

**ACADEMIC YEAR 2023/2024**

General information	
Academic subject	<b>GENERAL PATHOLOGY AND PATHOPHYSIOLOGY</b>
Degree course	Animal Science L38
Academic Year	II year
European Credit Transfer and Accumulation System (ECTS)	5+1
Language	Italian
Academic calendar (starting and ending date)	II semester: 26/02/2024 – 14/06/2024
Attendance	Mandatory

Professor/ Lecturer	
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Virtual headquarters	Microsoft Teams platform if necessary
Tutoring (time and day)	Tuesday: 12.00-13.00; Wednesday: 15.00-16.00; Thursday: 12.00-13.00; 15-16.00.

Syllabus	
<b>Learning Objectives</b>	<p>The general pathology and physiopathology course aims to propose, with the use of the appropriate medical-scientific terminology, the basic concepts of injury, damage and alteration in various animal diseases, so that students are able to understand the pathophysiological mechanisms underlying animal diseases. Students will be led, through theoretical teaching and possibly laboratory activities, to acquire:</p> <ol style="list-style-type: none"> <li>the ability to understand the methods and mechanisms of damage production caused by several etiological agents;</li> <li>the ability to identify the damage response mechanisms caused by articulated cellular and tissue systems of a living organism together with its multiform molecular complexes;</li> <li>the basic techniques for discriminating the main alterations from both histological, cytological and macroscopic point of view, in order to make a morphological diagnosis;</li> <li>ability to communicate and pass on what has been learned;</li> <li>skills in the common diagnostic and biosafety procedures used by the pathologist (routine staining, special histochemical, immunohistochemical), developing the sampling, fixation and interpretation skills of histological preparations (DOC.1.21);</li> </ol> <p>the fundamental principles of modern cellular and molecular pathology, as well as degenerative, inflammatory and neoplastic multicellular pathological processes, and cellular pathophysiology and mechanisms of organ pathology and integrated functions.</p>
<b>Course prerequisites</b>	The student must have acquired knowledge and skills related to Physiology 2 and Biology and Immunology.
<b>Contents</b>	General concepts of Pathology. Etiology: extrinsic and extrinsic causes of disease. Pathogenesis, morphological modifications and functional alterations concepts of cellular alteration. Causes of cell damage: cellular adaptations of growth and differentiation. Atrophy, hypertrophy, hypoplasia, hyperplasia, metaplasia. Cell

	death: Necrosis and apoptosis. Nutritional Factors to Physical Causes of Diseases. The inflammatory response; acute inflammation; chronic inflammation. Pathologies related to inflammation. Oncology: control of cell proliferation. Anaplasia. Nomenclature and classification of tumors. Physical, chemical and oncogenic virus carcinogenesis. Differences between benign and malignant tumors. Tumor angiogenesis. The metastatic process. Immunity in the tumor context. Angiogenesis in the physiological and pathological context. Haemostasis: haemorrhagic syndromes, disseminated intravascular coagulation, thrombosis. Atherosclerosis: causes and consequences. Hyperlipidemias, hypertension, vascular damage, clinical manifestations and complications. Pathophysiology of the cardiovascular system: changes in blood pressure, ischemia. Pathophysiology of the respiratory system: dyspnoea and cyanosis, acute and chronic respiratory failure. Renal pathophysiology: acute and chronic renal insufficiency. Pathophysiology of the liver: steatosis and cirrhosis, jaundice, liver failure.
<b>Books and bibliography</b>	Marcato P. S., <i>Anatomia e Istologia Patologica</i> , Esculapio, 1997; Celotti F. <i>Patologia Generale e Fisiopatologia</i> , EdiSES 2002; McGavin M. D., Zachary J. F., <i>Patologia generale veterinaria</i> , Elsevier Masson, 2010.
<b>Additional materials</b>	<i>Additional teaching material will be provided by the teachers during the course.</i>

<b>Work schedule</b>			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
<b>Hours</b>			
<b>150</b>	<b>40</b>	<b>10</b>	<b>100</b>
<b>ECTS</b>			
<b>6</b>	<b>5</b>	<b>1</b>	
<b>Teaching strategy</b>	Theoretical lessons will focus on the topics in the program that will be exposed using the appropriate multimedia tools (personal computer, projector, use of the WEB). The practical activity will be carried out mainly in the histopathology and oncology laboratories and in the immunohistochemistry one and possibly in the anatomical room. Outside normal teaching hours, self-assessment tests are provided to verify the progress of acquisitions, ongoing exemptions and, where necessary, use of additional learning methods.		
<b>Expected learning outcomes</b>			
<b>Knowledge and understanding on:</b>	<p>At the end of the course, students will acquire:</p> <ul style="list-style-type: none"> <li>o knowledge relating not only to the pathogenesis, but also to the underlying physiopathological mechanisms of animal diseases;</li> <li>o ability to recognize and describe the pathogenetic and molecular mechanisms of cell and tissue damage in relation to the various etiological causes of disease.</li> <li>o Ability to communicate and transmit what they have learned and to be able to continue their study path in full autonomy.</li> <li>o Know the main basic pathogenetic mechanisms that lead to the establishment of alterations from purely functional to morphologically overt. To develop the ability to recognize organs and lesions and to use the correct language for histological description - acquisition of diagnostic and communication skills.</li> </ul>		

<p><b>Applying knowledge and understanding on:</b></p>	<p>Students will acquire the ability to recognize and describe in a coherent and rational way:</p> <ul style="list-style-type: none"> <li>○ the pathogenetic and molecular mechanisms of cell and tissue damage in relation to the various etiological causes of disease;</li> <li>○ the main processes that cause the onset of circulatory disorders, hemodynamic alterations and thermoregulation in pets;</li> <li>○ the basic principles of the genesis of the innate and acquired immune response and of the processes underlying the phenomena of hypersensitivity and autoimmune diseases (DOC. 2.5).</li> </ul>
<p><b>Soft skills</b></p>	<ul style="list-style-type: none"> <li>• <i>Making informed judgments and choices</i> At the end of the course, students will be able to: <ul style="list-style-type: none"> <li>○ review and critically evaluate the literature relating to teaching (DOC. 1.8);</li> <li>○ show skills in the logical approach to scientific and pathophysiological reasoning (DOC. 2.1).</li> </ul> </li> <li>• <i>Communicating knowledge and understanding</i> At the end of the course, students will have to demonstrate the ability to: <ul style="list-style-type: none"> <li>○ work in a team, adopting adequate communication and interaction strategies (DOC. 2.11);</li> <li>○ adopt different linguistic registers, including the technical-scientific one, to adequately communicate experimental results (DOC. 1.4).</li> </ul> </li> <li>• <i>Capacities to continue learning</i> <ul style="list-style-type: none"> <li>○ to improve his knowledge of the topics through advanced courses and training periods.</li> </ul> </li> </ul>

<p><b>Assessment and feedback</b></p>	
<p>Methods of assessment</p>	<p>The examination of the General Pathology and Pathophysiology course allows the acquisition of 6 of the credits required by the study plan. The exam will take place orally</p>
<p>Evaluation criteria</p>	<p>The assessment of learning and the assessment of the educational objectives achieved will be carried out during the course through flip teaching sessions aimed at ascertaining the students' independent judgment and optional ongoing tests focused on multiple choice questionnaires (with only one correct answer) on the topics covered by the lessons. The final exam, aimed at ascertaining the degree of acquisition of the course topics and the mastery of the pathological mechanisms achieved by the student at the end of the theoretical teaching and practical exercises, must also verify in the student:</p> <ul style="list-style-type: none"> <li>• Applied knowledge and understanding: <ul style="list-style-type: none"> <li>○ Ability to make links between different disciplines and provide appropriate examples;</li> <li>○ Ability to evaluate a pathological picture and prepare a diagnostic algorithm;</li> <li>○ Ability to critically evaluate different control strategies for animal health diseases.</li> </ul> </li> <li>• Autonomy of judgment: <ul style="list-style-type: none"> <li>○ Ability to analyze and critical sense of the topics studied;</li> <li>○ Capacity for global and unitary assessment of the most common pathological situations of livestock and companion animals;</li> </ul> </li> <li>• Communication skills: <ul style="list-style-type: none"> <li>○ Ability and clarity of presentation;</li> <li>○ Expressive appropriateness, with particular reference to specialist terminology;</li> </ul> </li> </ul>



	<ul style="list-style-type: none"><li>○ Ability to learn;</li><li>○ Ability to rework the knowledge acquired through the diagnostic examination;</li><li>○ Ability to apply the general knowledge acquired in new and differentiated practical situations.</li></ul>
Criteria for assessment and attribution of the final mark	The final grade of the General Pathology and Physiopathology test is closely related to the critical sense shown by the student in the discussion of the topics and to the medical-scientific language acquired during the assiduous attendance of the frontal course and practical activities. The final evaluation is expressed out of thirty; the exam, passed with a grade equal to or greater than 18, will take into account not only the accuracy of the answers, but also the communication skills, the clarity of presentation, the disciplinary competence and the level of in-depth analysis of the issues addressed.
<b>Additional information</b>	