

Code of subject	M_WE_SEM 6 PZTOFIZJ 2 ANG
Field of study	Veterinary Medicine
Name of the training module including the Polish name	Pathophysiology 2 Patofizjologia 2
Language of instruction	English
Type of the training module	Obligatory
Level of the training module	Master level
Form of studies	Full-time
Location in the programme (year)	III
Location in the programme (semester)	6
Number of ECTS credits with a division into contact/noncontact	5 (3,1/1,9)
Name and surname of the person in charge	Dr hab. Urszula Kosior-Korzecka, Assoc. Prof.
Unit offering the subject	Sub-Department of Pathophysiology, Department of Preclinical Veterinary Sciences, Faculty of Veterinary Medicine
Aim of the module	The aim of the module is to familiarize students with the etiopathogenesis of selected cardiovascular, respiratory, metabolic, endocrine and immunological diseases in animals at the molecular, cellular, organ and systemic levels, including target therapy.
Learning outcomes – the total number of learning outcomes may not exceed (4-8) for the module. The description of the intended learning outcomes that a student should achieve after the completion of the module should be provided. The outcomes for all forms of classes used should be presented.	Konwledge:
	Student: K1. knows and understands basic pathological processes and is able to determine their importance in the course of the disease K2. knows and interprets the role of signaling molecules and receptor proteins in the pathomechanisms of diseases of cardiovascular, respiratory, gastrointestinal and excretory systems. K3. knows and understands the principles and mechanisms underlying the formation of metabolic and endocrine diseases at the molecular, cellular, organ and systemic levels, taking into account biological mechanisms enabling recovery.
	Skills:
	Student: S1 - can analyze, evaluate and use the knowledge of the pathogenesis of a given disease in the selection of the appropriate target therapy S2 - can analyze and interpret the results of laboratory experiments performed in the field of etiology and pathogenesis of cardiovascular, respiratory, gastrointestinal, reproductive and hematopoietic systems diseases of animals. S3 - can use selected molecular and cellular laboratory techniques, the results of which are used to analyze the etiology, pathomechanism and target therapy of cardiovascular, respiratory, gastrointestinal, reproductive and hematopoietic systems diseases.
	Social competences:

	<p>Student:</p> <p>SC1. is ready to learn and improve skills throughout his life in connection with continuous progress in biomedical sciences</p> <p>SC2. is ready to work individually and in a team as well as cooperate and perform entrusted tasks</p>
<p>Preliminary and additional requirements</p>	<p>Passed Pathophysiology module 1</p>
<p>Contents of the training module – a compact description</p>	<p>LECTURES:</p> <p>Basic pathomechanisms of cardiomyocyte damage in heart failure. Cardiomyopathies - classification and, etiopathogenesis. Myocardial infarction - causes and symptoms. Selected types of shock (septic, anaphylactic, cardiogenic, pulmonary) - etiology, pathogenesis and clinical symptoms. Etiopathogenesis of respiratory diseases in companion animals, farm animals and horses. Interdependence of neutrophils, coagulation and inflammatory mediators in cattle (BRD) and horses (RAO) respiratory diseases. Etiology and pathomechanisms of osmotic and secretory diarrhea. General management of diarrhea in animals. Pathogenesis of gastric ulcers. Participation of trophallergens in food intolerances. Infectious anorexia. Mechanism of autointoxication in horses and cattle. Pathomechanisms of pancreatitis and intestinal proliferative conditions. Activation of stellate and Kupfer cells in the course of fibrosis and liver cirrhosis. Symptoms and molecular mechanisms of endocrine disorders. Etiopathogenesis of various types of diabetes. Hormonal and receptor determinants of ovarian cyst development. Etiology and pathogenesis as well as symptoms of selected endocrine diseases in animals. Etiology, pathogenesis and symptoms of selected metabolic diseases in animals. Causes, pathomechanisms and symptoms of selected hemorrhagic diseases in animals. Renal failure - causes, mechanisms and symptoms.</p> <p>CLASSES:</p> <p>Cardiovascular disorders - classification. Etiology of dilated and hypertrophic cardiomyopathy in dogs. Causes and pathomechanism of cardiac tamponade. Myocardial damage during ischemia and reperfusion. Analysis of potassium and calcium ions in the blood and other selected biochemical parameters used to assess cardiac function. Hypertension. Local circulatory disorders. Pathological types of breathing and forms of dyspnea. Emphysema and atelectasis of the lungs. Pneumonia and pleural disease. Pulmonary embolism. Assessment of platelet count as a diagnostic parameter in the diagnosis of DIC in the course of pneumonia. Gastrointestinal disorders</p> <p>in polygastric animals with particular emphasis on etiopathogenesis of rumen acid dyspepsia. Pathogenesis of gastric ulcers in horses and companion animals. The relationship between diet and stress and the development of gastric ulcer. Etiology and pathogenesis of</p>

	<p>osmotic diarrhea in piglets and calves. Prevention and target therapy. Differentiation of primary diabetes types. Species-specific diabetes complications. Glucose tolerance test. The role of glycosylated proteins in diabetes in dogs and cats. Differentiation of diabetes mellitus with Fanconi syndrome in dogs. Polyethiopathogenesis of polycystic ovary syndrome in pigs and cows. Differentiation of follicular and luteal cysts based on the concentration of 17β-estradiol and progesterone in blood plasma and / or follicular fluid. Clinical signs. Etiology and pathogenesis of genetically conditioned primary anemia and secondary anemia in animals. Measurement of the degree and rate of hemolysis under physiological and cholestasis conditions. Disorders of the white blood cell system, with particular emphasis on the etiopathogenesis of leukemias and lymphomas. B-lymphocyte transformation test. Hemorrhagic diathesis in animals. Determination of prothrombin and thrombin time in the course of DIC syndrome.</p>
<p>Recommended and obligatory reading list</p>	<p>Notes from lectures and classes, selected scientific publications. References:</p> <ol style="list-style-type: none"> 1. Norman F., Cheville : Introduction to veterinary pathology 2. Slauson D.: Mechanisms of disease - a textbook of comparative general pathology 3. Sherbet G., Lakshmi M.: The genetics of cancer
<p>The intended forms/activities/teaching methods</p>	<p>Lectures, classes, labs, practical work, demonstration, presentation</p>
<p>Methods of verification and documentation forms of the achieved learning outcomes</p>	<p>The presence of the student during the classes is obligatory. During the semester, the student may miss 1 practical exercise. At the end of the semester or at another date set by the teacher, the student must complete the practical part of missed class and/or demonstrate an appropriate level of substantive preparation in the field of the material covered by this class.</p> <p>A workbook on Pathophysiology should be kept exclusively for this subject. It should contain plans for individual classes and protocols of practical classes performed along with the results of the tests/experiments and their interpretation.</p> <p>Verification of learning outcomes in terms of practical skills and social competences: During the course, the student must perform a practical classes (individually, in pairs or in a group), calculate the results, if possible, present them in a graphic version, interpret them based on the knowledge of the subject of the etiopathogenesis of the disorders / diseases in question and draw appropriate conclusions (usually the student must indicate which of the analyzed samples is from a healthy/control animal and which is from an affected /experimental one and justify her/ his decision). All these tasks must be described by the student in the workbook on Pathophysiology. Correct carrying out of all the above-mentioned tasks is the basis for passing the practical exercise.</p> <p>Verification of learning outcomes in terms of knowledge, practical skills and social competences: In the second semester, three series</p>

of classes are carried out. After completing each cycle of practical classes, the credit is performed. Participation in the credit of the classes is possible only after passing the practical part from a given cycle.

In each semester, two credits are oral and one is written. The result of each credit is a grade (5.0; 4.5; 4.0; 3.5; 3.0; 2.0) determined in accordance with the provisions in the Department's Education Quality Book. The student is entitled to 3 credit terms:

- the first - on the date indicated in the classes schedule (the only possibility to change the date is an earlier date);
- the second - within the next 7 days at the agreed date with the teacher;
- the third - at the end of the semester (common for all groups after agreeing the date with the person responsible for the item).

Students who fail to pass the credit within the prescribed period will receive unsatisfactory grades (2.0) (except for a sick leave or a very important random reason).

The condition for taking the exam is obtaining credits from all practical classes and positive grades from all theoretical credits in semester II.

The Pathophysiology exam consists of two parts:

1. written (open-ended questions)
2. oral

The final grade is the average of the grades obtained by the student in both parts of the exam.

THE WRITTEN PART

Students receive a total of 15 open-ended questions in three series (all

via Microsoft Teams):

Series 1 - 5 questions - students have 10 minutes to answer each question + 10 minutes for manipulations related to downloading the questions with Microsoft Teams and sending the answers to the indicated e-mail address (60 minutes in total). For a full answer to each question, they can get 6 points (30 in total). The works are sent to the teacher's e-mail address.

Break: 15 minutes

Series 2 - 5 questions - students have 10 minutes to answer each question + 10 minutes for manipulations related to downloading the questions with Microsoft Teams and sending the answers to the indicated e-mail address (60 minutes in total). For a full answer to each question, they can get 6 points (30 in total). The works are sent to the teacher's e-mail address.

Break: 15 minutes

Series 3 - 5 questions - students have 5 minutes to answer each question + 10 minutes for manipulations related to downloading the questions with Microsoft Teams and sending the answers to the indicated e-mail address (35 minutes in total). For a full answer to each question, they can get 3 points (15 in total). The works are sent to the teacher's e-mail address.

The maximum number of points that can be obtained is 75 (100%).

	<p>The written part of the exam is assessed in accordance with the guidelines contained in the Faculty Book of Education Quality.</p> <p>THE ORAL PART</p> <p>Students who have obtained a positive grade in the written part of the examination take the oral part, which for each student consists of three questions. The answer to each question is assessed on a percentage scale. The final grade depends on the average score for the answers to the three questions asked. The oral part of the exam is assessed in accordance with the guidelines contained in the Faculty Book of Education Quality. The final exam grade is the average of the grades obtained by the student in both parts of the exam.</p> <p>The final grade for the module consists of the grade from semester I (10%), grade from the semester II (10%) and grade for the final exam (80%).</p> <p>Forms of documenting the achieved learning outcomes: written credits, the written part of the exam, protocols of practical exercises (in student notebooks).</p>																																							
<p>The workload of activities that requires direct participation of an academic teacher</p>	<table border="1"> <thead> <tr> <th>Contact hours</th> <th>Number of hours</th> <th>ECTS</th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td>15</td> <td>0.6</td> </tr> <tr> <td>Classes</td> <td>30</td> <td>1.2</td> </tr> <tr> <td>Consultation</td> <td>5</td> <td>0.2</td> </tr> <tr> <td>Credits</td> <td>18</td> <td>0.08</td> </tr> <tr> <td>Exam/retake exam</td> <td>8</td> <td>0.3</td> </tr> <tr> <td>In total:</td> <td>74</td> <td>3.1</td> </tr> <tr> <td colspan="3">Non-contact hours</td> </tr> <tr> <td>Preparation for classes</td> <td>10</td> <td>0.4</td> </tr> <tr> <td>Preparation of reports from practical classes</td> <td>10</td> <td>0.4</td> </tr> <tr> <td>Studying the literature</td> <td>17</td> <td>0.7</td> </tr> <tr> <td>Preparation for the exam</td> <td>10</td> <td>0.4</td> </tr> <tr> <td>In total:</td> <td>47</td> <td>1.9</td> </tr> </tbody> </table>	Contact hours	Number of hours	ECTS	Lectures	15	0.6	Classes	30	1.2	Consultation	5	0.2	Credits	18	0.08	Exam/retake exam	8	0.3	In total:	74	3.1	Non-contact hours			Preparation for classes	10	0.4	Preparation of reports from practical classes	10	0.4	Studying the literature	17	0.7	Preparation for the exam	10	0.4	In total:	47	1.9
Contact hours	Number of hours	ECTS																																						
Lectures	15	0.6																																						
Classes	30	1.2																																						
Consultation	5	0.2																																						
Credits	18	0.08																																						
Exam/retake exam	8	0.3																																						
In total:	74	3.1																																						
Non-contact hours																																								
Preparation for classes	10	0.4																																						
Preparation of reports from practical classes	10	0.4																																						
Studying the literature	17	0.7																																						
Preparation for the exam	10	0.4																																						
In total:	47	1.9																																						
<p>The workload of activities that requires direct participation of an academic teacher</p>	<table border="1"> <thead> <tr> <th>Contact hours</th> <th>Number of hours</th> <th>ECTS</th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td>15</td> <td>0.6</td> </tr> <tr> <td>Classes</td> <td>30</td> <td>1.2</td> </tr> <tr> <td>Consultation</td> <td>5</td> <td>0.2</td> </tr> <tr> <td>Credits</td> <td>18</td> <td>0.08</td> </tr> <tr> <td>Exam/retake exam</td> <td>8</td> <td>0.3</td> </tr> <tr> <td>In total:</td> <td>74</td> <td>3.1</td> </tr> </tbody> </table>	Contact hours	Number of hours	ECTS	Lectures	15	0.6	Classes	30	1.2	Consultation	5	0.2	Credits	18	0.08	Exam/retake exam	8	0.3	In total:	74	3.1																		
Contact hours	Number of hours	ECTS																																						
Lectures	15	0.6																																						
Classes	30	1.2																																						
Consultation	5	0.2																																						
Credits	18	0.08																																						
Exam/retake exam	8	0.3																																						
In total:	74	3.1																																						
<p>Relationship between subject learning outcomes and veterinary studies learning outcomes</p>	<p>K1 - WE_W06+++ WE_W07+++WE_W09++ WE_W05+ WE_W04+</p> <p>K2 - WE_W06+++ WE_W07+++WE_W09++ WE_W05+ WE_W04+</p> <p>K3 - WE_W06+++ WE_W07+++WE_W09++ WE_W05+ WE_W04+</p> <p>S1 – WE_U25+</p> <p>S2 – WE_U19+++</p> <p>S3 - WE_U19+++</p> <p>Sc1 – WE_K6+++</p> <p>Sc2 – WE_K5++</p>																																							

<p>Impact of selected compounds to final grade</p>	<p>The condition for passing the second semester is attendance at the classes, obtaining a credit for all practical exercises provided for in the schedule for this semester and positive grades from all theoretical credits. The final grade for the classes in the second semester is the grade average from three theoretical credits. The final grade for the module consists of the grade from semester I (10%), grade from the semester II (10%) and grade for the final exam (80%).</p>
--	---