

2024/2025.

PHYSIOLOGY OF DOMESTIC ANIMALS I

UNIVERSITY OF ZAGREB
FACULTY OF VETERINARY MEDICINE
Basic and Preclinical Science Division
Department / Clinic: Department of Physiology and Radiobiology
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190810	REPUBLIKA HRVATSKA		
Veterinarski fakultet u Zagrebu			
Primljeno:	10.09.2024		
Klasifikacijska oznaka	Org. jed.		
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Urudžbeni broj	Prilozi	Vrijedno	
251-61-06-24-64	0	-	

Zagreb, September 9th, 2024

COURSE SYLLABUS

Course name: Physiology of Domestic Animals I

Academic year 2024-2025

Course leader: Ana Shek Vugrovečki, DVM, PhD, associate professor
Ivona Žura Žaja, DVM, PhD, associate professor

Teachers: Jasna Aladrović, DVM, PhD, full professor, Ana Shek Vugrovečki, DVM, PhD, associate professor, Ivona Žura Žaja DVM, PhD, associate professor, Lana Pađen DVM, PhD, assistant professor, Jadranka Pejaković, DVM, PhD, associate professor
Associate teachers: Josip Miljković, DVM, Stefani Fruk, DVM

First day of classes: October 8th, 2024
End at: January 23rd, 2025

Activities - Physiology of Domestic Animals I (1/5)

Start Date	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
08/10/2024	8:15	9:45	p01 Introduction, Cell Physiology	3E-1, 3E-2, 3E-3		1:30	Pađen L.	P_fiziologija
09/10/2024	14:00	15:30	p02 Homeostasis, acid-base balance	3E-1, 3E-2, 3E-3		1:30	Žura Žaja I.	P_fiziologija
10/10/2024	8:30	9:15	p03 Body fluids	3E-1, 3E-2, 3E-3		0:45	Shek - Vugrovečki A.	P_fiziologija
10/10/2024	9:15	10:00	p04 Blood Physiology	3E-1, 3E-2, 3E-3		0:45	Shek - Vugrovečki A.	P_fiziologija
10/10/2024	10:30	13:00	v01 Determination of erythrocytes' osmotic pressure resistance	3E-3		2:30	Nastavnici na predmetu	V_fiziologija
11/10/2024	8:00	10:30	v01 Determination of erythrocytes' osmotic pressure resistance	3E-1, 3E-2		2:30	Nastavnici na predmetu	V_fiziologija
11/10/2024	10:45	12:15	p05 Erythrocytes	3E-1, 3E-2, 3E-3		1:30	Shek - Vugrovečki A.	P_fiziologija
14/10/2024	7:30	10:00	v02 Transport across cell membranes	3E-3		2:30	Nastavnici na predmetu	V_patofiziologija
15/10/2024	7:30	10:00	v02 Transport across cell membranes	3E-1, 3E-2		2:30	Nastavnici na predmetu	V_patofiziologija
16/10/2024	9:30	12:00	v03 Venepuncture, anticoagulants, blood plasma, serum, acid-base	3E-3		2:30	Nastavnici na predmetu	V_fiziologija
17/10/2024	9:40	12:10	v03 Venepuncture, anticoagulants, blood plasma, serum, acid-base	3E-1, 3E-2		2:30	Nastavnici na predmetu	V_fiziologija
18/10/2024	9:15	11:45	v04 Erythrocytes' count	3E-3		2:30	Nastavnici na predmetu	V_fiziologija

Activities - Physiology of Domestic Animals I (2/5)

Start Date	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
22/10/2024	7:30	10:00	v04 Erythrocytes' count	3E-1, 3E-2		2:30	Nastavnici na predmetu	V_fiziologija
24/10/2024	10:00	11:30	p06 Leukocytes, platelets	3E-1, 3E-2, 3E-3		1:30	Shek - Vugrovečki A.	P_fiziologija
28/10/2024	12:00	14:30	v05 Hgb, Htc. erythrocytes' indices, SR	3E-1, 3E-2		2:30	Nastavnici na predmetu	V_fiziologija
30/10/2024	12:30	15:00	v05 Hgb, Htc. erythrocytes' indices, SR	3E-3		2:30	Nastavnici na predmetu	V_fiziologija
20/11/2024	13:30	14:15	p07 Blood coagulation	3E-1, 3E-2, 3E-3		0:45	Shek - Vugrovečki A.	P_fiziologija
20/11/2024	14:15	15:00	p08 Nervous Physiology 1 - function and organisation	3E-1, 3E-2, 3E-3		0:45	Žura Žaja I.	P_fiziologija
21/11/2024	11:00	13:30	v06 Leucocyte Count, Haematopoiesis and Lymph	3E-1, 3E-2		2:30	Nastavnici na predmetu	V_fiziologija
21/11/2024	13:45	16:15	v06 Leucocyte Count, Haematopoiesis and Lymph	3E-3		2:30	Nastavnici na predmetu	V_fiziologija
26/11/2024	7:30	10:00	v07 Blood slide preparing and staining, Reticulocytes	3E-3		2:30	Nastavnici na predmetu	V_fiziologija
27/11/2024	7:30	10:00	v07 Blood slide preparing and staining, Reticulocytes	3E-1, 3E-2		2:30	Nastavnici na predmetu	V_fiziologija
28/11/2024	10:30	12:00	p09 Nervous Physiology 2 - structure, nervous activity mechanism	3E-1, 3E-2, 3E-3		1:30	Žura Žaja I.	P_fiziologija
29/11/2024	14:15	15:45	p10 Nervous Physiology 3 - brain	3E-1, 3E-2, 3E-3		1:30	Žura Žaja I.	P_fiziologija
02/12/2024	7:30	10:00	v08 Differential blood count	3E-3		2:30	Nastavnici na predmetu	V_fiziologija

Activities - Physiology of Domestic Animals I (3/5)

Start Date	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
02/12/2024	10:15	12:45	v08 Differential blood count	3E-1, 3E-2		2:30	Nastavnici na predmetu	V_fiziologija
03/12/2024	10:15	11:45	p11 Muscle Physiology - Skeletal muscles	3E-1, 3E-2, 3E-3		1:30	Pađen L.	P_fiziologija
03/12/2024	14:00	16:30	V09 Blood groups dogs and cats	3E-1, 3E-2		2:30	Nastavnici na predmetu	V_fiziologija
04/12/2024	14:45	17:15	V09 Blood groups dogs and cats	3E-3		2:30	Nastavnici na predmetu	V_fiziologija
05/12/2024	10:00	12:30	v11 Nervous system computer simulation	3E-3		2:30	Nastavnici na predmetu	R_patofiziologija
05/12/2024	13:00	15:30	v11 Nervous system computer simulation	3E-1, 3E-2		2:30	Nastavnici na predmetu	R_patofiziologija
06/12/2024	8:00	9:30	p12 Muscle Physiology - Smooth muscles, muscle action	3E-1, 3E-2, 3E-3		1:30	Pađen L.	P_fiziologija
10/12/2024	13:00	15:30	v10 Blood groups determination in dogs and cats	3E-1, 3E-2		2:30	Nastavnici na predmetu	V_fiziologija
11/12/2024	7:30	10:00	v10 Blood groups determination in dogs and cats	3E-3		2:30	Nastavnici na predmetu	V_fiziologija
12/12/2024	11:00	13:30	v12 Hematology analyser, hematology findings, interpretation of analyses	3E-3		2:30	Nastavnici na predmetu	V_fiziologija

Activities - Physiology of Domestic Animals I (4/5)

Start Date	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
13/12/2024	10:00	12:30	v12 Hematology analyser, hematology findings, interpretation of analyses	3E-1, 3E-2		2:30	Nastavnici na predmetu	V_fiziologija
18/12/2024	9:00	11:30	v14 Muscular system computer simulation	3E-3		2:30	Nastavnici na predmetu	R_patofiziologija
18/12/2024	13:30	16:00	v14 Muscular system computer simulation	3E-1, 3E-2		2:30	Nastavnici na predmetu	R_patofiziologija
19/12/2024	13:30	15:00	p13 Endocrinology 1 - Cortex-limbic system-hypothalamus-hypophysis	3E-1, 3E-2, 3E-3		1:30	Aladrović J.	P_fiziologija
07/01/2025	10:00	11:30	p14 Endocrinology 2 - Hormones interaction	3E-1, 3E-2, 3E-3		1:30	Aladrović J.	P_fiziologija
07/01/2025	12:00	14:30	v13 Special senses	3E-1, 3E-2		2:30	Nastavnici na predmetu	V_fiziologija
08/01/2025	10:00	12:30	v13 Special senses	3E-3		2:30	Nastavnici na predmetu	V_fiziologija
09/01/2025	7:30	9:00	p15 Endocrinology 3 - Thyroid and pancreas	3E-1, 3E-2, 3E-3		1:30	Aladrović J.	P_fiziologija
13/01/2025	10:00	12:30	v15 EEG and EMG	3E-3		2:30	Nastavnici na predmetu	V_fiziologija
13/01/2025	12:45	15:15	v15 EEG and EMG	3E-1, 3E-2		2:30	Nastavnici na predmetu	V_fiziologija
15/01/2025	8:15	9:45	p16 Endocrinology 4 - adrenal and parathyroid	3E-1, 3E-2, 3E-3		1:30	Aladrović J.	P_fiziologija

Activities - Physiology of Domestic Animals I (5/5)

Start Date	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
16/01/2025	13:30	15:00	p17 Endocrinology 5 - Sex and tissue hormones	3E-1, 3E-2, 3E-3		1:30	Pađen L.	P_fiziologija
17/01/2025	10:00	12:30	v16 Positive and negative feedback, thyroxine function, TSH in animal metabolism	3E-3		2:30	Nastavnici na predmetu	R_patofiziologija
17/01/2025	12:45	15:15	v16 Positive and negative feedback, thyroxine function, TSH in animal metabolism	3E-1, 3E-2		2:30	Nastavnici na predmetu	R_patofiziologija
23/01/2025	10:00	11:30	v17 Mechanism of hormonal replacement therapy (oestrogen), insulin	3E-3		1:30	Nastavnici na predmetu	R_patofiziologija
23/01/2025	12:00	13:30	v17 Mechanism of hormonal replacement therapy (oestrogen), insulin	3E-1, 3E-2		1:30	Nastavnici na predmetu	R_patofiziologija
			Physiology of Domestic Animals I	3 E	Kolokvij	1:00	Shek - Vugrovečki A.	P_fiziologija
Total: 52						106:30		

STUDENT RESPONSABILITIES

Attendance at lectures	During semester a student must attend 15 lecture lessons in order to gain minimal 3 points. The maximum number of points from this evaluation element is 6.
Attendance at seminars	NA
Attendance at exercises	During semester a student must attend 36 exercise lessons in order to gain minimal 8 points. The maximum number of points from this evaluation element is 12. When the student upon the completion of teaching in the first try makes up for nonattendance of an exercise (excused and approved), points are added to the gained ones. If the student makes up for the unattended lessons in further tries the points do not count.
Active participation in seminars and exercises	During the practical part of the lesson (exercises), which is 50 hours of teaching, the student must successfully complete scheduled tasks. During the course, the student's activity is evaluated during the exercises. For six positive answers, the student earns an additional 5 points and 3 points for determining complete blood analysis. During the practical part of the course, the student must achieve a minimum of 5 points and can achieve the maximum of 10 points
Final exam	The final exam starts with a student's short analysis of results gained from the first four evaluation elements. At the final exam the student answers the questions in oral form. The final exam comprises the material from endocrinology and it estimates the capability of a student to connect physiological processes. The maximum gained number of points at the final exam is 40 points. Regardless the gained number of points from the first four evaluation elements, the student must show minimal knowledge at the final exam in order to earn minimal 24 points. In case the student does not satisfy at the final part of the exam, the lecturer determines time for re-examination.
Examination requirements	Pursuant to Article 41, Paragraph 3 of the Regulations on Integrated Undergraduate and Graduate Studies (2023) a student can be excused from classes of a particular subject up to 50% of the teaching hours, 30% of the fund of seminar hours and 30% of the fund of hours of exercises or professional clinical work. Each organizational unit determines the method of control of class attendance for its core subjects, at for which the maximum number of excused absences must be determined in absolute numbers at the beginning of the semester and a method of compensation.

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GRADING AND EVALUATING STUDENT WORK

Continuous knowledge checking (colloquia)	<p>During the course of the Physiology of Domestic Animals I two assessment of knowledge (colloquia) will be organized. The first colloquium includes basic physiology and physiology of the blood, and the second examination involves the physiology of the muscular and nervous system. At each colloquium, the student must achieve at least 10 points to achieve the required 20 points. The maximum number of points scored from this grading element is 32 points. A student who does not achieve the necessary points during the course of instruction is entitled to three times access to a correctional colloquium that will be organized in certain terms.</p> <p>The terms of the colloquium from the Physiology of Domestic Animals I in the academic year 2024/2025 Colloquia will be held in the Department of Physiology and radiobiology, online on LMS Vef</p> <p>Basic physiology and physiology of blood January 8th, 2025 12:45 15:30h Nervous and muscle system physiology January 20nd, 2025 13:15-14h</p> <p>The terms of repeated colloquium from the Physiology of Domestic Animals I during the winter semester and the winter exam period of the academic year will be held according to the following schedule:</p> <p>February 4th, 2025 10-11h February 11th, 2025 10- 11h February 18th, 2025 10- 11h</p>
Final exams (dates)	11/2/2025 21/2/2025
Form of final exam	oral exam

LITERATURE

Obligatory literature	<ol style="list-style-type: none"> 1. Sjaastad Ø. V., O. Sand, K. Hove: Physiology of Domestic Animals. Scandinavian veterinary press, 2010. 2. Cunningham, J. G.: Textbook of veterinary physiology. 3rd edition, W. B. Saunders Company, 2002. 3. Dukes' physiology of domestic animals (William O. Reece, Ed.). The 12th ed. Cornell University Press. Ithaca and London, 2004. 4. Vander, A. J., J. H. Sherman, D. S. Luciano: Human physiology. The mechanisms of body function. The 5th ed. McGraw-Hill Publishing Comp. New York, 1990.
Supplementary literature	<ol style="list-style-type: none"> 1. Feldman, B. F., J. G. Zinkl, N. C. Jain: Schalm's Veterinary Hematology. 5th ed. Lippincott Williams & Wilkins, 2000. 2. Kaneko, J. J., J. W. Harvey, M. L. Bruss: Clinical Biochemistry of Domestic Animals. Academic Press. San Diego, Boston, New York, Sydney, Tokyo, 1987. 3. Payne, J. M., S. Payne: The Metabolic Profile Test. Oxford University Press. Oxford, New York, Tokyo, 1987. 4. Schmidt-Nielsen, K.: Animal Physiology. Adaptation and Environment. Cambridge University Press, 1997.

OBJECTIVES AND LEARNING OUTCOMES

Course objectives	<p>The aim of the classes in the subject Physiology of domestic animals I. is to apply the acquired knowledge in physics, biology, chemistry, biochemistry, histology and anatomy, the student acquires knowledge and skills about the normal function of individual organs and tissues, that is, the organism. Students are trained through lectures, seminars and exercises for progressive development of knowledge and understanding of basic principles and facts about physiological processes from cells to the entire organism. Especially through understanding and connecting regulatory mechanisms, maintenance of homeostasis, acid-base balance, blood physiology, physiology of the nervous and muscular system and hormone functions. In addition to the aforementioned basic knowledge, students acquire and develop certain skills and abilities in taking, preparing and examining different biological samples, they develop the ability to explain and connect information and conclusions, the ability to search for data from the literature and to understand contemporary ones trends in veterinary physiology.</p>
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Learning outcomes	<p>After successfully mastering the subject Physiology of Domestic Animals I, the student will be able to:</p> <ul style="list-style-type: none"> - explain and differentiate the basic principles and facts of physiological processes from the cell to the entire organism - explain the physiological functions of the blood, nervous and muscular systems, and hormones - to argue the importance of constant maintenance of blood, nervous and muscle tissue functions - integrate regulatory mechanisms, maintenance of homeostasis and acid-base balance - master the skills of obtaining and analyzing whole blood, plasma, serum - compare whether the obtained values correspond to the physiological limits for certain types of domestic animals - carry out measurements of indicators of the physiological functions of cells in a virtual and real environment
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GRADING OF STUDENT WORK

<i>Points</i>	<i>Grade</i>
Up to 59	1 (F)
60-68	2 (E)
69-76	2 (D)
77-84	3 (C)
85-92	4 (B)
93-100	5 (A)

Head teacher:

Ana Shuk Wagoni

Head of Department/Clinic:

U.A. Ana Shuk Wagoni

**GRADING AND EVALUATION OF STUDENT WORK ON COURSES WITH
LECTURES, SEMINARS and EXERCISES**

Type of activity	Minimal number of points	Maximal number of points
Attendance at lectures	3	6
Attendance at seminars	4	6
Attendance at exercises	4	6
Active participation in seminars and exercises	5	10
Continuous knowledge checking (colloquia)	20	32
Final exam	24	40
TOTAL	60	100

**GRADING AND EVALUATION OF STUDENT WORK ON COURSES WITH
LECTURES and SEMINARS**

Type of activity	Minimal number of points	Maximal number of points
Attendance at lectures	3	6
Attendance at exercises	8	12
Active participation in exercises	5	10
Continuous knowledge checking (colloquia)	20	32
Final exam	24	40
TOTAL	60	100

**GRADING AND EVALUATION OF STUDENT WORK ON COURSES WITH
SEMINARS and EXERCISES**

Type of activity	Minimal number of points	Maximal number of points
Attendance at seminars / exercises	11	18
Active participation in seminars and exercises	5	10
Continuous knowledge checking (colloquia)	20	32
Final exam	24	40
TOTAL	60	100