SYLLABUS OF THE EDUCATIONAL COMPONENT

PATHOLOGICAL ANATOMY AND AUTOPSY

specialty	**211 – Veterinary medicine**	**mandatory discipline**	**mandatory**
educational program	**veterinary medicine**	**faculty**	**veterinary medicine**
educational level	**master**	**department**	**normal and pathological morphology**

TEACHER

ULIANYTSKA ANASTASIIA

Higher education - specialty: veterinary medicine.
Scientific degree - Candidate of Veterinary Sciencesin specialty 16.00.01 (pathology, oncology and morphology of animals).
Academic title – associate professor.
Work experience – 21 years.
Indicators of professional activity on the course topic: professional scientific publications included in scientific-metric databases Scopus , Web of Science Core Collection ;
co-author of 10 educational and methodological developments;
participant in foreign scientific conferences.

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GENERAL INFORMATION ABOUT THE EDUCATIONAL COMPONENT	
Objektive	**Providing students knowledge of the morphological foundations of various forms of animal pathologies, understanding etiopathogenesis of desease, nosology, morpho-functional changes in organs, tissues, and cells revealed through post-mortem examination; and the specifics of pathological-anatomical diagnostics of diseases.**
Format	**lectures, practical classes, independent work, individual assignments.**
Detailing learning outcomes and forms of their control	**ability to apply methods and techniques of pathological and anatomical diagnostics of animal diseases to establish the final diagnosis and causes of their death / control at the lessons, test, exam:;** types of control (oral discussion during the lesson, written test questioning, e-examination) **ability to select, pack, fix and send samples of biological material for laboratory research / control at the lessons, test, exam;** types of control (discussion during the lesson, written test questioning, e-examination) **ability to conduct forensic veterinary examination** **ability to conduct research at the appropriate level, apply knowledge in practical situations, conducting special research while performing professional tasks/ individual practical classes, analyses based on post-mortem findings.** **the ability to think abstractly, analyze, synthesize, search, and process information from various sources.**
Scope and forms of control	**11 ECTS credits (330 hours): 30 hours of lectures, 106 hours of laboratory classes, 30 hours of teaching practice; 30 hours - coursework; 134 hours of independent work, current control (6 chapters); final control - two undifferentiated tests, exam, coursework.**
Teacher requirements	**timely completion of tasks, activity, teamwork**

COMPLIANCE WITH THE EDUCATION STANDARD AND EDUCATIONAL PROGRAM			
Competence	**GC1. Ability to think abstractly, analyze and synthesize, search, process information from various sources.** **GC2. Ability to apply knowledge in practical situations.** **GC7. Ability to conduct research at the appropriate level.** **GC 8. Ability to learn and master modern knowledge.** **GC 9. Ability to make informed decisions.**	**Program results** **teaching**	**PRN1. Know and correctly use the terminology of veterinary medicine.** **PRN2. Use information from domestic and foreign sources to develop diagnostic, treatment, and business strategies.**

	GC 10. Ability to communicate with representatives of other professional groups of different levels (with experts in other fields of knowledge/types of economic activity). GC 11. Ability to evaluate and ensure the quality of work performed. SC1. The ability to establish the features of the structure and functioning of cells, tissues, organs, their systems and apparatuses of the body of animals of different classes and species - mammals, birds, insects (bees), fish and other vertebrates. SC2. The ability to use tools, special devices, instruments, laboratory equipment and other technical means to carry out the necessary manipulations during professional activities. SC3. Ability to comply with the rules of labor protection, asepsis and antiseptics during professional activities. SC5. Ability to apply methods and techniques of pathological and anatomical diagnosis of animal diseases to establish the final diagnosis and causes of their death. SC6. Ability to select, package, fix and send samples of biological material for laboratory research. SC7. Ability to organize and conduct laboratory and special diagnostic studies and analyze their results.		PRN3. Determine the essence of physicochemical and biological processes that occur in the body of animals in normal and pathological conditions. PRN7. Formulate conclusions regarding the effectiveness of selected methods and means of keeping, feeding and treating animals, prevention of infectious and non-infectious diseases, as well as production and technological processes at enterprises for keeping, breeding or operating animals of various classes and species.

STRUCTURE OF THE EDUCATIONAL COMPONENT

Chapter 1. General pathological anatomy. Pathological anatomy of dystrophies, necrosis, inflammation. Adaptive and restorative processes and their consequences for the body. Atrophies: classification and pathomorphological characteristics. Pathomorphology of tumors, leukemias, radiation sickness of animals and birds.

Lecture 1	Introduction to pathological anatomy. Forms of pathologies. The doctrine of thanatogenesis: pathological and anatomical aspects.	Laboratory and practical lesson 1 (LPL 1)	Objects and methods of research in pathanatomy. Acquaintance with the history of the department. Determination of primary and secondary signs of death and autolysis. Biosafety rules for working with cadaveric material and ways to neutralize it.	Independent study	1. The history of the development of veterinary pathology. 2. Biochemistry of cadaveric stiffness. Conditions and pathologies of the severity of cadaveric hypostases. 3. Structure and functions of biomembranes and non-membrane cell organelles.
		LPL 2	Research methods in pathological anatomy.		

Lecture 2	Violation of the morpho-functional integrity of cells. Granular dystrophy: pathomorpho-characteristics.	LPL 3	Cellular dysproteinosis: hydropic and hyaline-drip dystrophy.		4. The importance of free radical damage for the development of decompositive dyslipidosis. 5. Pathogenesis of hypoxic cell damage. 6. Pathomorphocharacteristics of ichthyosis. 7. Morphocharacteristics of connective tissue.
		LPL 4	Pathomorphological characteristics of dystrophy.		
Lecture 3	Disruption of the morphofunctional integrity of extracellular systems. Pathomorpho-characteristics of mucoid and fibrinoid swelling, hyalinosis, amyloidosis.	LPL 5	Pathomorphology of dyslipidosis. Fatty infiltration of the liver.		
		LPL 6	Pathomorphology of dyschromoproteinosis developing on hemoglobin and melanin.		8. Pathomorphocharacteristics of jaundice.
Lecture 4	Necrosis: classification, pathomorphological characteristics, outcome, complications and significance for the body.	LPL 7	Mineral, carbohydrate dystrophy, dysglycoproteinosis.		9. Pathomorphocharacterization of dysglycoproteinosis (cellular mucoidosis and cachectic/hungry edema).

		LPL 8	Necrosis and apoptosis: pathomorphological differences.		10-11. Regulation of the processes of aging, death and cell repair. 12. Differences between necrosis and apoptosis.
Lecture 5	Pathomorphology of alterative and exudative types of inflammation.	LPL 9	Pathomorphology of circulatory disorders and tissue fluid content.		13-14. The concept of "histion". Morpho-functional characteristics of the microcirculatory bed. Causes of plasmorrhagia. Pathomorphocharacteristics of lymphatic circulation pathologies.
		LPL 10	Morphological criteria for primary and secondary alteration in the focus of inflammation. Pathomorphology of proliferative inflammation.		15. Pathomorphocharacterization of immune and specific inflammation. The concepts of "granulation tissue" and "specific granuloma". 16. Thrombosis and embolism: pathomorphocharacteristics. 17. Hyperemia, stasis, spasm, ischemia, collapse, plasmorrhagia, hemorrhage: pathomorphocharacteristics.
Lecture 6	Adaptive and restorative processes: morphological characteristics.	LPL 11	General atrophies: pathomorphocharacteristics. Narrowing of the lumens of tubular organs and body cavities.		18. Concepts: proliferation, differentiation, determination, form formation, organogenesis. 19. Difference between hypertrophy and hyperplasia. 20. Laws of regeneration.
		LPL 12	Local atrophies.		
Lecture 7	Tumors: principles of classification, pathomorphological diagnostics; prognostic criteria in oncology, significance for the body.	LPL 13	Pathomorphology of tumor growth.		21. Theories of carcinogenesis. 22. Laws of tumor metastasis.

		LPL 14	Hemoblastosis of animals: pathomorphocharacteristics.		23. Differential diagnosis of leukemia in animals and poultry.
Lecture 8	Animal leukemias: pathomorphological characteristics.	LPL 15	Pathomorphocharacteristics of avian leukemia.		
		LPL 16	Credit lesson.		
Chapter 2. Organopathology. Special pathoanatomy: pathomorphology of bacterial diseases.					
Lecture 9	Primary and secondary heart pathologies. Myocardiodystrophy, cardiomyopathy, myocarditis: pathomorphological characteristics.	LPL 16	Vascular pathologies: pathomorphocharacteristics. Atherosclerosis: pathomorphocharacteristics.	Independent study	24. Congenital pathologies of the heart: pathomorphocharacteristics. 25. Pathomorphocharacteristics of cardiomyopathies.
		LPL 17	Pathomorphocharacteristics of diseases of the upper respiratory tract, lungs and bronchi.		26. Congenital pathologies of the lungs: pathomorphocharacteristics.
Lecture 10	Pathomorphological characteristics of hepatodystrophies, hepatitis, liver cirrhosis, cholecystitis.	LPL 18	Pathomorphocharacteristics of pancreatic diseases.		27. Toxic liver dystrophy: pathomorphic characteristics. 28. Veno-occlusive liver disease: pathomorphic characteristics. 29. Ketosis and diabetes mellitus in animals: pathogenesis and pathomorphocharacteristics.
		LPL 19	Pathomorphocharacteristics of diseases of the digestive system.		30. Pathomorphological characteristics and differential diagnosis of ulcers in the gastrointestinal tract.
Lecture 11	Kidney pathologies: patho-morphological characteristics.	LPL 20	Pathomorphocharacteristics of pathologies of the nervous system.		31. The concept of "renal coma".

		LPL 21	Pathomorphocharacterization of macro- and microelementoses of animals and poultry.		32-33. Hypovitaminosis and hypervitaminosis of animals and poultry: pathomorphocharacteristics.
					34-35. Pathomorphological diagnosis of poisoning with urea, lupine, zinc phosphide, arsenic.
Lecture 12	Systemic inflammatory response syndrome, septicemia and sepsis: pathomorphological characteristics.	LPL 22	Pathomorphocharacteristics of erysipelas of animals.		36. Difference between microbemia and septicemia. 37. Septicemic diseases of animals. 38. Syndrome of disseminated intravascular coagulation in the pathogenesis of septicemia.
		LPL 23	Pathomorphocharacteristics of anthrax.		39-41. Anthrax, listeriosis and erysipelas in humans: risks of infection.
Lecture 13	Pathomorphological characteristics of listeriosis.	LPL 24	Pathomorphocharacteristics of pasteurellosis.		
		LPL 25	Pathomorphocharacteristics of animal hemophiliasis.		42. Poultry hemophiliasis: pathomorphocharacteristics.
Lecture 14	Pathomorphological characteristics of escherichiosis.	LPL 26	Pathomorphocharacteristics of animal salmonellosis.		43. Specific granulomas: macro- and microstructure.
		LPL 27	Pathomorphocharacteristics of animal leptospirosis.		44. Pathomorphocharacteristics of paratuberculosis.
Lecture 15	Pathomorphological characteristics of tuberculosis.	LPL 28	Pathomorphocharacteristics of clostridiosis.		45. Pathomorphocharacterization of yersiniosis.
		LPL 29	Pathomorphocharacteristics of hoe and mite.		46. Pathomorphocharacteristics of epizootic lymphangoitis.
		LPL 30	Credit lesson.		

Chapter 3. Special pathoanatomy: pathomorphology of mycoplasmosis, chlamydia, virosis, prion diseases, mycotoxicosis and parasitosis of animals. Organization, technique and methods of pathological autopsy of corpses of animals and birds of different species and age groups. Pathoanatomical documentation. Technique of making museum wet and dry preparations. Rules for selection, fixation, packaging and shipment of pathological material.

	LPL 31	Pathomorphological characteristics chlamydial diseases, mycoplasmosis. Pathomorphological characteristics herpesvirus deseases.	Independent study	47-51. Pathomorphocharacteristics of pig mycoplasmosis; respiratory mycoplasmosis and avian ornithosis.
	LPL 32	Pathogenesis and pathomorphology of viruses: rabies		
	LPL 33	Pathomorphology of bovine spongiform encephalopathy		
	LPL 34	Differential pathomorphological characteristics of African and European swine fever.		
	LPL 35	Pathomorphological characteristics of parainfluenza-3 and respiratory syncytial infection.		
	LPL 36	Pathomorphological characteristics of respiratory syncytial infection.		
	LPL 37	Pathomorphocharacteristics of the Newcastle sparrow.		
	LPL 38	Pathomorphocharacteristics of avian influenza.		
	LPL 39	Pathomorphocharacteristics of Marek's disease.		
	LPL 40	Pathomorphocharacteristics of gastroenteral and systemic viruses of animals.		52. Pathomorphocharacteristics of Aujeszky's disease.
	LPL 41	Pathomorphocharacteristics of animal adenovirosis.		53-54. Slow and prion diseases of sheep and goats: pathomorphocharacteristics.
	LPL 42	Pathomorphocharacteristics of animal foot-and-mouth disease.		
	LPL 43	Pathomorphocharacteristics of animal pox.		
	LPL 44	Pathomorphocharacteristics of animal mycoses.		
	LPL 45	Pathomorphological characteristics of animal mycoses and aflatoxicosis.		
	LPL 46	Pathomorphocharacteristics of eimeriosis, histomoniasis, trichomoniasis.		55-56. Pathomorphocharacteristics of myxomatosis, papillomatosis.
	LPL 47	Pathomorphocharacteristics of echinococcosis, trichinosis, fasciolosis, dicroceliosis.		57. T-2 toxicosis of animals and poultry: pathomorphocharacteristics.

LPL 48	Rules for working with pathological material for the manufacture of museum preparations.
LPL 49	Rules for filling out the primary documentation of the patrostina.
LPL 50	Autopsy of the corpses of pigs, carnivores, fur animals.
LPL 51	Technique of pathological autopsy of poultry corpses.
LPL 52	Features of the technique of cutting horse corpses.
LPL 53	Features of the technique of patrostsection of corpses of ruminants.

58. Pathomorphocharacteristics of anaplasmosis, theileriosis, coenurosis, dictyocaulosis.

59-61. Rules for filling out the documentation of pathological and anatomical examination of corpses or cadaveric material (using the provided completed training samples, acts and protocols, fill in the examination / autopsy report and two training protocols - compressed and extended).

EXAM

BASIC LITERATURE AND METHODOLOGICAL MATERIALS

1. Chauhan R.S. Text book of veterinary pathology. IVRI, Bereilly, 2010. - 651p.
2. Dijk E. Color atlas of veterinary pathology / Dijk E. Van, Gruys Erik, Johan M.V.M., 2007. – 200p.
3. Jubb, K. V. F. Pathology of domestic animals / Jubb, K. V. F., Kennedy, P. C., & Palmer, N. (5th ed., Vols. 1-3). Elsevier. – 2016
4. King M. J. Necropsy book. A Guide for Veterinary Students, Residents, Clinicians, Pathologists, and Biological Researchers / King M. J., Lois Roth-Johnson, Dodd D.C. College of Veterinary Medicine Cornell University Ithaca, New York, 2013. – 248p. https://ecommons.cornell.edu/handle/1813/37948
5. Meuten Donald J.. Tumors in Domestic Animals, First edition, by John Wiley & Sons, 2017. – 997p
6. Robbins & Cotran Pathologic Basis of Disease, international edition, 10th ed, by Kumar, Abbas and Aster. Saunders Elsevier, 2021, General Pathology. ISBN: 978p.
7. Zachary F. Pathologic Basis of Veterinary Disease, 6th Edition. / Edited by James F. Zachary. Elsevier, St Louis M.O.: Elsevier, Inc., 2017. – 1835p.

1. Diagnostic exercise https://davisthompsonfoundation.org/diagnostic-exercise/
2. Gross Pathology Description and Interpretation Drs. Jeff Caswell & Brandon Plattner. Department of Pathobiology, University of Guelph ©2012 Jeff Caswell and Brandon Plattner https://secure.vet.cornell.edu/nst/nst.asp?Fun=F_Range&Rng=1-1000
3. Guidelines for the Collection and Submission of Necropsy Samples https://www.academia.edu/25076937/Basic_Guidelines_for_the_Collection_and_Submission_of_Necropsy_Samples
4. Veterinary Pathology https://veterinariavirtual.uab.cat/archivopatologia

GRADING SYSTEM

SYSTEM	POINTS	ACTIVITY THAT IS ASSESSED

Final evaluation	**100 ECTS points (standard)**	**up to 50**	**50% of the average grade for chapters**
		up to 50	**final testing**
Rating of section	**100-point total**	**up to 50**	**answers to test questions**
		up to 20	**oral answers in laboratory and practical classes**
		up to 30	**result of mastering the independent work block**

NORMS OF ACADEMIC ETHICS AND INTEGRITY

- **All participants in the educational process must adhere to the code of academic integrity and the requirements stipulated in the regulation "On Academic Integrity of Participants in the Educational Process of DBTU": to demonstrate discipline, good manners, respect each other's dignity, show kindness, honesty, and responsibility.**