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UNIVERSITY OF ZAGREB
FACULTY OF VETERINARY MEDICINE
Heinzelova 55
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Division: Clinics
Organizational unit: Veterinary Pathology
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Register No. of the organisational unit: 61-11-595
Zagreb, February 9th, 2023

159681	REPUBLIKA HRVATSKA
Veterinarski fakultet u Zagrebu	
Primljeno:	09.02.2023
Klasifikacijska oznaka	Org. jed.
605-03/22-04/35	251-61-32;
Urudžbeni broj	Prilozi / Vrijednost
251-61-11/378-23-59	0 / -

COURSE SYLLABUS

Course name: SPECIAL VETERINARY PATHOLOGY

Academic year 2022-23

Course leader: Ivan-Conrado Šoštarić-Zuckermann, PhD, DECVP, Associate professor
Deputy course leader: Andrea Gudan Kurilj, PhD, DECVP, Full professor

Teachers: Andrea Gudan Kurilj, PhD, DECVP, Full professor (Full prof. Andrea Gudan Kurilj) Marko Hohšteter, DVM, PhD, Associate Professor (Assoc. prof. Marko Hohšteter);
Doroteja Huber, DVM, PhD; Lidija Medven Zagradišnik, DVM, PhD; Dunja Vlahović, DVM, PhD

First day of classes: 27.2.2023.

Last day of classes: 26.5. 2023.

Timetable for LECTURES academic year 2022-2023

LECTURES				
Date	**Methodological unit**	**Teacher**	**Location / time**	**Literature**
27.2.2023.	Pathology of Alimentary System	Full prof. Andrea Gudan Kurilj	Veterinary Pathology lecture room/ 10-12 h	1. J. F. Zachary (2022): Pathologic Basis of Disease, 7th edition, Elsevier, Philadelphia. 2. V. Kumar, Abul K. Abbas, N. Fausto (2015): Robbins and Cotran: Pathologic Basis of Disease, 9th. Elsevier Saunders, Philadelphia. 3. Notes and presentations provided by lecturers.
28.2.2023.	Pathology of Alimentary System	Full prof. Andrea Gudan Kurilj	Veterinary Pathology lecture room/ 8-10 h	
1.3.2023.	Pathology of Alimentary System	Full prof. Andrea Gudan Kurilj	Veterinary Pathology lecture room/ 12-14 h	
3.3.2023.	Pathology of Liver	Assoc. Prof. Ivan-Conrado Šoštarić-Zuckermann	Veterinary Pathology lecture room/ 10-12 h	
6.3.2023.	Pathology of Liver and pancreas	Assoc. Prof. Ivan-Conrado Šoštarić-Zuckermann	Veterinary Pathology lecture room/ 12-14 h	
9.3.2023.	Pathology of Urinary System	Full prof. Andrea Gudan Kurilj	Veterinary Pathology lecture room/ 10-12 h	
13.3.2023.	Pathology of Urinary System	Full prof. Andrea Gudan Kurilj	Veterinary Pathology lecture room/ 10-12 h	
14.3.2023.	Pathology of Urinary System	Full prof. Andrea Gudan Kurilj	Veterinary Pathology lecture room/ 10-12 h	
15.3.2023.	Pathology of Respiratory System	Assoc. prof. Marko Hohšteter	Veterinary Pathology lecture room / 12-14 h	
20.3.2023.	Pathology of Respiratory System	Assoc. prof. Marko Hohšteter	Veterinary Pathology lecture room/ 10-12 h	
21.3.2023.	Pathology of Respiratory System	Assoc. prof. Marko Hohšteter	Veterinary Pathology lecture room/ 8-10 h	
22.3.2023.	Pathology of Endocrine System	Assoc. prof. Ivan-Conrado Šoštarić-Zuckermann	Veterinary Pathology lecture room/ 14-16	
27.3.2023.	Pathology of Endocrine System	Assoc. prof. Ivan-Conrado Šoštarić-Zuckermann	Veterinary Pathology lecture room / 8-10	

28.3.2023.	Pathology of Skeletal Muscle	Assoc. prof. Ivan-Conrado Šoštarić-Zuckermann	Veterinary Pathology lecture room / 10-12 h	
29.3.2023.	Pathology of Bones	Assoc. prof. Ivan C. Šoštarić-Zuckermann	Veterinary Pathology lecture room / 10-12 h	
3.4.2023.	Pathology of Nervous System	Assoc. prof. Marko Hohšteter	Veterinary Pathology lecture room/ 10-12 h	
4.4.2023.	Pathology of Nervous System	Assoc. prof. Marko Hohšteter	Veterinary Pathology lecture room/ 12-14 h	
11.4.2023.	Pathology of Nervous System	Assoc. prof. Marko Hohšteter	Veterinary Pathology lecture room/ 10-12 h	
14.4.2023.	Digital Pathology in Veterinary madicine	Lidija Medven Zagradišnik, PhD	Veterinary Pathology lecture room/ 10-12 h	
	Pathology of Skin	Full prof. Andrea Gudan Kurilj		
17.4.2023.	Pathology of Skin	Full prof. Andrea Gudan Kurilj	Veterinary Pathology lecture room/ 10-12 h	
20.4.2023.	Pathology of Skin	Full prof. Andrea Gudan Kurilj	Veterinary Pathology lecture room/ 10-12 h	
24.4.2023.	Pathology of Female Reproductive System	Assoc. prof. Marko Hohšteter	Veterinary Pathology lecture room/ 10-12 h	
25.4.2023.	Pathology of Female Reproductive System	Assoc. prof. Marko Hohšteter	Veterinary Pathology lecture room/ 10-12 h	
27.4.2023.	Pathology of Male Reproductive System	Assoc. prof. Marko Hohšteter	Veterinary Pathology lecture room/ 10-12 h	
2.5.2023.	Pathology of Cardivascular System	Full prof. Andrea Gudan Kurilj	Veterinary Pathology lecture room/ 10-12 h	
3.5.2023.	Pathology of Cardivascular System	Full prof. Andrea Gudan Kurilj	Veterinary Pathology lecture room/ 10-12 h	
5.5.2023.	Pathology of Hematopoietic System	Assoc. prof. Ivan-Conrado Šoštarić-Zuckermann	Veterinary Pathology lecture room/ 10-12 h	
8.5.2023.	Pathology of Lymph Nodes	Assoc. prof. Ivan-Conrado Šoštarić-Zuckermann	Veterinary Pathology lecture room/ 12-14 h	

10.5.2023.	Pathology of Spleen	Assoc. prof. Ivan-Conrado Šoštarić-Zuckermann	Veterinary Pathology lecture room/ 10-12 h	
12.5.2023.	Eye Pathology	Assoc. prof. Ivan-Conrado Šoštarić-Zuckermann	Veterinary Pathology lecture room/ 14-16 h	

Timetable for PRACTICALS academic year 2022-2023

PRACTICALS						
Date	**Methodological unit**	**Teacher**	**Type of practical**	**Group**	**Location / time**	**Literature**
2.3.2023.	Necropsy technique: repetition	Full prof. Andrea Gudan Kurilj, Lidija Medven Zagradišnik, PhD, Assoc. prof. Ivan-Conrado Šoštarić-Zuckermann	Clinical practicals	All	Necropsy hall/ 12-16 h	J. F. Zachary (2022): Pathologic Basis of Disease, 7th edition, Elsevier, Philadelphia. Grabarević, Željko i Sabočanec, Ruža (2016): Osnove razudbe domaćih životinja. Medicinska naklada, Zagreb. Notes provided by lecturers.
3.3.2023.	Introduction to writing of necropsy report.	Full prof. Andrea Gudan Kurilj, Doroteja Huber, PhD, Dunja Vlahović, PhD	Clinical practicals	All	Necropsy hall/ 12-16 h	
8.3.2023.	Necropsy technique and recognition of pathological changes; writing of necropsy report.	Dunja Vlahović, PhD, Doroteja Huber, PhD, Lidija Medven Zagradišnik, PhD	Clinical practicals	All	Necropsy hall/ 10-14 h	
17.3.2023.	Necropsy technique and recognition of pathological changes; writing of necropsy report.	Assoc. prof. Marko Hohšteter, Lidija Medven Zagradišnik, PhD, Assoc. prof. Ivan-	Clinical practicals	All	Necropsy hall/ 8-12 h	

		Conrado Šoštarić-Zuckermann				
24.3.2023.	Necropsy technique and recognition of pathological changes; writing of necropsy report.	Assoc. prof. Marko Hohšteter, Dunja Vlahović, PhD, Lidija Medven Zagradišnik, PhD	Clinical practicals	All	Necropsy hall/ 8-12 h	
29.3.2023.	Necropsy technique and recognition of pathological changes; writing of necropsy report.	Dunja Vlahović, PhD, Doroteja Huber, PhD, Assoc. prof. Marko Hohšteter	Clinical practicals	All	Necropsy hall/ 12-16 h	
30.3.2023.	Necropsy technique and recognition of pathological changes; writing of necropsy report.	Full prof. Andrea Gudan Kurilj, Assoc. prof. Ivan-Conrado Šoštarić-Zuckermann, Doroteja Huber, PhD	Clinical practicals	All	Necropsy hall/ 14-18 h	
31.3.2023.	Necropsy technique/ **Histopathology I** Introduction: slides preparation, staining techniques. Slides: (2) Liver: hepatocellular steatosis (lipidosis). (14) Liver (dog): bilirubin retention/ cholestasis. (4) Skeletal muscle (horse): coagulative necrosis.	Lidija Medven Zagradišnik, PhD, Doroteja Huber, PhD, Dunja Vlahović, PhD _____ Histopathology/ Assoc. prof. Marko Hohšteter, Dunja Vlahović, PhD	Clinical practicals _____ Laboratory practicals	All	Necropsy hall/ 12-14 h Physics practicum/ 14-16 h	

5.4.2023.	**Histopathology II** Slides: (46) Liver (pig): Hepatitis, interstitial, chronic, eosinophilic and fibrous (parasitic hepatitis). (45) Liver (chinchilla): Hepatitis, suppurative and necrotizing (milliar). (Salmonellosis) (44) Liver (horse): postnecrotic cirrhosis. (47) Liver (dog): zonal necrosis. **Histopathology III** Slides: (18) Lung (horse): multiple arterial thrombi. (50) Valve (dog): Valvular (verrucous) endocarditis, chronic. (51) Valve (pig): Endocarditis, thrombotic, septic. (55) Spleen (pig): haemorrhagic infarction.	Lidija Medven Zagradišnik, PhD, Assoc. prof. Ivan-Conrado Šoštarić-Zuckermann	Laboratory practicals	All	Physics practicum/ 10-14 h	
13.4.2023.	**Histopathology IV** Slides: (58) Myocardium	Assoc. prof. Ivan-Conrado Šoštarić-Zuckermann,	Laboratory practicals	All	Physics practicum / 12-16 h	

	(horse): Embolic myocarditis. (59) Myocardium (pig): Myocarditis, necrotizing, lymphocytic and histiocytic, multifocal. (93) Liver (monkey): disseminated hepatic tuberculosis. (100) Skin (pig): Citaneous Actinomycosis. **Histopathology V** Slides: (30) Skin (dog): Nodular sebaceous hyperplasia. (32) Skin (dog): Squamous cell carcinoma. (28) Skin (dog): Papilloma. (33) Testis (dog): Seminoma.	Doroteja Huber, PhD				
19.4.2023.	**Histopathology VI** Slides: (34) Lymph node (dog): Lymphoma. (35) Skin (dog): Mast cell tumor HE & Toluidin. (36) Mammary gland (dog): Adenocarcinoma	Dunja Vlahović, PhD, Full prof. Andrea Gudan Kurilj	Laboratory practicals	All	Physics practicum / 12-16 h	

	(tubulopapillar) (37) Mammary gland (dog): Benign mixed tumor **Histopathology VII** Slides: (60) Lung (horse): Pneumonia, fibrinous and necrotizing. (62) Lung (horse): Bronchopneumonia, embolic and suppurative. (63) Lung (pig): Porcine Enzootic Pneumonia					
20.4.2023.	**Histopathology VIII** Slides: (42) Stomach (dog): Stomach ulcer. (43) Small intestine (dog): Parvovirosis. (81) Kidney (cat): FIP **Histopathology IX** Slides: (105) Lung, urinary bladder (dog): Distemper (104) Brain (dog): Rabies	Full prof. Andrea Gudan Kurilj, Lidija Medven Zagradišnik, PhD	Laboratory practicals	All	Physics practicum / 12-16 h	
27.4.2023.	**Histopathology X** Slides: (77) Mammry gland (cow): Mastitis, suppurative.	Doroteja Huber, PhD, Assoc. prof. Marko Hohšteter	Laboratory practicals	All	Physics practicum/ 12-16 h	

	(76) Uterus (dog): Endometritis, chronic, suppurative (pyometra). (74) Kidney (horse): Nephritis glomerulointerstitialis, chronic. **Histopathology XI** Slides: (48) Liver (dog): Contagious Canine Hepatitis. (53) Lymph node (pig): Lymphadenitis, haemorrhagic, acute. (54) Lymph node (pig): Suppurative lymphadenitis.					
2.5.2023.	**Histopathology XII** Slides: (67) Lung (cat): Verminous Pneumonia. (68) Liver (rabbit): Coccidiosis (69) Liver (hyrax): Toxoplasmosis. (70) Myocard (sheep): Sarcocystosis. **Histopathology XIII** Slides:	Lidija Medven Zagradišnik, PhD, Assoc. prof. Ivan-Conrado Šoštarić-Zuckermann	Laboratory practicals	All	Physics practicum / 12-16 h	

	(80) Kidney, tongue (dog): Uremia.					
4.5.2023.	**Histopathology XIV and XV** Slides - all: repetition and colloquium	Assoc. prof. Marko Hohšteter, Doroteja Huber, PhD	Laboratory practicals	All	Physics practicum/ 8-12 h	
16.5.2023.	**Konverzatorij (case study analysis)** Presentations of necropsy cases with active participation of students in analysis and discussion	Assoc. Prof. Marko Hohšteter	Laboratory practicals	All	Veterinary Pathology lecture room/ 10-13 h	
18.5.2023.	**Konverzatorij** Presentations of necropsy cases with active participation of students in analysis and discussion	Doroteja Huber, PhD	Laboratory practicals	All	Veterinary Pathology lecture room/ 10-13 h	
22.5.2023.	**Konverzatorij** Presentations of necropsy cases with active participation of students in analysis and discussion	Lidija Medven Zagradišnik, PhD	Laboratory practicals	All	Veterinary Pathology lecture room/ 8-11 h	
24.5.2023.	**Konverzatorij** Presentations of necropsy cases with active participation of students in analysis and discussion	Assoc. prof. Ivan-Conrado Šoštarić-Zuckermann	Laboratory practicals	All	Veterinary Pathology lecture room/ 10-13 h	
26.5.2023.	**Konverzatorij** Presentations of necropsy cases with active participation of	Dunja Vlahović, PhD	Laboratory practicals	All	Veterinary Pathology lecture room/ 10-13 h	

	students in analysis and discussion					

STUDENT OBLIGATIONS

Lecture attendance	The total number of lectures include 60 hours. During sixth semester student must be present on at least 30 hours (50%) of lectures to get minimal 3 points (each lecture hour is calculated as 0.1 points). A student can get a maximum of 6 points for this element.
Seminars attendance	
Practicals attendance	The total number of practicals include 75 hours. During the sixth semester student must be present on at least 60 hours of practicals to get a minimum of 8 points. A student can get a maximum of 12 points for this element.
Active participation in seminars and practicals	In this element, student must achieve a minimum of 5 points, and can achieve a maximum of 10 points. Each student has the obligation to perform at least two **necropsies** during semester,

	where success is scored as follows: 0-5 points (0 points = did not perform necropsy nor wrote necropsy report; 1 point = performed necropsy but but did not wrote necropsy report ; 2 points = performed necropsy, and wrote necropsy report; 3 points = performed two necropsies, and wrote necropsy report; 4 points = performed two necropsies, and wrote necropsy report and showed very good knowledge of theory and technique. **Histopathology**: 0 points – student has not drawn majority of given slides; 1 point – student drawn the majority of given slides; 2 points – student drawn all given slides and poorly described slides; 3 points - student drawn all given slides and correctly described slides; 4 points - student nicely drawn all given slides and correctly described slides. **Konverzatorij (Case study analysis)**: 0 points - student has not learned given program unit; 1 point - student has learned given program unit; 2 points - student has learned given program unit and actively participated in discussion. The range of 5 to 10 points student achieves by combining ie. adding values earned by necropsies, histopathology and konverzatorij.
Final exam	Minimal conditions for passing the first, second, third and fourth evaluation elements are all summed up and they are worth 36 points all together. In order to take the final exam a student must gain the 36 points. **The final exam consists of a written and oral part. Written part** of the final exam will last for 60 minutes, and consists of two parts. The first part is recognition of macroscopic pathological changes (duration: 20 minutes). In this part, 10 photographs of pathological processes (one photo at 2 minute intervals) will be displayed on the LCD projector. For each photo, two questions will be asked, and the student can get maximum of 0.5 point per photograph (points are awarded in range from 0.25 to 0.5). The second part of the written exam is in the essay form. Each question will have guidelines to clarify what is expected in answers. Students will briefly describe some pathological processes. This part of the exam contains of 4 questions, and each question will be scored with a maximum of 5 points. A minimum of 15 points is required to pass the written exam, while a maximum of 25 points is possible. After scoring the written part of the exam, **students who received a minimum number of points (15) have the right to access the oral part of the exam**, while those who have a lower number of points receive a negative grade and do not have the right to access the oral part of the exam. Additional oral questions are askeed according to the same principle as the essay type of questions in the written part, and it is possible to achieve a maximum of 15 points in the oral part.The grade of the final exam is the one derived from the points that student has collected from the written and oral part of the exam. The maximum amount of points in final

	exam is 40.
Examination requirements	Student requirements are defined in the Regulations on the Integrated Undergraduate and Graduate Study of Veterinary Medicine. 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; 20% of the seminars and 20% of the exercises.

GRADING AND EVALUATING STUDENT WORK

Continuous knowledge-checking (mid-terms)	During the semester, two colloquiums will be held (1. Written colloquium from the chapter "Pathology of the skin"; 2. Practical examination in Histopathology). **Written colloquium is from the chapter " Pathology of the skin"**. In this colloquium it is necessary to achieve at least 10 points; maximum possible points is 16. Colloquium consists of 32 questions; in order to achieve the minimum number of points it is required to answer 20 questions (each correct answer is awarded 0.5 points). The incorrect answers will be counted as negative points (so the total score will be reduced for the number of incorrect answers, while the unanswered questions will not be scored). The colloquium will be held at the Veterinary Pathology lecture room. It is required to apply for the colloquiums with the internal application forms that are provided in the student administration office. Dates of colloquiums and Application dedlines are: 1. Term: 25. 4. 2023. at 7:30 (Application until 12:00 on 24.4.2023.). 2. Term: 9.5.2023. at 7.30 (Application until 12:00 on 8.5.2023.). 3. Term: 6.6.2023. at 7:30 (Application until 12:00 on 5.6.2023.). The second colloquium is a **practical colloquium in Histopathology**. From this colloquium it is necessary to achieve a minimum of 10 points, and maximum possible points is 16. Practical examination of the Histopathology is performed at the Veterinary Pathology lecture room by examining the knowledge from slides that were presented on histopathology practicals. Each student gets four slides and has to be able to recognize the tissue, describe the lesions and give the diagnosis. Dates of colloquiums are: 1. Term: 4.5.2023. (last practicalsl – application is not required). 2. Term: 18.5.2023. at 7:30. (Application until 12:00 on 17.5.2023.). 3. Term: 1.6.2023. at 7:30 (Application until 12:00 on 31.5.2023.).
Final exams (dates)	24.3.2023., 27.4.2023., 31.5.2023., 27.6.2023., 5.7.2023.,11.7.2023., 6.9.2023., 21.9.2023.
Form of final exam	Written and oral exam.

LITERATURE

Obligatory literature	1. J. F. Zachary (2022): Pathologic Basis of Disease, 7th edition, Elsevier, Philadelphia. 2. Notes and presentations provided by lecturers.
Optional literature	1. Grabarević, Željko i Sabočanec, Ruža (2016): Osnove razudbe domaćih životinja. Medicinska naklada, Zagreb. 2. Jubb, Kennedy & Palmer, Grant Maxie M (2015): Pathology of Domestic Animals., 6th ed, Saunders Elsevier.

OBJECTIVES AND LEARNING OUTCOMES

Course objectives	Pathogenesis of noninfectious, infectious and congenital diseases. Classification and nomenclature of diseases. Morphology of lesions characteristic for certain diseases. Macroscopic and microscopic recognition of diseases related to the clinical signs of the disease.
Learning outcomes	At the end of the course students will get knowledge in pathology of organic systems necessary for further performing of education in other clinical subjects. The final goal upon the end of the studying is to be able to recognise a pathological process, make a right diagnosis and give the proper therapy, or if the animal perishes to get the right diagnosis in a proper way (by autopsy and other laboratory studies) thus act as a preventive measure for other animals. By the completion of the course students should be able to: - analyze pathological changes (lesions) and classify them in order to determine specific animal diseases - analyze microscopic slides of basic pathologic processes and most important animal diseases - correlate macroscopic and microscopic changes together with the results of other ancillary laboratory tests - make diagnosis and conclusion about emergence and development of disease or animal death - write necropsy report

GRADING SCHEME

Points	*Grade*
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)

Course leader:
Assoc. prof. Ivan-Conrado Šoštarić-Zuckermann, DECVP

Head of organizational unit:
Assoc. prof. Ivan-Conrado Šoštarić-Zuckermann, DECVP

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