

# 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 Sciences in 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.

phone +380971904633

e - mail

ulyanickaya.a79@gmail.com

remote support

Moodle

## GENERAL INFORMATION ABOUT THE EDUCATIONAL COMPONENT (DISCIPLINE)

|           |                                                                                                                                                                                                                                                                                                                                    |
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| Objektive | Providing students knowledge of the morphological foundations of various forms of animal pathologies, understanding etiopathogenesis of disease, 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.                                                                                                                                                                                                                                                             |

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| <b>Detailing learning outcomes and forms of their control</b> | <p>ability to apply methods and techniques of pathological and anatomical diagnostics of animal diseases to establish the final diagnosis and causes of their death / <b>control at the lessons, test, exam;</b> types of control (oral discussion during the lesson, written test questioning, e-examination)</p> <p>ability to select, pack, fix and send samples of biological material for laboratory research / <b>control at the lessons, test, exam;</b> types of control (discussion during the lesson, written test questioning, e-examination)</p> <p>ability to conduct forensic veterinary examination</p> <p>ability to conduct research at the appropriate level, apply knowledge in practical situations, conducting special research while performing professional tasks/ <b>individual practical classes, analyses based on post-mortem findings.</b></p> <p>the ability to think abstractly, analyze, synthesize, search, and process information from various sources.</p> |
| <b>Scope and forms of control</b>                             | <p><b>10 ECTS credits (300 hours): 30 hours of lectures, 90 hours of laboratory classes, 30 hours of teaching practice; 30 hours - coursework; 120 hours of independent work, current control (6 tests); final control - two undifferentiated tests, exam, coursework.</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Teacher requirements</b>                                   | <p>timely completion of tasks, activity, teamwork</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

### COMPONENT OF THE EDUCATIONAL STANDARD AND CURRICULUM

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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| <b>Competence</b> | <p>GC1. Ability to think abstractly, analyze and synthesize, search, process information from various sources.</p> <p>GC2. Ability to apply knowledge in practical situations.</p> <p>GC7. Ability to conduct research at the appropriate level.</p> <p>GC 8. Ability to learn and master modern knowledge.</p> <p>GC 9. Ability to make informed decisions.</p> <p>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).</p> <p>GC 11. Ability to evaluate and ensure the quality of work performed.</p> <p>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.</p> <p>SC2. The ability to use tools, special devices, instruments, laboratory equipment and other technical means to carry out the necessary manipulations during professional activities.</p> <p>SC3. Ability to comply with the rules of labor protection, asepsis and antiseptics during professional activities.</p> <p>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.</p> | <b>Program results teaching</b> | <p>PRN1. Know and correctly use the terminology of veterinary medicine.</p> <p>PRN2. Use information from domestic and foreign sources to develop diagnostic, treatment, and business strategies.</p> <p>PRN3. Determine the essence of physicochemical and biological processes that occur in the body of animals in normal and pathological conditions.</p> <p>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.</p> |
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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.

## STRUCTURE OF THE EDUCATIONAL COMPONENT

**Part 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.

|                  |                                                                                                                                                               |                                                  |                                                                                                                                                                                                                                                      |                   |                                                                                                                                                                                                                                                           |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Lecture 1</b> | Introduction to pathological anatomy. Forms of pathologies. The doctrine of thanatogenesis: pathological and anatomical aspects.                              | <b>Laboratory and practical lesson 1 (LPL 1)</b> | 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.<br>2. Biochemistry of cadaveric stiffness. Conditions and pathologies of the severity of cadaveric hypostases.<br>3. Structure and functions of biomembranes and non-membrane cell organelles. |
|                  |                                                                                                                                                               | <b>LPL 2</b>                                     | Research methods in pathological anatomy.                                                                                                                                                                                                            |                   |                                                                                                                                                                                                                                                           |
| <b>Lecture 2</b> | Violation of the morpho-functional integrity of cells. Granular dystrophy: pathomorpho-characteristics.                                                       | <b>LPL 3</b>                                     | Cellular dysproteinoses: hydropic and hyaline-drip dystrophy.                                                                                                                                                                                        |                   | 4. The importance of free radical damage for the development of decompositive dyslipidosis.<br>5. Pathogenesis of hypoxic cell damage.<br>6. Pathomorphocharacteristics of ichthyosis.<br>7. Morphocharacteristics of connective tissue.                  |
|                  |                                                                                                                                                               | <b>LPL 4</b>                                     | Pathomorphological characteristics of dystrophy.                                                                                                                                                                                                     |                   |                                                                                                                                                                                                                                                           |
| <b>Lecture 3</b> | Disruption of the morphofunctional integrity of extracellular systems. Pathomorpho-characteristics of mucoid and fibrinoid swelling, hyalinosis, amyloidosis. | <b>LPL 5</b>                                     | Pathomorphology of dyslipidosis. Fatty infiltration of the liver.                                                                                                                                                                                    |                   |                                                                                                                                                                                                                                                           |
|                  |                                                                                                                                                               | <b>LPL 6</b>                                     | Pathomorphology of dyschromoproteinoses developing on hemoglobin and melanin.                                                                                                                                                                        |                   | 8. Pathomorphocharacteristics of jaundice.                                                                                                                                                                                                                |

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| <b>Lecture 4</b> | 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.                                                                       |
| <b>Lecture 5</b> | Pathomorphology of alternative 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".                                                       |
| <b>Lecture 6</b> | Adaptive and restorative processes: morphological characteristics.                                                                | LPL 11 | General atrophies: pathomorphocharacteristics. Narrowing of the lumens of tubular organs and body cavities.                              |  | 16. Thrombosis and embolism: pathomorphocharacteristics.                                                                                                                                  |
|                  |                                                                                                                                   | LPL 12 | Local atrophies.                                                                                                                         |  | 17. Hyperemia, stasis, spasm, ischemia, collapse, plasmorrhagia, hemorrhage: pathomorphocharacteristics.                                                                                  |
| <b>Lecture 7</b> | Tumors: principles of classification, pathomorphological diagnostics; prognostic criteria in oncology, significance for the body. | LPL 13 | Pathomorphology of tumor growth.                                                                                                         |  | 18. Concepts: proliferation, differentiation, determination, form formation, organogenesis.                                                                                               |
|                  |                                                                                                                                   | LPL 14 | Hemoblastosis of animals: pathomorphocharacteristics.                                                                                    |  | 19. Difference between hypertrophy and hyperplasia.                                                                                                                                       |
| <b>Lecture 8</b> | Animal leukemias: pathomorphological characteristics.                                                                             | LPL 15 | Pathomorphocharacteristics of avian leukemia.                                                                                            |  | 20. Laws of regeneration.                                                                                                                                                                 |
|                  |                                                                                                                                   |        |                                                                                                                                          |  | 21. Theories of carcinogenesis.                                                                                                                                                           |
|                  |                                                                                                                                   |        |                                                                                                                                          |  | 22. Laws of tumor metastasis.                                                                                                                                                             |
|                  |                                                                                                                                   |        |                                                                                                                                          |  | 23. Differential diagnosis of leukemia in animals and poultry.                                                                                                                            |

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|                                                                                              |                                                                                                                               | LPL 16 | Credit lesson.                                                                                 |                   |                                                                                                                                                                                                                           |
| <b>Part 2.</b> Organopathology. Special pathoanatomy: pathomorphology of bacterial diseases. |                                                                                                                               |        |                                                                                                |                   |                                                                                                                                                                                                                           |
| <b>Lecture 9</b>                                                                             | 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.                                                                                                                                                      |
| <b>Lecture 10</b>                                                                            | Pathomorphological characteristics of hepatodystrophies, hepatitis, liver cirrhosis, cholecystitis.                           | LPL 18 | Pathomorphocharacteristics of pancreatic diseases.                                             |                   | 27. Toxic liver dystrophy: pathomorphic characteristics.<br>28. Veno-occlusive liver disease: pathomorphic characteristics.<br>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.                                                                                                                |
| <b>Lecture 11</b>                                                                            | 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.                                                                                                                              |
| <b>Lecture 12</b>                                                                            | 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.                                                                                                                                                 |

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| 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 lymphangitis.                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                           | LPL 30            | Credit lesson.                                      |  |                                                                                                         |
| <b>Part 3.</b> Special pathoanatomy: pathomorphology of mycoplasmosis, chlamydia, virosis, prion diseases, mycotoxicosis and parasitosis of animals.<br>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.<br>Pathomorphological characteristics herpesvirus diseases. | 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. Pathomorphocharacteristics of Marek's disease.                                      |                   |                                                     |  |                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                              | LPL 39 Pathomorphocharacteristics of gastroenteral and systemic viruses of animals.<br>Pathomorphocharacteristics of animal adenovirosis. |                   |                                                     |  |                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                              | LPL 40 Pathomorphocharacteristics of animal foot-and-mouth disease.<br>Pathomorphocharacteristics of animal pox.                          |                   |                                                     |  | 52. Pathomorphocharacteristics of Aujeszky's disease.                                                   |

- LPL 41** Pathomorphocharacteristics of animal mycoses. Pathomorphological characteristics of animal mycoses and aflatoxicosis.
- LPL 42** Pathomorphocharacteristics of eimeriosis, histomoniasis, trichomoniasis. Pathomorphocharacteristics of echinococcosis, trichinosis, fasciolosis, dicroceliosis.
- LPL 43** Rules for working with pathological material for the manufacture of museum preparations. Rules for filling out the primary documentation of the patrostina.
- LPL 44** Autopsy of the corpses of pigs, carnivores, fur animals. Technique of pathological autopsy of poultry corpses.
- LPL 45** Features of the technique of cutting horse corpses. Features of the technique of patrostsection of corpses of ruminants.

**53-54.** Slow and prion diseases of sheep and goats: pathomorphocharacteristics.

**55-56.** Pathomorphocharacteristics of myxomatosis, papillomatosis.

**57.** T-2 toxicosis of animals and poultry: pathomorphocharacteristics.

**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).

### BASIC LITERATURE AND METHODOLOGICAL MATERIALS

Chauhan R.S. Text book of veterinary pathology. IVRI, Bereilly, 2010. - 651p.

Dijk E. Color atlas of veterinary pathology / Dijk E. Van, Gruys Erik, Johan M.V.M., 2007. – 200p.

Jubb, K. V. F. Pathology of domestic animals / Jubb, K. V. F., Kennedy, P. C., & Palmer, N. (5th ed., Vols. 1-3). Elsevier. – 2016

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>

Meuten Donald J.. Tumors in Domestic Animals, First edition, by John Wiley & Sons, 2017. – 997p

Robbins & Cotran Pathologic Basis of Disease, international edition, 10th ed, by Kumar, Abbas and Aster. Saunders Elsevier, 2021, General Pathology. ISBN: 978p.

Zachary F. Pathologic Basis of Veterinary Disease, 6th Edition. / Edited by James F. Zachary. Elsevier, St Louis M.O.: Elsevier, Inc., 2017. – 1835p.

Diagnostic exercise

<https://davisthompsonfoundation.org/diagnostic-exercise/>

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](https://secure.vet.cornell.edu/nst/nst.asp?Fun=F_Range&Rng=1-1000)

Guidelines for the Collection and Submission of Necropsy Samples  
[https://www.academia.edu/25076937/Basic\\_Guidelines\\_for\\_the\\_Collection\\_and\\_Submission\\_of\\_Necropsy\\_Samples](https://www.academia.edu/25076937/Basic_Guidelines_for_the_Collection_and_Submission_of_Necropsy_Samples)

Veterinary Pathology  
<https://veterinariavirtual.uab.cat/archivopatologia>

### EVALUATION SYSTEM

SYSTEM

POINTS

ACTIVITY TO BE EVALUATED

|                                            |                            |           |                                                                           |
|--------------------------------------------|----------------------------|-----------|---------------------------------------------------------------------------|
| Final assessment (different credit, exam)  | 100 points ECTS (standard) | up to 100 | 40 % - Final testing<br>60 % - student's current work during the semester |
| Final assessment (non-differential credit) | 100 points ECTS (standard) | up to 100 | 100 % - average grade for sections                                        |
| Rating of section                          | 100 points total           | up to 30  | 30 % - answers to test questions                                          |
|                                            |                            | up to 30  | 30 % - the result of mastering the block of independent work              |
|                                            |                            | up to 40  | 40 % - student activity in class (oral answers)                           |

## 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.