

Nazwa zajęć/ <i>Course title:</i>	<b>Fizjologia zwierząt</b>	ECTS	<b>4</b>
Nazwa zajęć w j. angielskim/ <i>Course title in English:</i>	<b>Animal physiology</b>		
Zajęcia dla kierunku studiów/ <i>Degree program name:</i>	Biotechnology		

Język kursu/ <i>Course language:</i>		English		Poziom studiów/ <i>Study level:</i>		I	
Typ studiów/ <i>Form of studies:</i>	X intramural .. extramural	Status zajęć/ <i>Course status</i>	podstawowe/ <i>Basic</i> X kierunkowe/ <i>major</i>	X obowiązkowe/ <i>mandatory</i> .. do wyboru/ <i>elective</i>	Semestr/ <i>Semester:</i>	4 semestr zimowy/ <i>winter semester</i> x semestr letni/ <i>summer semester</i>	
Rok akademicki/ <i>Academic year:</i>				2022/2023	Numer katalogowy/ <i>Catalogue number:</i>	BBT_BTa-1S-4L-30	

Koordinator zajęć/ <i>Course coordinator:</i>	<b>Dr hab. Tomasz Sadkowski</b>						
Prowadzący zajęcia/ <i>Teachers responsible for the course:</i>	A team of employees of the Department of Physiological Sciences						
Założenia, cele i opis zajęć/ <i>Aims, objectives and description of the course:</i>	<p>Understanding the physiological processes at the level of cells, tissues, systems and selected organs. Getting to know the mechanisms regulating the course of physiological processes, including the role of the nervous and endocrine systems. Tracing the course of physiological processes using computer simulations in the PhysioEx program as well as on the basis of laboratory exercises in the field of digestive physiology.</p> <p>The topics of the lectures include issues related to the basics of cell excitability, the physiology of the nervous system, the presentation of the structure and functions of the autonomic nervous system, the physiology of the heart and circulatory system, discussion of the process of hemopoiesis, the function of blood and the role of its components, digestive processes in the stomach of monogastric animals and mechanisms of their regulation, specificity digestion in the stomach of ruminants and their importance for the production, protein synthesis of microorganisms in the rumen and methods of its evaluation, the role of the pancreas and the liver in the processes of digestion and absorption in the small intestine, as well as the effects of plant anti-nutritional factors, further include the mechanisms and regulation of hormone secretion, their role in maintaining homeostasis in the body, in reproductive processes in females and males and during lactation. The subject of the exercises (divided into a lecture and a practical part) concerns the excitability of the cell, signal transmission and modulation, the role of transmitters and neuromodulators, the construction of skeletal and smooth muscles, the mechanisms of their contraction and the registration of contractile activity of these muscles in the PhysioEx program, electrical properties of the cells of the stimulus-conducting system, cardiac automatism, ECG and regulation of the heart and circulation, blood and plasma functions, and determinations of basic hematological parameters, respiratory physiology, spirometry and thoracography tests, the role of pancreatic and intestinal juice enzymes and bile in digestive processes in the small intestine and liver in metabolic processes, hormonal regulation of the sex cycle, metabolism and methods of its study.</p>						
Formy dydaktyczne, liczba godzin/ <i>Teaching forms, number of hours:</i>	<p>a) lectures ..... number of hours 30</p> <p>b) laboratory classes ..... number of hours 30</p>						
Metody dydaktyczne/ <i>Teaching methods:</i>	Lecture, laboratory exercises, computer exercises, problem discussion during classes, the possibility of using distance education in necessary cases anatomy, biochemistry						
Wymagania formalne i założenia wstępne/ <i>Formal requirements and prerequisites</i>	The student has knowledge of cell biology, knows the basics of anatomy, can use a microscope and a computer						
Efekty uczenia się/ <i>Learning outcomes:</i>	treść efektu przypisanego do zajęć/ <i>the content of the effect assigned to the course:</i>					Odniesienie do efektu kierunkowego <i>/Relation to the course outcomes</i>	Siła dla ef. kier* <i>/Impact on the course outcomes*</i>
Wiedza (absolwent zna i rozumie) <i>/Knowledge:</i> (the graduate knows and understands)	W1	has knowledge of excitability, the functioning of the central and autonomic nervous system, skeletal and smooth muscles				K_W05 K_W06 K_W10	2 3 3
	W2	knows how to interpret the work of the heart, circulatory system and respiration				K_W05 K_W06 K_W10	2 3 3
	W3	knows how to characterize and compare the digestive processes in monogastric and ruminant animals, has knowledge of the impact of plant anti-nutritional factors on the body, disrupting the digestive and absorption processes in the small intestine				K_W05 K_W06 K_W08 K_W10	2 3 3 3

	W4	knows how to characterize the mechanisms of influence of hormones from the endocrine glands and / or the gastrointestinal tract, can determine the role of hormones in digestive processes, metabolism and reproduction	K_W05 K_W06 K_W08 K_W10	2 3 3 3
Umiejętności (absolwent potrafi) /Skills: (the graduate is able to)	U1	can assess the relationship between the structure and function at the cell level	K_U05 K_U21	2 1
	U2	can determine the composition of morphotic elements in the blood, analyze the basic physiological parameters of the blood of healthy and sick animals, can determine the role of enzymes and bile in the processes of digestion and absorption in the small intestine	K_U05 K_U06 K_U07 K_U21	2 2 2 1
	U3	uses computer programs (PhysioEx) used to simulate the course of physiological processes, to the extent specified in the full description of the subject	K_U01 K_U21	2 1
Kompetencje (absolwent jest gotów do) /Competences: (The graduate is ready to)	K1	is ready to interpret and present the results obtained during computer and chemical exercises and to actively participate in the discussion of the results, work independently and in small teams cooperating during exercises	K_K05 K_K02	1 1
Treści programowe zapewniające uzyskanie efektów uczenia się:  /Program contents ensuring the achievement of the learning outcomes:		Understanding the physiological processes at the level of cells, tissues, systems and selected organs. Getting to know the mechanisms regulating the course of physiological processes, including the role of the nervous and endocrine systems. Tracing the course of physiological processes using computer simulations in the PhysioEx program as well as on the basis of laboratory exercises in the field of digestive physiology. Issues such as: cell excitability, physiology of the nervous system, presentation of the structure and functions of the autonomic nervous system, physiology of the heart and circulatory system, discussion of the process of hemopoiesis, blood function and the role of its components, discussion of the digestive processes in the stomach of monogastric animals and the mechanisms of their regulation, specificity of digestion in the stomach of ruminants, the synthesis of the protein of microorganisms in the rumen and methods of its evaluation, the role of the pancreas and the liver in the processes of digestion and absorption in the small intestine, as well as the effects of plant anti-nutritional factors, mechanisms and regulation of hormone secretion and their role in maintaining homeostasis in the body, in processes in females and males and during lactation.		
Sposób weryfikacji efektów uczenia się/ Methods of the verification of the learning outcomes:		written exam, entrance tests before starting the exercises, activity during discussions during computer and chemical exercises,		
Szczegóły dotyczące sposobów weryfikacji i form dokumentacji osiągniętych efektów uczenia się /Details on the verification methods and of the ways of documenting the learning outcomes:		Entry tests for exercises with a score, points for activity, examination papers with a grade, the possibility of using distance learning if necessary		
Elementy i wagi mające wpływ na ocenę końcową/Elements and weights influencing the final grade:		The assessment of the learning outcomes consists of: scores from 9 admissions to the exercises and student activity during the exercises (converted into grades) and the written exam score (converted into grades). The weight of each element is 50%. The final grade for the subject is calculated as the average of the above-mentioned elements, taking into account their weight. The condition for passing the course is to obtain at least 51% of the total sum of points from the tutorials and the written exam		
Miejsce realizacji zajęć/ Teaching place:		Lecture - lecture hall, classes - rooms of the Department of Physiological Sciences		
Literature / Literature: 1. T. Krzymowski – Fizjologia Zwierząt, PWRiL, Warszawa, 2005 2. E.P. Solomon i wsp. - Biologia, Mulico Oficyna Wydawnicza, Warszawa, 2000 3.S.Silbernagl, I.A.Despopoulos – Kieszonkowy Atlas Fizjologii, PZWL, 1994 4. W.F. Ganong - Podstawy Fizjologii Lekarskiej, PZWL, 1994 5. R.K. Murray i wsp. – Biochemia Harpera, PZWL, 2000				
UWAGI/ANNOTATIONS The following scale is used to calculate the final score: 100-91% points - 5.0; 90-81% points - 4.5, 80-71% points - 4.0; 70-61% points - 3.5; 60-51% points - 3.0				

\*) 3 – zaawansowany i szczegółowy, 2 – znaczący, 1 – podstawowy/ 3 – significant and detailed, 2 – considerable, 1 – basic,

Wskaźniki ilościowe charakteryzujące moduł/przedmiot/Quantitative summary of the course:

Szacunkowa sumaryczna liczba godzin pracy studenta (kontaktowych i pracy własnej) niezbędna dla osiągnięcia zakładanych dla zajęć efektów uczenia się - na tej podstawie należy wypełnić pole ECTS / <i>Estimated number of work hours per student (contact and self-study) essential to achieve the presumed learning outcomes - basis for the calculation of ECTS credits:</i>	105 h
Łączna liczba punktów ECTS, którą student uzyskuje na zajęciach wymagających bezpośredniego udziału nauczycieli akademickich lub innych osób prowadzących zajęcia/ <i>Total number of ECTS credits accumulated by the student during contact learning:</i>	2.4 ECTS