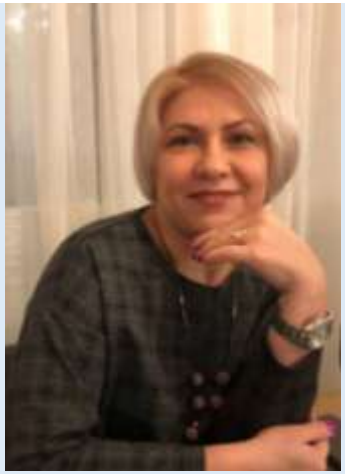
SYLLABUS OF THE EDUCATIONAL COMPONENT

BIOCHEMICAL RESEARCH METHODS IN VETERINARY MEDICINE

Specialty	**211 Veterinary Medicine**	**mandatory discipline**	**selective**
Educational program	**Veterinary Medicine**	**Faculty**	**Veterinary Medicine**
educational level	**Master's degree**	**Department**	**Animal Physiology and Biochemistry**

TEACHER

Hladka Nataliia



Higher education - veterinary medicine
Scientific degree – PhD in Agriculture, specialty 03.00.04 - Biochemistry.
Academic title - associate professor
Work experience - more than 15 years

Indicators of professional activity by course topic:

- author of more than 5 methodological developments;
- more than 15 years of experience in scientific work;
- co-author of the workshop on biological chemistry;
- co-author of more than 2 thematic publications;
- participant of scientific and methodical conferences.

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The following are involved in the teaching of the discipline: associate professor, PhD in Agriculture Vita Prykhodchenko.

GENERAL INFORMATION ABOUT THE EDUCATIONAL COMPONENT	
Purpose	assimilation by students of modern chemical and instrumental methods of substance analysis and their application to solving specific practical problems, mastering the general methodology of analysis and methods that play an important role in practical activities. The study of biochemical research methods is an important stage of a student's general chemical preparation. Provides the necessary base of knowledge and practical skills that will allow in the future to master new methods and devices in case of changes in methods and objects of analysis.
Format	lectures, practical classes, independent work, individual tasks.
Detailing of learning results and forms of their control	• Ability to use tools, special devices, devices, laboratory equipment and other technical means to carry out the necessary manipulations during professional activities (GC2, GC3, SC2, PLO1)/ individual practical classes. • Ability to follow the rules of labor protection, asepsis and antiseptics during professional activity. Ability to organize and conduct laboratory and special diagnostic studies and analyze their results (GC9, SC7, PLO3)/ individual practical classes. • Ability to abstract thinking, analysis, synthesis, search, processing of information from various sources (GC1, PLO18, PLO20)/ individual practical classes.
Scope and forms of control	3 ECTS credits (90 hours): 16 hours of lectures, 16 hours of practical classes, 58 hours of independent work; current control (2 chapters); final control - differentiated credit
Requirements of the teacher	timely completion of tasks, activity, teamwork.
Enrollment conditions	"free enrollment".

COMPLEMENTS THE STANDARD OF EDUCATION AND THE EDUCATIONAL PROGRAM

Competences	GC1. Ability to think abstractly, analyze and synthesizes. GC2. Ability to apply knowledge in practical situations. GC3. Knowledge and understanding of the subject field and profession. GC9. Ability to make informed decisions. SC2. The ability to use tools, special devices, devices, laboratory equipment and other technical means to carry out the necessary manipulations during the performance of professional tasks. SC3. Ability to follow the rules of labor protection, asepsis and antiseptics during professional activities. SC7. Ability to organize and conduct laboratory and special diagnostic studies and analyze their results.	**Program learning outcomes (PLO)**	PLO1. Know and correctly use the terminology of veterinary medicine. PLO3. To determine the essence of physico-chemical and biological processes that occur in the body of animals in normal and pathological conditions. PLO18. Carry out accounting reporting during professional activity. PLO20. To have specialized software tools for performing professional tasks.

STRUCTURE OF THE EDUCATIONAL COMPONENT

Chapter 1. CHARACTERISTICS OF THE MAIN RESEARCH METHODS. DETERMINATION OF METABOLITES OF METABOLISM.					
Lection 1.	**Familiarization with the instruments and equipment of a biochemical laboratory: glassware, its types, peculiarities of use, care; laboratory equipment.**	**Practical class 1 (PC 1).**	**Safety precautions in the laboratory. Laboratory glassware.**	**Independent work**	**Sampling and preparation for analysis. Requirements for working with biological material.** **Biochemical basis of veterinary enzymology.** **Osmotic resistance of erythrocytes (ORE) and its practical use in diagnostics.** **Study of biochemical parameters and their clinical and biochemical interpretation**
Lection 2.	**Characterization of the main research methods.**	**PC 2.**	**Biochemical analyzers in laboratory diagnostics**		
Lection 3.	**Structure and function of biological membranes and cell pathology.**	**PC 3.**	**Volumetric analytical methods of research. Solutions. Osmotic phenomena in living systems - endosmosis, exosmosis, turgor, lysis, hemolysis.**		
Lection 4.	**Determination of metabolites of carbohydrate metabolism.**	**PC 4.**	**Methods of studying metabolism: redox enzymes; the importance of dehydrogenases in metabolism: energy metabolism, substances that affect energy metabolism in cells.**		
Lection 5.	**Protein metabolism. Determination of metabolites of protein metabolism**	**PC 5.**	**Lipid metabolism. Definition of lipid metabolites.**		
Chapter 2. BIOCHEMISTRY OF TISSUES AND BIOLOGICAL FLUIDS.					
Lection 6.	**Liver biochemistry. Liver enzymes and their role in the diagnosis of diseases.**	**PC 6.**	**Clinical and diagnostic significance of the content of sulfate compound esters in urine, indican in blood and urine, bilirubin in blood (clinical and biochemical characteristics of jaundice).**	**Independent work**	**Metabolism of macro- and microelements in pathology of internal organs.** **Biochemistry of the muscular system.** **Biochemistry of the nervous system.**
Lection 7.	**Biochemistry of urine. Identification of normal and pathological components of urine.**	**PC 7.**	**Blood biochemistry. Plasma proteins and non-protein nitrogenous components.**		
Lection 8.	**Mineral metabolism.**	**PC 8.**	**The importance and distribution of water in the body. Physical and chemical characteristics of water. The state of water in the body. The main stages of metabolism.**		

BASIC LITERATURE AND TEACHING MATERIALS

Literature	1. Laboratory Methods of Veterinary Biochemistry: Mehrdad Shamsaddini Bafti, Razi Vaccine and Serum Research Institute 2. Dahlhausen B. Future Veterinary Diagnostics. J. Exot. Pet Med. 2010;19:117–132. doi: 10.1053/j.jepm.2010.05.006. [PMC free article] [PubMed] [CrossRef] [Google Scholar] 3. Soetan K., Abatan M. Biotechnology a key tool to breakthrough in medical and veterinary research. Biotechnol. Mol. Biol. Rev. 2008;3:88–94. [Google Scholar]	**Teaching materials**	1. Biochemistry [Text] : lecture workbook for foreign students 211 Veterinary medicine / V. Prichodchenko, N. Gladka, O. Denysova. - Kharkiv : EPC KSZA, 2021. - 311 p. - Б. ц. 2. http://moodle.btu.kharkiv.ua/login/index.php 3. https://aminbiol.com.ua/ 4. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9454634/

EVALUATION SYSTEM

SYSTEM		POINTS	ACTIVITY THAT IS ASSESSED
Final assessment (different credit, exam)Final evaluation	100 ECTS points (standard)	up to 100	40 % - Final testing
			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 (including students) 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 SBTU": to demonstrate discipline, good manners, respect each other's dignity, show kindness, honesty, and responsibility.