

2023/2024.

PHYSIOLOGY OF DOMESTIC ANIMALS I

UNIVERSITY OF ZAGREB  
FACULTY OF VETERINARY MEDICINE  
Basic and Preclinical Science Division  
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170636	REPUBLIKA HRVATSKA	
Veterinarski fakultet u Zagrebu		
Primljeno:	12.09.2023	
Klasifikacijska oznaka	Org. jed.	
605-03/23-04/28	251-61-32;	
Uredžbeni broj	Prilozi	Vrijednost
251-61-06/406-23-25	0	-

Zagreb, September 9<sup>th</sup>, 2023

## COURSE SYLLABUS

Course name: Physiology of Domestic Animals I

Academic year 2023-2024

**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

**Associate teachers:** Josip Miljković, DVM

First day of classes: October 3<sup>rd</sup>, 2023

End at: January 24<sup>th</sup>, 2024

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Activities - Physiology of Domestic Animals I (1/9)							
Start Dat	Start Tim	End Tim	Subject	Group	Instructor	Room	Length
03/10/2023	10:15	11:45	p01 Introduction, Cell Physiology	3E-1, 3E-2, 3E-3	Paden L.	P_fiziologija	1:30
04/10/2023	10:15	11:45	p02 Homeostasis, acid-base balance	3E-1, 3E-2, 3E-3	Žura Žaja I.	P_fiziologija	1:30
05/10/2023	10:15	11:00	p03 Body fluids	3E-1, 3E-2, 3E-3	Shek - Vugrovecki A.	P_fiziologija	0:45
05/10/2023	11:00	11:45	p04 Blood Physiology	3E-1, 3E-2, 3E-3	Shek - Vugrovecki A.	P_fiziologija	0:45
09/10/2023	13:00	15:30	v02 Transport across cell	3E-1, 3E-2	Nastavnici na predmetu	V_patofiziologija	2:30
11/10/2023	12:15	14:45	v02 Transport across cell	3E-3	Nastavnici na predmetu	V_patofiziologija	2:30
16/10/2023	10:15	12:45	v01 Determination of erythrocytes' osmotic pressure resistance	3E-1, 3E-2	Nastavnici na predmetu	V_fiziologija	2:30
18/10/2023	10:15	12:45	v01 Determination of erythrocytes' osmotic pressure resistance	3E-3	Nastavnici na predmetu	V_fiziologija	2:30

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Activities - Physiology of Domestic Animals I (2/9)							
Start Dat	Start Tim	End Tim	Subject	Group	Instructor	Room	Length
23/10/2023	10:15	12:45	v03 Venepuncture, anticoagulants, blood plasma, serum, acid-base	3E-3	Nastavnici na predmetu	V_fiziologija	2:30
26/10/2023	10:15	11:45	p05 Erythrocytes	3E-1, 3E-2, 3E-3	Shek - Vugrovecki A.	P_fiziologija	1:30
26/10/2023	12:15	14:45	v03 Venepuncture, anticoagulants, blood plasma, serum, acid-base	3E-1, 3E-2	Nastavnici na predmetu	V_fiziologija	2:30
31/10/2023	11:15	13:45	v04 Erythrocytes' count	3E-3	Nastavnici na predmetu	V_fiziologija	2:30
06/11/2023	13:00	15:30	v04 Erythrocytes' count	3E-1, 3E-2	Nastavnici na predmetu	V_fiziologija	2:30
07/11/2023	11:45	13:15	p06 Leukocytes, platelets	3E-1, 3E-2, 3E-3	Shek - Vugrovecki A.	P_fiziologija	1:30
07/11/2023	13:30	16:00	v05 Hgb, Htc. erythrocytes' indices, SR	3E-3	Nastavnici na predmetu	V_fiziologija	2:30

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Activities - Physiology of Domestic Animals I (3/9)							
Start Dat	Start Tim	End Tim	Subject	Group	Instructor	Room	Length
08/11/2023	11:30	14:00	v05 Hgb, Htc. erythrocytes' indices, SR	3E-1, 3E-2	Nastavnici na predmetu	V_fiziologija	2:30
13/11/2023	10:15	11:00	p07 Blood coagulation	3E-1, 3E-2, 3E-3	Shek - Vugrovecki A.	P_fiziologija	0:45
13/11/2023	11:00	11:45	p08 Nervous Physiology 1 - function and organisation	3E-1, 3E-2, 3E-3	Žura Žaja I.	P_fiziologija	0:45
17/11/2023	11:00	13:30	v06 Leucocyte Count, Haematopoiesis and Lymph	3E-1, 3E-2	Nastavnici na predmetu	V_fiziologija	2:30
17/11/2023	14:00	16:30	v06 Leucocyte Count, Haematopoiesis and Lymph	3E-3	Nastavnici na predmetu	V_fiziologija	2:30
20/11/2023	14:15	16:45	v07 Blood slide preparing and staining, Reticulocytes	3E-3	Nastavnici na predmetu	V_fiziologija	2:30



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Activities - Physiology of Domestic Animals I (4/9)								
Start Dat	Start Tim	End Tim	Subject	Group	Instructor	Room	Length	
21/11/2023	8:15	10:45	v07 Blood slide preparing and staining, Reticulocytes	3E-1, 3E-2	Nastavnici na predmetu	V_fiziologija	2:30	
22/11/2023	8:15	9:45	p09 Nervous Physiology 2 - structure, nervous activity mechanism	3E-1, 3E-2, 3E-3	Žura Žaja I.	P_fiziologija	1:30	
22/11/2023	11:15	13:45	v08 Differential blood count	3E-3	Nastavnici na predmetu	V_fiziologija	2:30	
23/11/2023	14:15	16:45	v08 Differential blood count	3E-1, 3E-2	Nastavnici na predmetu	V_fiziologija	2:30	
27/11/2023	8:15	9:45	p10 Nervous Physiology 3 - brain	3E-1, 3E-2, 3E-3	Žura Žaja I.	P_fiziologija	1:30	
28/11/2023	10:15	12:45	v09 Thrombocyte count, PT and aPTV from citrate blood	3E-1, 3E-2	Nastavnici na predmetu	V_fiziologija	2:30	
29/11/2023	13:15	15:45	v09 Thrombocyte count, PT and aPTV from citrate blood	3E-3	Nastavnici na predmetu	V_fiziologija	2:30	

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### Activities - Physiology of Domestic Animals I (5/9)

Start Dat	Start Tim	End Tim	Subject	Group	Instructor	Room	Length
29/11/2023	13:15	15:45	v11 Nervous system computer	3E-1, 3E-2	Nastavnici na predmetu	R_patofiziologija	2:30
30/11/2023	8:15	9:45	p11 Muscle Physiology - Skeletal muscles	3E-1, 3E-2, 3E-3	Paden L.	P_fiziologija	1:30
30/11/2023	10:15	12:45	v11 Nervous system computer	3E-3	Nastavnici na predmetu	R_patofiziologija	2:30
04/12/2023	8:15	9:45	p12 Muscle Physiology - Smooth muscles, muscle action	3E-1, 3E-2, 3E-3	Paden L.	P_fiziologija	1:30
05/12/2023	10:15	12:45	v10 Blood groups determination in dogs and cats	3E-1, 3E-2	Nastavnici na predmetu	V_fiziologija	2:30
07/12/2023	10:15	12:45	v10 Blood groups determination in dogs and cats	3E-3	Nastavnici na predmetu	V_fiziologija	2:30

Activities - Physiology of Domestic Animals I (6/9)

Start Dat	Start Tim	End Tim	Subject	Group	Instructor	Room	Length
13/12/2023	10:15	12:45	v12 Hematology analyser, hematology findings, interpretation of analyses	3E-3	Nastavnici na predmetu	V_fiziologija	2:30
13/12/2023	13:15	15:45	v12 Hematology analyser, hematology findings, interpretation of analyses	3E-1, 3E-2	Nastavnici na predmetu	V_fiziologija	2:30
13/12/2023	13:15	15:45	v14 Muscular system computer	3E-3	Nastavnici na predmetu	R_patofiziologija	2:30
14/12/2023	10:15	12:45	v14 Muscular system computer	3E-1, 3E-2	Nastavnici na predmetu	R_patofiziologija	2:30
19/12/2023	8:15	9:45	p13 Endocrinology 1 - Cortex-limbic system-hypothalamus-hypophysis	3E-1, 3E-2, 3E-3	Aladrovic J.	P_fiziologija	1:30

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Activities - Physiology of Domestic Animals I (7/9)							
Start Dat	Start Tim	End Tim	Subject	Group	Instructor	Room	Length
19/12/2023	10:15	12:45	v13 Special senses	3E-3	Nastavnici na predmetu	V_fiziologija	2:30
21/12/2023	8:15	9:45	p14 Endocrinology 2 - Hormones interaction	3E-1, 3E-2, 3E-3	Aladrovic J.	P_fiziologija	1:30
21/12/2023	10:15	12:45	v13 Special senses	3E-1, 3E-2	Nastavnici na predmetu	V_fiziologija	2:30
09/01/2024	8:15	9:45	p15 Endocrinology 3 - Thyroid and pancreas	3E-1, 3E-2, 3E-3	Aladrovic J.	P_fiziologija	1:30
09/01/2024	13:15	15:45	v15 EEG and EMG	3E-3	Nastavnici na predmetu	V_fiziologija	2:30
10/01/2024	10:15	12:45	v15 EEG and EMG	3E-1, 3E-2	Nastavnici na predmetu	V_fiziologija	2:30
16/01/2024	8:15	9:45	p16 Endocrinology 4 - adrenal and parathyroid	3E-1, 3E-2, 3E-3	Aladrovic J.	P_fiziologija	1:30



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Activities - Physiology of Domestic Animals I (8/9)								
Start Dat	Start Tim	End Tim	Subject	Group	Instructor	Room	Length	
16/01/2024	10:15	12:45	v16 Positive and negative feedback, thyroxine function, TSH in animal metabolism	3E-3	Nastavnici na predmetu	R_patofiziologija	2:30	
18/01/2024	8:15	9:45	p17 Endocrinology 5 - Sex and tissue hormones	3E-1, 3E-2, 3E-3	Paden L.	P_fiziologija	1:30	
18/01/2024	10:15	12:45	v16 Positive and negative feedback, thyroxine function, TSH in animal metabolism	3E-1, 3E-2	Nastavnici na predmetu	R_patofiziologija	2:30	
24/01/2024	8:15	9:45	v17 Mechanism of hormonal replacement therapy (oestrogen), insulin	3E-1, 3E-2	Nastavnici na predmetu	R_patofiziologija	1:30	

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Activities - Physiology of Domestic Animals I (9/9)							
Start Dat	Start Tim	End Tim	Subject	Group	Instructor	Room	Length
24/01/2024	10:15	11:45	v17 Mechanism of hormonal replacement therapy (oestrogen), insulin	3E-3	Nastavnici na predmetu	R_patofiziologija	1:30
<b>Total: 51</b>							<b>105:30</b>

STUDENT RESPONSIBILITIES

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	Student requirements are defined in the Regulations on the Integrated Undergraduate and Graduate Study of Veterinary Medicine (2022). Given the above, the student must acquire a minimum number of points from all assessment elements in order to take the final exam. Article 41: a student can justifiably be absent from up to 50 % of the lectures; 30% of the seminars and 30 % of the exercises.



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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><b>The terms of the colloquium from the Physiology of Domestic Animals I in the academic year 2023/2024</b>  <b>Colloquia will be held in the Department of Physiology and radiobiology, online on LMS Vef</b></p> <p><b>Basic physiology and physiology of blood December 14th, 2023 14-15h</b>  <b>Nervous and muscle system physiology January 22nd, 2024 10-11h</b></p> <p><b>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:</b></p> <p><b>February 2<sup>nd</sup>, 2024 11-12h</b>  <b>February 8<sup>th</sup>, 2024 11-12h</b></p>
Final exams (dates)	<b>12/2/2024 22/2/2024</b>
Form of final exam	oral exam



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LITERATURELITERATURE

Obligatory literature	<ol style="list-style-type: none"> <li>1. Sjaastad Ø. V., O. Sand, K. Hove: Physiology of Domestic Animals. Scandinavian veterinary press, 2010.</li> <li>2. Cunningham, J. G.: Textbook of veterinary physiology. 3rd edition, W. B. Saunders Company, 2002.</li> <li>3. Dukes' physiology of domestic animals (William O. Reece, Ed.). The 12th ed. Cornell University Press. Ithaca and London, 2004.</li> <li>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.</li> </ol>
Supplementary literature	<ol style="list-style-type: none"> <li>1. Feldman, B. F., J. G. Zinkl, N. C. Jain: Schalm's Veterinary Hematology. 5th ed. Lippincott Williams &amp; Wilkins, 2000.</li> <li>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.</li> <li>3. Payne, J. M., S. Payne: The Metabolic Profile Test. Oxford University Press. Oxford, New York, Tokyo, 1987.</li> <li>4. Schmidt-Nielsen, K.: Animal Physiology. Adaptation and Environment. Cambridge University Press, 1997.</li> </ol>

OBJECTIVES AND LEARNING OUTCOMES

Course objectives	<p>Course of Physiology of domestic animals I qualifies students for progressive development of knowledge from physics, chemistry, biochemistry, histology and anatomy and understanding of basic principles and facts of physiological processes from cell to the total body, understanding and correlating of regulatory mechanisms, understanding of homeostasis keeping, acid-base balance, development of knowledge and skills related to body liquids in special regard of blood physiology, understanding of physiological function of muscle/nervous system, physiological function of hormones in context of the whole homeostatic system. The goal is to provide the progressive development of skills in collecting, preparing, and interpreting the results of the different sample analysis, to provide modern trends in veterinary physiology so that students will achieve a working knowledge of physiology; development of abilities for interpretation, and conclusion about information; the abilities of searching for information in the literature.</p>
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Learning outcomes	<p>After successfully mastering the course students will be able to:</p> <ul style="list-style-type: none"> <li>- describe the basic principles and the facts of the physiological processes from the cell to the whole organism,</li> <li>- explain the physiological functions of the blood, nervous and muscular system and hormones,</li> <li>- recognize the importance of maintaining continuous function of blood, nerve and muscle tissue,</li> <li>- connect the regulatory mechanisms maintain homeostasis and acid-base balance;</li> <li>- use the skills of obtaining and analyzing whole blood, plasma, and serum</li> <li>- to evaluate whether the obtained values are within physiological limits for certain species of domestic animals, and</li> <li>- to conclude how blood tests can indicate certain pathological changes or certain disease stages</li> </ul>
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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 Štek Wozar

Head of Department/Clinic:

A. Velić

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2023/2024.

PHYSIOLOGY OF DOMESTIC ANIMALS I

Note: The head teacher is required to submit a Course Syllabus to all teachers and associates on the Course.



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**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
<b>TOTAL</b>	<b>60</b>	<b>100</b>

**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
<b>TOTAL</b>	<b>60</b>	<b>100</b>

**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
<b>TOTAL</b>	<b>60</b>	<b>100</b>