8, T10, E23, E27, E29**

UD 6. - PATHOPHYSIOLOGY OF THE IMMUNE SYSTEM	Lecture 21. Pathophysiology of the immune system. Immunodeficiencies. Immunopathological reactions. **COMPETENCES: CB2, CG2, T1, T2, T4, T6, T8, T10, E23, E27, E29**
UD 7. – THERMOREGULATION PATHOPHYSIOLOGY	Lecture 22. Thermoregulation pathophysiology. Hyperthermia. Hypothermia. Febrile syndrome. Heat blow. **COMPETENCES: CB2, CG2, T1, T2, T4, T6, T8, T10, E23, E27, E29**
EXPERT GAME 1	Expert game 1
EXPERT GAME 2	Expert game 2
EXPERT GAME 3	Expert Game 3
PRESENTATION OF SCIENTIFIC PAPERS. DAY 1	PRESENTATION OF SCIENTIFIC PAPERS. DAY 1
PRESENTATION OF SCIENTIFIC PAPERS. DAY 2	PRESENTATION OF SCIENTIFIC PAPERS. DAY 2
PRACTICES	·Electrocardiography and blood pressure measurement ·Electrocardiography, study of cardiac arrhythmias. ·Urinary catheterization and study of the disorders of the urinary analysis. ·Techniques of enteral and parenteral nutrition in anorexic animals and calculation of their maintenance requirements. ·Analysis and interpretation of biological fluids. ·Drainage placement Techniques (Pleuracan, Cystofix and Peritofix) and realization of emergency techniques like thoracocentesis and abdominocentesis.
CLINICAL PRACTICE	·Clinical Practice 1: Calculation of drug doses and control of hospitalized patients. ·Clinical Practice 2: Calculation of drug doses and control of hospitalized patients.
SEMINAR	·Arrhythmias clinical seminar. ·Nutrition clinical seminar.

CLINICAL CASES SEMINAR	·Discussion of clinical cases: cardiorespiratory disorders. ·Discussion of clinical cases: renal pathology. ·Discussion of clinical cases: Gastrointestinal pathology.
EVALUATION & TUTORIAL	Evaluation and tutorial

Organization of the practical activities:

	Content	Place	Hours
PR1.	Practice 1: Electrocardiography and blood pressure measurement	Drylab	2,00
PR2.	Seminar 1: Arrhythmias clinical seminar.	Lecture room	2,00
PR3.	Practice 2: Electrocardiography, study of cardiac arrhythmias.	Drylab	2,00
PR4.	Practice 3: Urinary catheterization and study of the disorders of the urinary analysis.	Drylab	2,00
PR5.	Seminar: Nutrition clinical seminar.	Lecture room	2,00
PR6.	Practice 4: Techniques of enteral and parenteral nutrition in anorexic animals and calculation of their maintenance requirements.	Drylab	2,00
PR7.	Practice 5: Analysis and interpretation of biological fluids.	Drylab	2,00
PR8.	Practice 6: Drainage placement Techniques (Pleuracan, Cystofix and Peritofix) and realization of emergency techniques like thoracocentesis and abdominocentesis.	Drylab	2,00
PR9.	Clinical Practice 1: Calculation of drug doses and control of hospitalized patients.	Hospital	4,00
PR10.	Discussion of clinical cases 1: cardiorespiratory disorders.	Lecture room	2,00
PR11.	Discussion of clinical cases 2: cardiorespiratory disorders. Discussion of clinical cases: renal pathology.	Lecture room	2,00
PR12.	Discussion of clinical cases 3: Gastrointestinal pathology.	Lecture room	2,00

Temporary organization of learning:

Block of content	Number of sessions	Hours
DU 1.- CARDIOVASCULAR SYSTEM PATHOPHYSIOLOGY	6,00	12,00
DU 2.- RESPIRATORY SYSTEM PATHOPHYSIOLOGY	4,00	8,00
DU 3.- THE URINARY SYSTEM PATHOPHYSIOLOGY	3,00	6,00
DU 4.- THE DIGESTIVE SYSTEM PATHOPHYSIOLOGY	7,00	14,00
UD 5. – CANCER PATHOPHYSIOLOGY	1,00	2,00
UD 6. - PATHOPHYSIOLOGY OF THE IMMUNE SYSTEM	2,00	4,00
UD 7. – THERMOREGULATION PATHOPHYSIOLOGY	1,00	2,00
EXPERT GAME 1	1,00	2,00
EXPERT GAME 2	1,00	2,00
EXPERT GAME 3	1,00	2,00
PRESENTATION OF SCIENTIFIC PAPERS. DAY 1	1,00	2,00
PRESENTATION OF SCIENTIFIC PAPERS. DAY 2	1,00	2,00
PRACTICES	6,00	12,00
CLINICAL PRACTICE	4,00	8,00

SEMINAR	2,00	4,00
CLINICAL CASES SEMINAR	3,00	6,00
EVALUATION & TUTORIAL	5,00	10,00

References

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