

UNIVERSITY OF ZAGREB
FACULTY OF VETERINARY MEDICINE
Heinzelova 55
Tel. 01/2390 248
Division: Basic and Pre-clinical Sciences
Organizational unit: Anatomy, Histology and Embryology
E-mail of the course leader: kuzir@vef.unizg.hr
Register No of the organisational unit: 61-05-2025/47
Zagreb, 10/2/2025

	
198033	REPUBLIKA HRVATSKA
Veterinarski fakultet u Zagrebu	
Primljeno:	11.02.2025
Klasifikacijska oznaka	Org. jed.
602-04/24-22/38	251-61-41/251-61-32;
Uredbeni broj	Prilozi Vrijednost
251-61-05-25-137	0 -

COURSE SYLLABUS

Course name: Histology with General Embryology
Academic year 2024/2025

Course leader: Full Prof. Snježana Kužir

Deputy course leader: postdoctoral assistant Lucija Devčić

Teachers: Full Prof. Snježana Kužir, postdoctoral assistant Lucija Bastiančić, teaching assistant Nikolina Škvorc

First day of classes: 3/3/2025

Last day of classes: 13/3/2022

Activities - Histology with general embryology (1/6)

Start Date	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
03/03/2025	10:00	11:30	p01 Introduction, Embryology	4E-1, 4E-2, 4E-3		1:30	Kužir S.	V_histologija
04/03/2025	10:00	11:30	p02 Epithelial Tissue	4E-1, 4E-2, 4E-3		1:30	Kužir S.	V_histologija
04/03/2025	11:45	13:15	v01 Cell;Hostological methods	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
05/03/2025	8:15	9:45	v01 Cell;Hostological methods	4E-3		1:30	Nastavnici na predmetu	V_histologija
07/03/2025	14:00	15:30	v02 Epithelial 1	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
10/03/2025	10:15	11:45	v02 Epithelial 1	4E-3		1:30	Nastavnici na predmetu	V_histologija
11/03/2025	11:15	12:45	v03 Epithelial 2	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
12/03/2025	11:30	13:00	v03 Epithelial 2	4E-3		1:30	Nastavnici na predmetu	V_histologija
13/03/2025	8:30	10:00	v04 Epithelial 3	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
13/03/2025	12:00	13:30	v04 Epithelial 3	4E-3		1:30	Nastavnici na predmetu	V_histologija
14/03/2025	8:15	9:45	p03 Connective tissue	4E-1, 4E-2, 4E-3		1:30	Kužir S.	V_histologija
17/03/2025	9:30	11:00	v05 Connective tissue 1	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
18/03/2025	9:00	10:30	v05 Connective tissue 1	4E-3		1:30	Nastavnici na predmetu	V_histologija
20/03/2025	9:15	10:45	v06 Connective tissue 2	4E-3		1:30	Nastavnici na predmetu	V_histologija

Activities - Histology with general embryology (2/6)

Start Date	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
20/03/2025	11:00	12:30	v06 Connective tissue 2	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
21/03/2025	10:00	11:30	p04 Supportive tissue	4E-1, 4E-2, 4E-3		1:30	Kužir S.	V_histologija
21/03/2025	12:00	13:30	v07 Supportive tissue, cartilage	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
21/03/2025	14:00	15:30	v07 Supportive tissue, cartilage	4E-3		1:30	Nastavnici na predmetu	V_histologija
25/03/2025	10:00	11:30	v08 Supportive tissue, bone	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
25/03/2025	11:45	13:15	v08 Supportive tissue, bone	4E-3		1:30	Nastavnici na predmetu	V_histologija
26/03/2025	10:00	10:45	p05 Blood	4E-1, 4E-2, 4E-3		0:45	Kužir S.	V_histologija
27/03/2025	14:00	15:30	v09 Blood	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
28/03/2025	11:45	13:15	v09 Blood	4E-3		1:30	Nastavnici na predmetu	V_histologija
31/03/2025	13:45	14:30	p06 Muscle tissue	4E-1, 4E-2, 4E-3		0:45	Kužir S.	V_histologija
02/04/2025	13:00	14:30	v10 Muscle tissue	4E-3		1:30	Nastavnici na predmetu	V_histologija
02/04/2025	14:45	16:15	v10 Muscle tissue	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
04/04/2025	13:30	14:15	p07 Nerve tissue	4E-1, 4E-2, 4E-3		0:45	Kužir S.	V_histologija
04/04/2025	14:30	16:00	v11 Nerve tissue	4E-3		1:30	Nastavnici na predmetu	V_histologija

Activities - Histology with general embryology (3/6)

Start Date	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
07/04/2025	14:00	15:30	v11 Nerve tissue	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
08/04/2025	12:45	14:15	v12 Recapitulation	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
10/04/2025	13:00	14:30	v12 Recapitulation	4E-3		1:30	Nastavnici na predmetu	V_histologija
11/04/2025	8:00	9:00	Histology with general embryology		Kolokvij 1	1:00	Kužir S.	V_histologija
14/04/2025	11:45	12:30	p08 Circulatora system	4E-1, 4E-2, 4E-3		0:45	Kužir S.	V_histologija
15/04/2025	9:00	10:30	v13 Circulatory system	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
16/04/2025	8:15	9:45	v13 Circulatory system	4E-3		1:30	Nastavnici na predmetu	V_histologija
22/04/2025	8:00	8:45	p09 Central nervous system	4E-1, 4E-2, 4E-3		0:45	Kužir S.	V_histologija
23/04/2025	13:55	15:25	v14 Central nervous system	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
24/04/2025	10:45	12:15	v14 Central nervous system	4E-3		1:30	Nastavnici na predmetu	V_histologija
05/05/2025	10:00	10:45	p10 Sensory organs	4E-1, 4E-2, 4E-3		0:45	Kužir S.	V_histologija
05/05/2025	11:00	12:30	v15 Eye	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
06/05/2025	8:00	9:30	v15 Eye	4E-3		1:30	Nastavnici na predmetu	V_histologija
07/05/2025	8:15	9:45	p11 Skin and skin derivatives	4E-1, 4E-2, 4E-3		1:30	Kužir S.	V_histologija

Activities - Histology with general embryology (4/6)

Start Date	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
07/05/2025	11:45	13:15	v16 Skin and skin derivatives 1	4E-3		1:30	Nastavnici na predmetu	V_histologija
07/05/2025	13:30	15:00	v16 Skin and skin derivatives 1	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
09/05/2025	9:00	10:30	v17 Skin and skin derivatives 2	4E-3		1:30	Nastavnici na predmetu	V_histologija
13/05/2025	8:15	9:45	v17 Skin and skin derivatives 2	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
13/05/2025	14:00	14:45	p12 Respiratory system	4E-1, 4E-2, 4E-3		0:45	Kužir S.	V_histologija
15/05/2025	8:15	9:45	v18 Respiratori system	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
16/05/2025	8:15	9:45	v18 Respiratori system	4E-3		1:30	Nastavnici na predmetu	V_histologija
20/05/2025	10:00	11:30	p13 Digestion 1	4E-1, 4E-2, 4E-3		1:30	Kužir S.	V_histologija
20/05/2025	15:15	16:45	v19 Digestion 1a	4E-3		1:30	Nastavnici na predmetu	V_histologija
21/05/2025	13:30	15:00	v19 Digestion 1a	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
22/05/2025	9:45	11:15	v20 Digestion 1b	4E-3		1:30	Nastavnici na predmetu	V_histologija
22/05/2025	13:00	14:30	v20 Digestion 1b	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
23/05/2025	8:15	9:45	p14 Digestion 2	4E-1, 4E-2, 4E-3		1:30	Kužir S.	V_histologija
26/05/2025	9:15	10:45	v21 Digestion 2a	4E-3		1:30	Nastavnici na predmetu	V_histologija

Activities - Histology with general embryology (5/6)

Start Date	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
27/05/2025	8:30	10:00	v21 Digestion 2a	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
28/05/2025	9:45	11:15	v22 Digestion 2b	4E-3		1:30	Nastavnici na predmetu	V_histologija
28/05/2025	13:00	14:30	v22 Digestion 2b	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
02/06/2025	9:15	10:45	p15 Immune system and lymphatic organs	4E-1, 4E-2, 4E-3		1:30	Kužir S.	V_histologija
02/06/2025	11:00	12:30	v23 Immune system and lymphatic organs 1	4E-3		1:30	Nastavnici na predmetu	V_histologija
02/06/2025	14:45	16:15	v23 Immune system and lymphatic organs 1	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
04/06/2025	8:15	9:45	v24 Immune system and lymphatic organs 2	4E-3		1:30	Nastavnici na predmetu	V_histologija
04/06/2025	11:45	13:15	v24 Immune system and lymphatic organs 2	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
05/06/2025	11:00	11:45	p16 Endocrine glands	4E-1, 4E-2, 4E-3		0:45	Kužir S.	V_histologija
05/06/2025	12:00	13:30	v25 Endocrine glands	4E-3		1:30	Nastavnici na predmetu	V_histologija
05/06/2025	13:45	15:15	v25 Endocrine glands	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
06/06/2025	8:00	9:30	p17 Urinary system	4E-1, 4E-2, 4E-3		1:30	Kužir S.	V_histologija
06/06/2025	13:30	15:00	v26 Urinary system	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija

Activities - Histology with general embryology (6/6)								
Start Date	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
06/06/2025	15:15	16:45	v26 Urinary system	4E-3		1:30	Nastavnici na predmetu	V_histologija
09/06/2025	8:00	8:45	p18 Male reproductive system	4E-1, 4E-2, 4E-3		0:45	Kužir S.	V_histologija
09/06/2025	12:45	14:15	v27 Male reproductive system	4E-3		1:30	Nastavnici na predmetu	V_histologija
10/06/2025	8:00	9:30	v27 Male reproductive system	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
10/06/2025	12:15	13:45	p19 Female reproductive system	4E-1, 4E-2, 4E-3		1:30	Kužir S.	P_fiziologija
10/06/2025	14:45	16:15	v28 Female reproductive system	4E-3		1:30	Nastavnici na predmetu	V_histologija
11/06/2025	11:30	13:00	v28 Female reproductive system	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
11/06/2025	15:15	16:45	v29 PLacenta	4E-3		1:30	Nastavnici na predmetu	V_histologija
12/06/2025	8:15	9:45	v29 PLacenta	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
13/06/2025	9:45	11:15	v30 Repetition	4E-1, 4E-2		1:30	Nastavnici na predmetu	V_histologija
13/06/2025	11:45	13:15	v30 Repetition	4E-3		1:30	Nastavnici na predmetu	V_histologija
16/06/2025	8:00	9:00	Histology with general embryology		Kolokvij 2	1:00	Kužir S.	V_histologija
Total: 81						113:45		

Histology with General Embryology

STUDENT OBLIGATIONS

Lecture attendance	Presence at lectures (min 15h).
Seminars attendance	-
Practicals attendance	Presence in practicals (min. 42h).
Active participation in seminars and practicals	Activity in training (a minimum of 5 points earned). Students are expected to actively participate in the practicals by asking questions, drawing microscope slides and actively learning from the literature. Each student's activity in the practicals will be assessed based on class participation and knowledge demonstrated during entrance tests/examinations. During the course, each student's preparation will be checked (test/oral) at least 5 times (maximum 2 points per check). The minimum number of points achieved from this assessment element is 5, and the maximum is 10 points.
Final exam	The final exam is oral, and knowledge of histological slides is tested. Each student will choose randomly a closed box with 5 slides. For each slide the student can gain 8 points. If the student does not recognize tissue or the organ, he/she shall lose the opportunity to be tested orally on this slide. The minimum number of points is 24 and the maximum number of points is 40. The final grade is formed based on the total sum of all five evaluation elements (attending lectures, attending the practicals, participation at practicals, preliminary exams and points from the final exam).
Examination requirements	Student requirements are defined in the Regulations on studying in the University Integrated Undergraduate and Graduate Study Programme <i>Veterinary Medicine</i> (2024). Given the above, the student must acquire a minimum number of points from all assessment elements in order to take the final exam. 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)	Passed examination of two preliminary exams (min. 10 + 10 points earned). Two preliminary exams will be organized during the course. Both are worth minimum 10 and maximum 16 points. To take the oral exam students must have minimal 10 points from each. In case she/he does not earn enough points, the student has the right to repeat preliminary exam twice again . In this context it is possible to gain 32 points maximum 11/4/2025, 16/6/2025
Final exams (dates)	10/4/2025, 2/7/2025, 15/7/2025, 10/9/2025, 18/9/2025
Form of final exam	Oral exam

LITERATURE

Obligatory literature	AUGHEY, E., F. L. FRYE (2001): Comparative Veterinary Histology with Clinical Correlates. Manson Publishing/The Veterinary Press, London, UK. BACHA, W. J., L. M. BACHA (2012): Color Atlas of Veterinary Histology. 3rd ed. J. Wiley-Blackwell, Chichester, UK
-----------------------	--

Histology with General Embryology

	BANKS, W. J. (1993): Applied Veterinary Histology. Mosby-Year Book, Inc. St. Louis. HYTTEL, P., F. SINOWATZ, M. VEJLSTED (2010): Essentials of Domestic Animal Embryology. Saunders Elsevier, Philadelphia. McGEADY, T. A., P. J. QUINN, E. S. FITZPATRICK, M. T. RYAN (2006): Veterinary Embryology. Blackwell Publishing, Dublin. SAMUELSON, D. A. (2006): Textbook of Veterinary Histology. Saunders (W. B.) Co Ltd, London, UK PP of lectures and exercises
Optional literature	DELLMAN, H.- D. (1993): Textbook of Veterinary Histology. Lea & Febiger. Philadelphia. KERR, J. B. (2000): Atlas of Functional Histology. Mosby, London, St. Louis, Philadelphia, Sydney, Tokyo. MESCHER, A. (2013): Junqueira's Basic Histology: Text and Atlas. 13th ed. Mc Graw Hill Companies, Inc NODEN, D. M., A. DE LAHUNTA (1985): The Embryology of Domestic Animals. Developmental Mechanisms and Malformations. Williams & Wilkins. Baltimore, Hong Kong, London, Sydney. SADLER, T. W. (2006): Langman's Medical Embryology, Lippincott Williams & Wilkins a Wolters Kluwer business. 10th ed. Philadelphia, Baltimore, New York, London, Buenos Aires, Hong Kong, Sydney, Tokyo. YOUNG, B., J. W. HEATH (2000): Wheater's Functional Histology, A Text and Colour Atlas. Churchill Livingstone, Edinburgh, London, New York, Oxford, Philadelphia, St. Louis, Sydney, Toronto.

OBJECTIVES AND LEARNING OUTCOMES

Course objectives	Histology is one of the basic subjects of the medical sciences; it studies the structure of human and animal bodies, which can be seen only with the help of optic aids. Etymologically, histology is a science that studies the tissues of a body. However, it explores the complete microscopic and submicroscopic system of the organism. During the study, students of veterinary medicine improve their knowledge from macroscopic anatomy and at the same time, they gain insight into the correlation between the structure and function of organs and organic systems. Knowledge of the normal structures is essential for the recognition of changes in the structure of the tissue, organs and organic systems. Embryology deals with embryonic development and enables the understanding of complex interrelations in the body of an animal. It is also of practical importance since it explains the emergence of anomalies during development.
Learning outcomes	By the end of this course the student should be able to: - interpret the microstructure of tissues and organs of animal origin - compare the microstructure of tissues and organs of different animal species - recommend the histological technique of choice for displaying the basic microstructure of tissues and organs as well as specific structures within organs - collect a tissue or organ sample for the selected histological technique in accordance with the rules of the profession - master operating a light microscope for the purpose of histological analysis - analyze histological slides of animal origin - relate early embryonic development and histogenesis with structural features of animal tissues and organs

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



Full Prof. Snježana Kužir

Head of organizational unit:



Assist. Prof. Mirela Pavić Vulinović

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