

# SYLLABUS OF EDUCATIONAL COMPONENT



## PHYSIOLOGY OF ANIMALS

specialty	211 veterinary medicine	mandatory discipline	mandatory
educational program	Veterinary medicine	faculty	veterinary medicine
educational level	second (master's) level based by bachelor	chair	physiology and biochemistry of animals

### TEACHER

Larisa Vodopianova - <http://btu.kharkov.ua/wp-content/uploads/2022/12/VodopianovaLA.pdf>



**Higher education - veterinary specialty**  
**Scientific degree - candidate of biological sciences 03.00.19 - cryobiology**  
**Academic title - associate professor**  
**Work experience - more than 17 years**  
**Indicators of professional activity in the subject of the course:**

- Author of more than 20 methodological instructions for practical and independent work on the subject of the course;
- Advanced qualification for international internship at the National Research Center "Institute of Experimental and Clinical Veterinary Medicine" on the topic: Modern laboratory methods of diagnosis used in physiological research. NNC "Institute of Experimental and Clinical Veterinary Medicine", 180/6 ECTS credits, 2024.
- Internship at the "Odesa International Academy" on the topic: "Neurophysiology with the basics of zoopsychology", 120/4 ECTS credits, 2023.
- International certificate Certificate of international advanced training (webinar) - EUROPEAN ACADEMY OF SCIENCES & RESEARCH (EASR), Hamburg, Germany; " Introduction to systematic review and meta-analyses course", 09/22/2022, 0.46 ECTS credits (14 hours);
- International certificate Civil organization "International Foundation of Scientists and Educators" (IESF), Kyiv, Ukraine and Instytut Badawczo-Rozwojowy Lubelskiego Parku Naukowa Technologicznego Sp., Lublin, Poland. Certificate of international advanced training (webinare) "Non-formal education in the preparation of bachelors in the countries of the European Union and Ukraine", 20.02.2023, 1.5 ECTS credits (45 hours);
- Co-author / author of more than 1,30 thematic publications;
- Participant of scientific and methodical conferences on the subject of the course.

phone number	0674211529	e - mail	vodopyanova49@ukr . net	remote support	Moodle , Google Classroom , YouTube - <a href="https://www.youtube.com/@animalsphysiology">https://www.youtube.com/@animalsphysiology</a>
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### GENERAL INFORMATION ABOUT THE EDUCATIONAL COMPONENT (DISCIPLINE)

<b>Goal</b>	providing students with theoretical and practical knowledge of the course of physiological processes in the body of animals of various species and teaching them methods of managing physiological functions to increase productivity and improve the quality of animal husbandry products.
<b>Format</b>	lectures, practical classes, independent work, individual tasks, laboratory work, team work
<b>Detailing of learning results and forms of their control</b>	<ul style="list-style-type: none"> <li>• Ability to think abstractly, analyze and synthesize, conduct research at the appropriate level, learn and master modern knowledge, develop strategies for safe, sanitary animal keeping, know the terminology of ethology and zoopsychology, be able to use it correctly in your work (GC1, GC3, GC7, GC10, SC10, PLO1) / individual tasks, training</li> <li>• Ability to apply knowledge in practical situations, make informed decisions, communicate with representatives of other professional groups of various levels, formulate conclusions regarding the effectiveness of selected methods and means of keeping, feeding and treating animals,</li> </ul>

	<p>prevention of contagious and non-communicable diseases, as well as production and technological processes at enterprises on keeping, breeding or exploitation of animals (SC1, SC2, SC3, SC7)/ individual tasks</p> <ul style="list-style-type: none"> <li>The ability to use tools, special devices, devices, laboratory equipment and other technical means to carry out the necessary manipulations during professional activity, to develop quarantine and health measures, methods of therapy, prevention, diagnosis and treatment of diseases of various etiologies, to carry out educational activities among industry workers and population (GC2, GC7, SC1, SK2, PLO6) / individual tasks, essay</li> <li>implementation of environmental protection mechanisms, application of knowledge of biosafety, bioethics and animal welfare in professional activity, knowledge of rules and requirements of biosafety, bioethics and animal welfare in the process of professional (GC12, GC3, GC7, SC11, SC19, PLO17, PLO19) / training, individual tasks</li> </ul>
<b>Scope and forms of control</b>	7 ECTS credits (210 hours): 32 hours of lectures, 80 hours of laboratory and practical work, 98 hours of independent work, modular control (4 modules); final control - credit /exam
<b>Requirements of the teacher</b>	timely completion of practicals, activity, teamwork
<b>Enrollment conditions</b>	credit / exam

### COMPLEMENTS THE STANDARD OF EDUCATION AND THE EDUCATIONAL PROGRAM

<b>Competences</b>	<p>GC 1. Ability to abstract thinking, analysis and synthesis.  GC 2. Ability to apply knowledge in practical situations.  GC 7. Ability to conduct research at the appropriate level.  GC 8. Ability to learn and master modern knowledge.  GC 9. Ability to make informed decisions.  GC 10. Ability to communicate with representatives of others professional groups of different levels (with experts from other fields of knowledge/types of economic activity).  SC 1. The ability to establish the peculiarities of the structure and functioning of cells, tissues, organs, their systems and body apparatuses of animals of various classes and species - mammals, birds, insects (bees), fish and other vertebrates.  SC 2. The ability to use tools, special devices, devices, laboratory equipment and other technical means to carry out the necessary manipulations during professional activity  SK 3. Ability to follow the rules of labor protection, asepsis and antiseptics during professional activity  SK 7. Ability to organize and conduct laboratory and special diagnostic studies and analyze their results</p>	<b>Program learning outcomes</b>	<p>PLO1. Know and correctly use the terminology of veterinary medicine  PLO 2. Use information from domestic and foreign sources to develop diagnostic, treatment and business strategies.  PLO 3. Determine the essence of physico-chemical and biological processes that occur in the body of animals in normal and pathological conditions.  PLO 7. Formulate conclusions regarding the effectiveness of selected methods and means of keeping, feeding and treating animals, prevention of contagious and non-communicable diseases, as well as production and technological processes at enterprises for keeping, breeding or exploiting animals of various classes and species.</p>
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### STRUCTURE OF THE EDUCATIONAL COMPONENT (DISCIPLINES)

Module 1					
<b>Lecture 1</b>	Physiology, its subject and content . Composition, properties and functions of blood. Blood groups	<b>LC 1</b>	Methods of physiological research	<b>Independent and practical work</b>	1. Blood groups in animals 2. Modern methods of blood research
<b>Lecture 2</b>	Formed elements of blood. Hemostasis. Hemoglobin. Hematopoiesis	<b>LC 2</b>	Blood physiology. Blood groups		3. Hemotransfusion in animals 4. Preparations from blood and their use
		<b>LC 3</b>	Study of the properties of erythrocytes		

		<b>LC 4</b>	Osmotic properties of cells		
		<b>LC 5</b>	Properties of hemoglobin		
		<b>LC 6</b>	Determination of the number of erythrocytes and leukocytes.		
		<b>LC 7</b>	Leukocyte formula		
		<b>LC 8</b>	Hematopoiesis		
		<b>LC 9</b>	Content module test 1		
<b>Module 2</b>					
<b>Lecture 3</b>	Digestion in the oral cavity. Digestion in the single-chambered stomach and rumen	<b>LC 10</b>	Digestion in the oral cavity	<b>Independent practical work</b>	5. Peculiarities of feed intake and digestion in different species of animals 6. Gastrointestinal hormones 7. The role of intestinal microflora 8. Wall etching 9. Modern problems of pet nutrition. 10. Components of modern feed for pets 11. The concept of the chemical composition of feed 12. The concept of the energy composition of food.
<b>Lecture 4</b>	Digestion processes in the small intestine	<b>LC 11</b>	Digestion in the stomach of monogastric animals.		
<b>Lecture 5</b>	Metabolism	<b>LC 12</b>	Digestion in the rumen		
<b>Lecture 6</b>	Physiology of excretory organs	<b>LC 13</b>	Transformation of nitrogen-containing substances in the antrum		
<b>Lecture 7</b>	Organs of the endocrine system. Physiology of lactation	<b>LC 14</b>	Composition and properties of pancreatic juice, bile and intestinal juice		
		<b>LC 15</b>	Gastrointestinal motility		
		<b>LC 16</b>	Methods of studying metabolism. Exchange of proteins, carbohydrates and lipids		
		<b>LC 17</b>	Research of energy processes and thermoregulation		
		<b>LC 18</b>	Studying the processes of selection		
		<b>LC 19</b>	The role of the kidneys in excretion. Stages of urine formation		
		<b>LC 20</b>	General endocrinology.		
		<b>LC 21</b>	Lactation. Formation and composition of milk		
		<b>LC 22</b>	Physiology of analyzers. Eye. Organ of hearing and balance. Chapter 2 test		
<b>Module 3</b>					
<b>Lecture 8</b>	Physiology of arousal processes. Bioelectric phenomena in tissues	<b>LC 23</b>	Physiology of excitation processes	<b>Independent practical work</b>	13. Instincts in animals 14. General characteristics of different types of animal behavior (congenital or acquired) 15. Imprinting 16. Memory in animals 17. Operant conditioned reflexes 18. Stress in animals 19. Migration in animals 20. Parental behavior 21. Conditioned reflex and learning
<b>Lecture 9</b>	Physiology of muscles	<b>LC 24</b>	Tissue biocurrents		
<b>Lecture 10</b>	Functional value of nerves	<b>LC 25</b>	Properties of muscles		
<b>Lecture 11</b>	General physiology of the central nervous system	<b>LC 26</b>	Energetics of muscle contraction, work, fatigue		
<b>Lecture 12</b>	Functions of the spinal cord. Autonomic nervous system	<b>LC 27</b>	Properties of the nerve fiber		
<b>Lecture 13</b>	Functions of the brain.	<b>LC 28</b>	Structure of synapses. Mediators. Parabiosis		
<b>Lecture 14</b>	Higher nervous activity and conditioned reflexes	<b>LC 29</b>	Autonomic nervous system		
		<b>LC 30</b>	Reflex activity of the spinal cord.		

		<b>LC 31</b>	Properties of nerve centers		
		<b>LC 32</b>	Functions of individual parts of the brain		
		<b>LC 33</b>	Study of brain reflexes. Reticular formation		
		<b>LC 34</b>	Functions of the cortex of the cerebral hemispheres. GNI Chapter 3 Test		
<b>Module 4</b>					
<b>Lecture 15</b>	Physiology of the cardiovascular system	<b>LC 35</b>	Methods of studying the work of the heart. Analysis of the cardiac cycle	<b>Independent practical work</b>	22. Exchange of substances and energy in the myocardium 23. Differences in intrauterine blood circulation 24. Lymphatic system in animals 25. Blood pressure in different parts of the vascular bed.. Movement of blood along the vessels 26. Regulation of the volume of circulating blood. Blood depot 27. The role of surfactant and pleura in ensuring respiratory function 28. Tissue respiration 29. Physiology of breathing during muscle work. Artificial respiration 30. Peculiarities of breathing in different animals 31. Breathing bags in birds 32. The role of chemoreceptors in breathing regulation. 33. Respiratory center, localization of respiratory neurons.
<b>Lecture 16</b>	Physiology of breathing	<b>LC 36</b>	Properties of cardiac muscle. Regulation of heart activity.		
		<b>LC 37</b>	Hemodynamics		
		<b>LC 38</b>	Breathing mechanism.		
		<b>LC 39</b>	Regulation of breathing.		
		<b>LC 40</b>	Chapter 4 Test		

**BASIC LITERATURE AND METHODOLOGICAL MATERIALS**

## Literature

1. Animal Physiology, From Genes to Organisms, Sherwood, Lauralee; Klandorf, Hillar; Yancey, 2013, Second edition/ Publisher: Cengage Learning, 896p.
2. Whiting C. S. Human Anatomy & Physiology, Laboratory Manual / C. S. Whiting, KL Keller. - University of North Georgia: Frostburg State University, 2016. - 661 p.

## Methodical support

2. Normal physiology of animals: Test's book / **Vodopyanova L.** , Bobritska O. - Kharkiv, 2021. - 108 p.
3. Normal physiology of animals: Lectures for the 1st semester. Textbook for the self-study students/ **Vodopyanova L.** , Bobritska O. – Kharkiv, 2021. – 116 p.
4. Normal physiology of animals: Practical. Textbook for the self-study of students B 63/ **Vodopyanova L.** , Bobritska O., Ugai K., Ieliseienko A. - Kharkiv: 2019. - 210 p.
5. Physiology of animals. Test tasks for writing control papers for foreign students of the II year 6.110101 "Veterinary Medicine". Yugai K.D., Bobrytska O.M., **Vodopyanova L.A.** // Kh.:, 2021. – 52 p.
8. Physiology of animals. Workbook for students of the first and second year of 211 first (bachelor's) and second (master's) degrees of higher education - 211 "Veterinary medicine" / Yugay K.D., Bobrytska O.M., **Vodopyanova L.A.** // Kh.:, 2023. – 108 p.

## EVALUATION SYSTEM

SYSTEM		POINTS	ACTIVITY TO BE EVALUATED
Final assessment	100 point ECTS (standard)	up to 50	50% of the average grade for the modules
		up to 50	final testing
Modular assessment	100 points total	up to 50	answers to test questions
		to 20	oral answers in laboratory-practical classes
		to 30	the result of mastering the block of independent work

## NORMS OF ACADEMIC ETHICS AND CHARITY

All participants in the educational process (including those seeking education) must adhere to the code of academic integrity and the requirements set forth in the provision " On academic integrity of participants in the educational process of DBTU ": show discipline, good manners, respect each other's dignity, show kindness, honesty, and responsibility.