

Course: Physiology of domestic animals II

UNIVERSITY OF ZAGREB
FACULTY OF VETERINARY MEDICINE
Heinzelova 55
Tel. 01/2390187
Division: Basic and preclinical science division
Organizational unit: Physiology and Radiobiology
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Register No of the organisational unit:
Zagreb, 24/01/2024



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Veterinarski fakultet u Zagrebu		
Primljeno:	29.01.2024	
Klasifikacijska oznaka	Org. jed.	
605-03/23-04/28	251-61-32;251-61-41;	
Uredbeni broj	Prilozi	Vrijednost
251-61-06/406-24-88	0	-

COURSE SYLLABUS

Course name: **Physiology of domestic animals II**

Academic year 2023/2024

Course leader: Assoc. Prof., Ana Shek Vugrovečki, DVM, PhD
Deputy course leader: Assoc. Prof., Ivona Žura Žaja DVM, PhD

Teachers: Jasna Aladrović, DVM, PhD, Full Prof., Ana Shek Vugrovečki, DVM, PhD, Assoc. Prof.; Ivona Žura Žaja DVM, PhD, Assoc. Prof., Lana Pađen DVM, PhD, Assist. Prof., Josip Miljković, DVM, teaching assistant

First day of classes: 26/02/2024
Last day of classes: 06/06/2024

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

	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
26/02/2024	13:15	14:45	p01 Cardiovascular system I	4E-1, 4E-2, 4E-3		1:30	Žura Žaja I.	P_fiziologija
27/02/2024	8:15	9:45	p02 Cardiovascular system II	4E-1, 4E-2, 4E-3		1:30	Žura Žaja I.	P_farmakologija
28/02/2024	10:00	11:30	p03 Cardiovascular system III	4E-1, 4E-2, 4E-3		1:30	Žura Žaja I.	P_farmakologija
28/02/2024	13:30	16:45	v01 Cardiovascular system	4E-1, 4E-2		3:15	Nastavnici na predmetu	R_patofiziologija
29/02/2024	10:00	11:30	p04 Cardiovascular system IV	4E-1, 4E-2, 4E-3		1:30	Žura Žaja I.	P_farmakologija
29/02/2024	13:30	16:45	v01 Cardiovascular system	4E-3		3:15	Nastavnici na predmetu	R_patofiziologija
04/03/2024	10:00	11:30	p05 Respiratory system I	4E-1, 4E-2, 4E-3		1:30	Shek Vugrovecki A.	P_farmakologija
06/03/2024	12:00	13:30	s01 Cardiovascular system	4E-1, 4E-2, 4E-3		1:30	Žura Žaja I.	V_fiziologija
07/03/2024	10:00	13:15	v02 ECG	4E-1, 4E-2		3:15	Nastavnici na predmetu	V_fiziologija
07/03/2024	13:15	16:30	v02 ECG	4E-3		3:15	Nastavnici na predmetu	V_fiziologija
08/03/2024	10:15	11:45	p06 Respiratory system II	4E-1, 4E-2, 4E-3		1:30	Shek Vugrovecki A.	P_amfiteatar
08/03/2024	12:00	15:15	v03 Blood pressure measurement	4E-1, 4E-2		3:15	Nastavnici na predmetu	V_fiziologija
11/03/2024	12:00	13:30	p07 Digestion in the mouth and simple stomach	4E-1, 4E-2, 4E-3		1:30	Shek Vugrovecki A.	P_fizika
12/03/2024	11:30	12:15	s02 Circulatory system	4E-1, 4E-2, 4E-3		0:45	Žura Žaja I.	V_farmakologija
14/03/2024	10:00	13:15	v03 Blood pressure measurement	4E-3		3:15	Nastavnici na predmetu	V_fiziologija
18/03/2024	10:00	13:15	v04 Spirometry	4E-1, 4E-2		3:15	Nastavnici na predmetu	V_fiziologija

Activities - Physiology of Domestic Animals II (2/5)								
	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
20/03/2024	8:15	9:45	p08 Digestion in the simple stomach	4E-1, 4E-2, 4E-3		1:30	Shek Vugrovecki A.	P_fiziologija
21/03/2024	8:15	9:45	s03 Respiratory system	4E-1, 4E-2, 4E-3		1:30	Shek Vugrovecki A.	P_farmakologija
25/03/2024	9:15	10:45	p09 Rumen digestion I	4E-1, 4E-2, 4E-3		1:30	Aladrovic J.	P_fiziologija
26/03/2024	9:00	10:30	p10 Rumen digestion II	4E-1, 4E-2, 4E-3		1:30	Aladrovic J.	P_farmakologija
26/03/2024	12:15	15:30	v04 Spirometry	4E-3		3:15	Nastavnici na predmetu	V_fiziologija
02/04/2024	8:15	9:45	s04 Stomach digestion	4E-1, 4E-2, 4E-3		1:30	Paden L.	P_fiziologija
03/04/2024	8:15	9:45	p11 Intestinal digestion I	4E-1, 4E-2, 4E-3		1:30	Paden L.	P_fiziologija
03/04/2024	11:30	14:45	v06 Rumen contractions	4E-1, 4E-2		3:15	Nastavnici na predmetu	
04/04/2024	8:15	9:45	s05 Forestomach digestion	4E-1, 4E-2, 4E-3		1:30	Aladrovic J.	P_fiziologija
05/04/2024	11:45	15:00	v06 Rumen contractions	4E-3		3:15	Nastavnici na predmetu	
08/04/2024	11:30	13:00	p12 Intestinal digestion II	4E-1, 4E-2, 4E-3		1:30	Paden L.	P_fiziologija
09/04/2024	13:00	13:45	p13 Liver	4E-1, 4E-2, 4E-3		0:45	Paden L.	P_fiziologija
09/04/2024	13:45	14:30	p14 Excretory function of kidneys	4E-1, 4E-2, 4E-3		0:45	Aladrovic J.	P_fiziologija
11/04/2024	13:00	16:15	v05 Oral digestion	4E-1, 4E-2		3:15	Nastavnici na predmetu	V_fiziologija
12/04/2024	12:00	13:00	Physiology of Domestic Animals II	4E-1, 4E-2, 4E-3	Kolkvij 1.	1:00	Shek Vugrovecki A.	P_fiziologija
12/04/2024	13:00	16:15	v05 Oral digestion	4E-3		3:15	Nastavnici na predmetu	V_fiziologija

Activities - Physiology of Domestic Animals II (3/5)								
	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
16/04/2024	10:15	11:45	s06 Intestine digestion	4E-1, 4E-2, 4E-3		1:30	Paden L.	P_velika
16/04/2024	12:15	15:30	v07 Digestion in ruminants	4E-3		3:15	Nastavnici na predmetu	
17/04/2024	11:30	12:15	p15 Excretory function of kidneys	4E-1, 4E-2, 4E-3		0:45	Aladrovic J.	P_fiziologija
18/04/2024	13:30	16:45	v07 Digestion in ruminants	4E-1, 4E-2		3:15	Nastavnici na predmetu	
22/04/2024	8:15	11:30	v08 Stomach and intestine digestion	4E-1, 4E-2		3:15	Nastavnici na predmetu	
22/04/2024	11:30	12:15	p16 Urine formation I	4E-1, 4E-2, 4E-3		0:45	Aladrovic J.	P_fiziologija
23/04/2024	12:15	13:45	p17 Urine formation II	4E-1, 4E-2, 4E-3		1:30	Aladrovic J.	P_fiziologija
24/04/2024	8:15	11:30	v08 Stomach and intestine digestion	4E-3		3:15	Nastavnici na predmetu	
25/04/2024	8:15	9:45	s07 Urine	4E-1, 4E-2, 4E-3		1:30	Aladrovic J.	P_amfiteatar
26/04/2024	10:30	12:00	p18 Carbohydrate metabolism	4E-1, 4E-2, 4E-3		1:30	Shek Vugrovecki A.	P_fiziologija
29/04/2024	12:00	13:30	p19 Protein metabolism	4E-1, 4E-2, 4E-3		1:30	Paden L.	P_fiziologija
30/04/2024	8:15	11:30	v09 Urine analysis	4E-1, 4E-2		3:15		V_fiziologija
30/04/2024	12:15	15:30	v09 Urine analysis	4E-3		3:15		V_fiziologija
06/05/2024	10:00	13:15	v11 Carbohydrates and protein analysis	4E-1, 4E-2		3:15	Nastavnici na predmetu	V_fiziologija
07/05/2024	8:15	9:45	p20 Lipids metabolism	4E-1, 4E-2, 4E-3		1:30	Žura Žaja I.	P_fiziologija
10/05/2024	12:15	15:30	v11 Carbohydrates and protein analysis	4E-3		3:15	Nastavnici na predmetu	V_fiziologija
13/05/2024	10:00	11:30	p21 Vitamins metabolism	4E-1, 4E-2, 4E-3		1:30	Žura Žaja I.	P_fiziologija

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

	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
13/05/2024	11:45	13:15	s08 Lipid metabolism	4E-1, 4E-2, 4E-3		1:30	Žura Žaja I.	P_fiziologija
14/05/2024	13:30	16:45	v10 Excretion	4E-1, 4E-2, 4E-3		3:15	Nastavnici na predmetu	R_stocarstvo velika
17/05/2024	9:00	9:45	s12 The physiology of aging	4E-1, 4E-2, 4E-3		0:45	Žura Žaja I.	P_fiziologija
21/05/2024	10:00	11:30	p22 Minerals metabolism	4E-1, 4E-2, 4E-3		1:30	Shek Vugrovecki A.	P_fiziologija
21/05/2024	14:00	17:15	v12 Serum lipid determination	4E-1, 4E-2		3:15	Nastavnici na predmetu	V_fiziologija
22/05/2024	9:00	10:30	s13 Bioenergetics	4E-1, 4E-2, 4E-3		1:30	Paden L.	P_fiziologija
23/05/2024	10:00	11:30	p23 Neonatal physiology	4E-1, 4E-2, 4E-3		1:30	Aladrovic J.	P_fiziologija
23/05/2024	13:30	16:45	v12 Serum lipid determination	4E-3		3:15	Nastavnici na predmetu	V_fiziologija
27/05/2024	10:00	10:45	p24 Egg-laying physiology	4E-1, 4E-2, 4E-3		0:45	Aladrovic J.	P_fiziologija
27/05/2024	10:45	11:30	p25 Mammary gland I	4E-1, 4E-2, 4E-3		0:45	Paden L.	P_fiziologija
28/05/2024	8:15	9:00	s09 Vitamins metabolism	4E-1, 4E-2, 4E-3		0:45	Žura Žaja I.	P_farmakologija
28/05/2024	9:00	9:45	s10 Mineral metabolism	4E-1, 4E-2, 4E-3		0:45	Shek Vugrovecki A.	P_farmakologija
28/05/2024	10:00	11:00	Physiology of Domestic Animals II	4E-1, 4E-2, 4E-3	Kolokvij 2.	1:00	Shek Vugrovecki A.	P_farmakologija
28/05/2024	14:15	17:30	v14 Reproducion	4E-1, 4E-2		3:15	Nastavnici na predmetu	V_fiziologija, V_patofiziologija
28/05/2024	14:15	17:30	v15 Behaviour	4E-3		3:15	Nastavnici na predmetu	V_fiziologija, V_patofiziologija
29/05/2024	12:45	16:00	v14 Reproducion	4E-3		3:15	Nastavnici na predmetu	V_fiziologija, V_patofiziologija

Activities - Physiology of Domestic Animals II (5/5)								
	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
29/05/2024	12:45	16:00	v15 Behaviour	4E-1, 4E-2		3:15	Nastavnici na predmetu	V_fiziologija, V_patofiziologija
03/06/2024	9:15	10:45	p26 Mammary gland II	4E-1, 4E-2, 4E-3		1:30	Paden L.	P_fiziologija
04/06/2024	13:30	15:00	p27 Thermoregulation and skin physiology	4E-1, 4E-2, 4E-3		1:30	Aladrovic J.	P_fiziologija
06/06/2024	11:45	13:15	s11 Exercise physiology	4E-1, 4E-2, 4E-3		1:30	Shek Vugrovecki A.	P_fiziologija
Total: 69						142:15		

STUDENT OBLIGATIONS

Lecture attendance	During semester a student must attend 24 hours (50%) in order to gain minimal 3 points. The maximum number of points from this evaluation element is 6.
Seminars attendance	During the course the student must be present at 15 seminar hours to achieve a minimum of 4 points. The maximum score of this evaluation element is 6 points. If the student, upon the completion of the course, makes up for nonattendance (excused and approved) of the missed seminar, he gains points which are added to the previously gained points.
Practicals attendance	During semester a student must attend 40 practical hours in order to gain minimal 4 points. The maximum number of points from this evaluation element is 6. If the student, upon the completion of the course, makes up for nonattendance (excused and approved) of the missed exercise (excused and approved), points are added to the gained ones.
Active participation in seminars and practicals	During the 22 seminar hours and 60 hours of the practical classes, the student must complete the assigned. A student can earn up to 2 points per seminar, and a total of 4 points for producing and successfully presenting a seminar paper. For six positive answers (oral or written) the student earns an additional 6 points. During the course of seminars and exercises, the student must achieve at least 5 points and a 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 lessons, 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 of 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. If the student did not satisfy the final part of the exam, he/she can retake the final exam in previously determined terms.
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. Regulations On Intergraduate and Graduate Studies, Article 41: a student can justifiably be absent from up to 50% of the lectures; 30% of the seminars and 30% of the exercises.

GRADING AND EVALUATING STUDENT WORK

Continuous knowledge-checking (mid-terms)	<p>During the course of the Physiology of Domestic Animals II, two assessments of knowledge (colloquia) will be organized. The first colloquium includes the digestion and excretory physiology and the second cardiovascular and respiratory physiology. 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.</p> <p>A student who does not achieve the necessary points during the course of instruction is entitled to three times access to a colloquium retake that will be organized in certain terms.</p> <p>The terms of the colloquium from the Physiology of Domestic Animals II in the academic year 2023/2024.</p> <p>Cardiovascular and respiratory systems physiology April 12th, 2024 at 12am Digestive and excretory systems physiology May 28th, 2024 at 9am</p>
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	The terms of repeated colloquium from the Physiology of Domestic Animals II during the summer semester and the summer exam period of the academic year 2022/2023 will be held according to the following schedule: June 13th, 2024 at 11 am June 26th, 2024 at 11 am September 4th, 2024 at 11 am
Final exams (dates)	25/4/2024, 26/6/2024, 4/7/2024, 12/7/2024, 4/9/2024, 18/9/2024
Form of final exam	oral exam

LITERATURE

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

OBJECTIVES AND LEARNING OUTCOMES

Course objectives	Course of Physiology of domestic animals II 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 the physiology; development of abilities for interpretation, and conclusion about information; the abilities of searching for information in the literature.
Learning outcomes	After successfully mastering the course students will be able to: - describe the basic principles and the facts of the physiological processes from the cell to the whole organism in ruminant, non-ruminant species and poultry - explain the physiological functions of the body systems - explain the physiological functions of rumen and the other forestomachs

Course: Physiology of domestic animals II

- recognize the importance of maintaining continuous function of heart, lungs guts, kidneys, skin, and reproductive organs
- connect the regulatory mechanisms throughout body
- use the skills of obtaining and analyzing urine, plasma, serum, rumen content
- to evaluate whether the obtained values are within physiological limits for certain species of domestic animals, and
- to conclude how tests can indicate certain pathological changes or certain disease stages

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GRADING SCHEME

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

Course leader

Ana Shek Vugrović
izv. prof. dr. sc. Ana Shek Vugrovečki

Head of organizational unit:

I. Žura Žaja
izv. prof. dr. sc. Ivona Žura Žaja

Note: The course leader is required to submit a Course Syllabus to all teachers and associates pertaining to the Cours