

NATIONAL UNIVERSITY OF LIFE AND ENVIRONMENTAL SCIENCES  
OF UKRAINE

Department of internal diseases of animals



“CONFIRMED”

Dean faculty of veterinary medicine  
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“APPROVED”

at the meeting of the department of therapy  
and clinical diagnostics

Minutes № 9 of “ 15 ” “ 05 ” 2024

Head of department

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Guarantor of AP “Veterinary medicine”

Program Guarantor

 prof. Nataliia GRUSHANSKA

***PROGRAM OF THE COURSE***  
**Clinical diagnosis of animal diseases**

Field of knowledge "Veterinary medicine" \_\_\_\_\_

Specialty 211-"Veterinary medicine" \_\_\_\_\_

Academic programme "Veterinary medicine" \_\_\_\_\_

Faculty (Education and Research Institute) Veterinary medicine \_\_\_\_\_

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Kyiv – 2024

## Description of the discipline Clinical diagnosis of animal diseases

<b>Academic degree, specialty, academic programme</b>		
Academic degree	<i>master's</i>	
Specialty	211 - "Veterinary medicine"	
Academic programme	<u>Veterinary medicine</u>	
<b>Characteristics of the discipline</b>		
Type	compulsory	
Total number of hours	210	
Number of ECTS credits	7	
Number of modules	6	
Course project (work) (if any)	1	
Form of assessment	<i>exam / credit</i>	
<b>Indicators of the discipline for full-time and part-time forms of university study</b>		
	Full-time	Part-time
Year of study	3	
Semester	5,6	
Lectures	<i>45 hours</i>	<i>hours</i>
Practical classes and seminars		<i>hours</i>
Laboratory classes	<i>90 hours</i>	<i>hours</i>
Self-study	<i>75 hours</i>	<i>hours</i>
Number of hours per week for full-time students	<i>4 hours</i>	

### **1. Aim, objectives, competences and expected learning outcomes of the discipline**

**Aim** Is to teach students of higher education to apply clinical, instrumental and laboratory methods of research, the technique and sequence of their application in the study of individual organs and systems of animals, to analyze the detected symptoms and to substantiate the logical sequence of disease recognition

**Objectives** Clinical diagnosis of animal diseases precedes the study of other profiling clinical disciplines of veterinary medicine, such as internal diseases of animals, epizootology, parasitology, surgery and is the methodological basis of clinical veterinary medicine.

#### ***Acquisition of competences:***

Integral competence (IC):

- basic clinical, modern laboratory and instrumental methods of animal research;
- animal research protocols;
- clinical terminology;
- regulatory clinical indicators and their changes due to pathologies;

be able:

- independently conduct a clinical study of animals;
- analyze the obtained results of clinical observations, instrumental and laboratory studies;
- reflect, logically argue the definition of differential and final diagnosis for infectious and non-infectious diseases of a sick animal;
- communicate with clients, colleagues and support staff on professional issues, both in writing and orally;
- correctly draw up clinical documentation in accordance with the sequence according to the animal research protocol.

General competences (GC):

- ZK 1. Ability to abstract thinking, analysis and synthesis.
- ZK 2. Ability to apply knowledge in practical situations.
- ZK 3. Knowledge and understanding of the subject field and profession.
- ZK 7. Ability to conduct research at the appropriate level.
- ZK 8. Ability to learn and master modern knowledge.
- ZK 9. Ability to make informed decisions.
- ZK 11. Ability to evaluate and ensure the quality of performed works.

Special (professional) competences (SC):

- FC 2. 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 activities.
- FC 3. Ability to follow the rules of labor protection, asepsis and antiseptics during professional activity.
- FC 4. The ability to conduct clinical research with the aim of formulating conclusions about the condition of animals or establishing a diagnosis.
- FC 6. Ability to select, pack, fix and send samples of biological material for laboratory research.
- FC 7. Ability to organize, conduct and analyze laboratory and special diagnostic studies.
- FC 8. Ability to plan, organize and implement measures for the treatment of animals suffering from non-contagious, infectious and invasive diseases.
- FC 13. Ability to develop strategies for the prevention of diseases of various etiologies.

Expected Learning Outcomes (ELO)

In the process of studying the discipline "Clinical diagnosis of animal diseases", applicants of higher education must:

- master the techniques of handling animals, methods of their fixation and taming;
- master the methods of clinical research of animals, including physical, instrumental and laboratory methods;
- master the protocols and sequence of clinical examination of animal organs and systems;
- acquire certain skills and clinical competences during the establishment, study and determination of the main symptoms of internal diseases of animals of infectious and non-infectious etiology;

- learn the patient's clinical history;
- to acquire thinking skills, logical clinical argumentation when determining the differential and establishing the final diagnosis;
- master the method of dispensation of animals;
- acquire communication skills, both in written and oral form, with clients, colleagues, support staff;
- master the rules of professional ethics and deontology

## **2. Programme and structure of the discipline for:**

complete full-time (part-time) form of study;

Content module 1. General diagnostics

Topic of the lecture session 1. The essence and meaning of the discipline, its connection with other disciplines. The concept of symptoms, syndromes, diagnosis, prognosis. Protocol of a clinical study of animals. Preliminary acquaintance with the animal: registration and history

Topic of lecture class 2. Diagnostic significance of research of wool (hair) cover, skin, subcutaneous tissue. Diagnostic value of pathological changes of the skin and subcutaneous tissue.

Topic of the lecture session 3. Diagnostic value of examination of visible mucous membranes and lymph nodes. Thermometry.

Content module 2. Clinical examination of the cardiovascular system

Topic of the lecture session 4. Protocol for the study of the cardiovascular system in animals using inspection and palpation methods.

Topic of the lecture session 5. Study of heart tones by auscultation method and characteristics of their changes.

Topic of lecture session 6. Heart murmurs. Diagnosis of heart defects.

Lecture topic 7. Visual diagnostics of the cardiovascular system: ultrasound and X-ray examination of the heart.

Topic of lecture class 8. Study of arrhythmias.

Content module 3. Clinical examination of the respiratory tract

Topic of lecture 9. Research protocol of the respiratory system in animals General clinical methods of research of the upper (front) respiratory tract.

Topic of the lecture session 10. Examination, palpation and percussion of the chest in the area of the lungs and their diagnostic significance.

Topic of the lecture session 11. Diagnostic value of the lung auscultation method. Basic respiratory noises and their changes under physiological and pathological conditions. X-ray examination of the respiratory system of animals.

Content module 4. Clinical examination of the alimentary system

Topic of the lecture session 12. Research protocol of digestive organs and liver in animals. Clinical significance of the examination of the oral cavity, pharynx, esophagus, ox, and rumen.

Topic of the lecture session 13. Clinical significance of the external examination of the organs of the abdominal cavity of animals. Research of ruminants, rennet of ruminants. General clinical methods of animal liver research.

Topic of the lecture session 14. Research of the stomach and intestines of

monogastric animals. Endoscopy of animals.

Content module 5. Clinical examination of the urinary system and the nervous system

Topic of lecture session 15. Protocol of research of the urinary system of animals. Diagnostic value of clinical methods of kidney and urinary tract research. Special methods of research of the urinary system (ultrasound, X-ray, biopsy, cystoscopy)

Topic of lecture class 16. Research of physical and chemical properties of animal urine and their diagnostic significance. Study of animal urine sediments.

Topic of lecture session 17. Research protocol of the nervous system of animals. Diagnostic significance of the study of animal behavior, skull and spine, sense organs.

Topic of the lecture session 18. Diagnostic value of the study of sensitivity, reflexes, coordination of movements, convulsions, paresis and paralysis.

Content module 6. Examination of blood

Topic of lecture class 19. Blood system research protocol. Diagnostic value of research on physical and morphological indicators of blood. Diagnostic value of leukogram. Leukocytosis, leukocytopenia and their clinical significance

Topic of lecture class 20. Biochemical research of blood.

Topic of the lecture class 21. Generalization of the study of the discipline "Clinical diagnosis of animal diseases". The logic of diagnosis based on acquired knowledge, practical skills and competencies. Clinical history of the patient (on the example of clinical cases).

Modules and topics	Number of hours						
	Full-time education						
	weeks	total	l	p	lab	ind	s.st
1	2	3	4	5	6	7	8
<b>Module No. 1. General diagnosis</b>							
Topic No. 1. Methods of clinical examination of an animal	1-2	12	2		6	4	
Topic No. 2 Symptoms and syndromes of diseases. Diagnosis. Prognosis	3-4	13	3		6	4	
Topic No. 3. Study of the general condition of the animal	5-8	10	2		4	4	
Total according to module No. 1		35	7		14	12	
<b>Module No. 2. Clinical examination of the cardiovascular system</b>							
Topic 4. Basic methods of heart research	8-9	10	2		4	4	
Topic 5. Study of heart tones by auscultation. Changes in heart tones due to pathologies		10	2		4	4	
Topic 6. Heart murmurs	10-12	8	2		4	2	
Topic 7. Additional studies of the heart	13-15	8	2		4	2	
Topic 8. Investigation arteries and veins Arrhythmias. Analysis of clinical cases with pathology of the cardiovascular system		6	2		2	2	
Total according to module No. 2		42	10		18	14	
<b>Module No. 3. Clinical examination of the respiratory tract</b>							
Topic 9. Significance, scheme and methods of research of the respiratory system	1	10	2		4	4	
Topic 10. Detailed examination of upper respiratory tract and chest	2	8	2		2	4	
Topic 11. Auscultation of the lungs	3	10	2		4	4	
Total according to module No. 3		30	6		12	12	
<b>Module No. 4. Clinical examination of the alimentary system</b>							

Topic 12. Examination of feed and water intake. Appetite, chewing and belching and their changes	4	14	2		6	6	
Topic 13. Examination of the forestomach and abomasum. Examination of liver	5-6	14	2		8	4	
Topic 14. Examination of stomach, pharynx, gastric juice, and stomach contents.	7	14	2		8	4	
Total according to module No. 4		42	6		22	14	
<b>Module No. 5. Clinical examination of the urinary system and the nervous system</b>							
Topic 15. Examination of kidneys and bladder	9	10	2		4	4	
Topic 16. Appearance and analysis of urine	10	12	4		4	4	
Topic 17. Examination of the nervous system	11	8	2		8	2	
Topic 18. Study of sensitivity, reflexes, coordination of movements, convulsions, paresis and paralysis and their diagnostic value.		5	2		2	1	
Total according to module No. 5		35	10		14	11	
<b>Module No. 6. Examination of blood</b>							
Topic 19. Examination of blood system	12-13	14	4		6	6	
Topic 20. Examination of blood morphology and the immune system	14-15	12	2		4	6	
Total according to module No. 6		28	6		10	12	
Topic 21. Conclusion of the educational discipline "Clinical diagnosis of animal diseases"		2			2		
Total for the entire course		210	45		90	75	
Course project (work)		30					
Total hours		240					

### **3. Topics of laboratory (practical, seminar) classes**

No	Topic title	Hours
<b>Module No. 1</b>		
1.	Topic No. 1. Methods of clinical examination of an animal	6
2.	Topic No. 2 Symptoms and syndromes of diseases. Diagnosis. Prognosis	6
3.	Topic No. 3. Study of the general condition of the animal	4
<b>Module No. 2</b>		
4.	Topic 4. Basic methods of heart research	4
5.	Topic 5. Study of heart tones by auscultation. Changes in heart tones due to pathologies	4
6.	Topic 6. Heart murmurs	4
7.	Topic 7. Additional studies of the heart	4
8.	Topic 8. Investigation arteries and veins Arrhythmias. Analysis of clinical cases with pathology of the cardiovascular system	2
<b>Module No. 3</b>		
9.	Topic 9. Significance, scheme and methods of research of the respiratory system	4
10.	Topic 10. Detailed examination of upper respiratory tract and chest	2
11.	Topic 11. Auscultation of the lungs	4
<b>Module No. 4</b>		
12.	Topic 12. Examination of feed and water intake. Appetite, chewing and belching and their changes	6
13.	Topic 13. Examination of the forestomach and abomasum. Examination of liver	8
14.	Topic 14. Examination of stomach, pharynx, gastric juice, and stomach contents.	8
<b>Module No. 5</b>		
15.	Topic 15. Examination of kidneys and bladder	4
16.	Topic 16. Appearance and analysis of urine	4
17.	Topic 17. Examination of the nervous system	8
18.	Topic 18. Study of sensitivity, reflexes, coordination of movements, convulsions, paresis and paralysis and their diagnostic value.	2
<b>Module No. 6</b>		
19.	Topic 19. Examination of blood system	6
20.	Topic 20. Examination of blood morphology and the immune system	4
21.	Topic 21. Conclusion of the educational discipline "Clinical diagnosis of animal diseases"	2
Total for the entire course		90

#### **4. Topics for self-study**

No	Topic title	Hours
<b>Module No. 1</b>		
1.	Topic No. 1. Methods of clinical examination of an animal	4
2.	Topic No. 2 Symptoms and syndromes of diseases. Diagnosis. Prognosis	4
3.	Topic No. 3. Study of the general condition of the animal	4
<b>Module No. 2</b>		
4.	Topic 4. Basic methods of heart research	4
5.	Topic 5. Study of heart tones by auscultation. Changes in heart tones due to pathologies	4
6.	Topic 6. Heart murmurs	2
7.	Topic 7. Additional studies of the heart	2
8.	Topic 8. Investigation arteries and veins Arrhythmias. Analysis of clinical cases with pathology of the cardiovascular system	2
<b>Module No. 3</b>		
9.	Topic 9. Significance, scheme and methods of research of the respiratory system	4
10.	Topic 10. Detailed examination of upper respiratory tract and chest	4



11.	Topic 11. Auscultation of the lungs	4
Module No. 4		
12.	Topic 12. Examination of feed and water intake. Appetite, chewing and belching and their changes	6
13.	Topic 13. Examination of the forestomach and abomasum. Examination of liver	4
14.	Topic 14. Examination of stomach, pharynx, gastric juice, and stomach contents.	4
Module No. 5		
15.	Topic 15. Examination of kidneys and bladder	4
16.	Topic 16. Appearance and analysis of urine	4
17.	Topic 17. Examination of the nervous system	2
18.	Topic 18. Study of sensitivity, reflexes, coordination of movements, convulsions, paresis and paralysis and their diagnostic value.	1
Module No. 6		
19.	Topic 19. Examination of blood system	6
20.	Topic 20. Examination of blood morphology and the immune system	6
21.	Topic 21. Conclusion of the educational discipline "Clinical diagnosis of animal diseases"	
Total for the entire course		75

### **5. Tools for assessing expected learning outcomes:**

- exam;
- credit;
- module tests;
- presentation of laboratory and practical works;
- current (survey, testing);
- borderline (control work, essay, modules);
- final (testing, written exam).
- other types.

### **6. Teaching methods:**

- verbal method (lecture, discussion, interview, etc.);
- practical method (laboratory, practical classes);
- visual method (illustration, demonstration);
- processing learning resources (note-taking, summarising, reviewing, writing an abstract);
- video method (remote, multimedia, web-based, etc.);
- self-study (completing assignments);
- individual research work;
- other types.

### **7. Assessment methods:**

*(select necessary or add)*

- exam;
- credit;

- oral or written assessment;
- module tests;
- team projects;
- essays and reports;
- presentation of laboratory and practical works;
- presentations at academic events
- other types.

## 8. Distribution of points received by students

The assessment of students' knowledge and skills is conducted by means of a 100-point scale and is converted into national grades according to Table 1 of the current *Exam and Credit Regulations at NULES of Ukraine*.

Student's rating, points	National grading of exams and credits	
	exams	credits
90-100	excellent	pass
74-89	good	
60-73	satisfactorily	
0-59	unsatisfactorily	fail

To determine a student's rating in the discipline  $R_{DIS}$  (up to 100 points), the received assessment rating  $R_A$  (up to 30 points) is added to the academic performance rating  $R_{AP}$  (up to 70 points):  $R_{DIS} = R_{AP} + R_A$ .

## 9. Teaching and learning aids

- e-learning course of the discipline (<https://elearn.nubip.edu.ua>);
- lectures and presentations (in electronic form);
- textbooks, manuals, tutorials;
- guidelines for studying a discipline by full-time and part-time students;
- internship programmes of the discipline (if included in the curriculum).

## 10. Educational and methodological support

- електронний навчальний курс навчальної дисципліни (на навчальному порталі НУБіП України eLearn: <https://elearn.nubip.edu.ua/course/view.php?id=5307>)
- Лабораторне дослідження сечі. Методичні вказівки до проведення практичних занять / М.І. Цвіліховський, Т.І. Левищенко, О.М. Якимчук, В.О. Бондар та ін.. К., НУБіП України. 2014. 45 с.
- Здорове і хворе серце тварин. Методичні вказівки для підготовки лікаря ветеринарної медицини ОКР «Магістр» / Цвіліховський

- М.І., Береза В.І., Палюх Т.А., Немова Т.В. та інші. К. «Компринт». 2014. 37 с.
- Як уникнути помилок при дослідженні та побудові діагнозу хвороб системи дихання в тварин? Методичні вказівки для підготовки лікаря ветеринарної медицини ОКР «Магістр» / Береза В.І., Палюх Т.А., Немова Т.В. та інші. К., «Компринт». 2014. 33 с.
  - Ультразвукова діагностика хвороб нирок у дрібних домашніх тварин. Методичні вказівки для підготовки фахівців ОКР «Магістр» / Боднар В.О., Якимчук О.М., Немова Т.В., Павелиця О.О. та ін. К., «Компринт». 2014. 49с.
  - Боднар В.О., Якимчук О.М., Маринюк М.О., Обруч М.М. Сучасні методи діагностики у ветеринарній медицині дрібних домашніх тварин: (МАГНІТНО-РЕЗОНАНСНА ТОМОГРАФІЯ). Частина 2: Методичні вказівки для підготовки фахівців ОС «Магістр» за спеціальністю 211 – Ветеринарна медицина. К., «ЦП»КОМПРИНТ», 2017. 35 с.
  - Цвіліховський М.І., Якимчук О.М., Маринюк М.О., Костюк О.С., Якимчук І.М. Сучасні методи дослідження серця. К., «ЦП «КОМПРИНТ», 2020. 24 с.
  - Цвіліховський М.І., Якимчук О.М., Маринюк М.О., Якимчук І.М. Діагностика хвороб серцево-судинної системи. К., «ЦП «КОМПРИНТ», 2020. 26 с.
  - Цвіліховський М.І., Якимчук О.М., Маринюк М.О., Костюк О.С., Якимчук І.М. Сучасна електрокардіографія тварин. К., «ЦП «КОМПРИНТ», 2020. 22 с.
  - Цвіліховський М.І., Якимчук О.М., Маринюк М.О., Якимчук І.М. Діагностика хвороб дихальної системи тварин. К., «ЦП «КОМПРИНТ», 2020. 24 с.

## 11. Recommended sources of information

1. Clinical examination of organs and systems of animals. Training Manual / For the training of specialists in the field of knowledge "Veterinary Medicine" of higher education institutions / [M. Tsvilikhovskiy, O. Yakymchuk, M. Maryniuk, I. Yakymchuk, O. Berezovska]; for ed. M.I. Tsvilikhovskiy. K.: CP "KOMPRINT", 2018. 370 p.
2. Клінічна діагностика внутрішніх хвороб тварин / За ред. В.І. Левченко. Біла Церква. 2017. 544 с
3. Цвіліховський М.І., Боднар В.О., Якимчук О.М., Маринюк М.О. Практикум з клінічної діагностики хвороб тварин. К., «ЦП»КОМПРИНТ», 2017. 307 с.
4. Цвіліховський М.І., Якимчук О.М., Боднар В.О., Маринюк М.О., Обруч М.М., Якимчук І.М. Клінічне дослідження органів і систем тварин: навчальний посібник. К., "ЦП"КОМПРИНТ". 2017. 382 с.

5. Цвіліховський М.І., Якимчук О.М., Маринюк М.О., Бондар В.О., Якимчук І.М., Іванченко Н.Ю. Клінічна діагностика хвороб тварин. Частина 1. Інструментальні методи дослідження серця тварин: навчальний посібник. К., "ЦП" КОМПРИНТ". 2017. 126 с.
6. Цвіліховський М.І., Береза В.І., Костенко В.М., Бойко Н.І., Голопура С.І., Грушанська Н.Г., Якимчук О.М. Спеціальна пропедевтика, терапія і профілактика внутрішніх хвороб тварин: навчальний посібник. К., "ЦП"КОМПРИНТ", 2017. 607 с.
7. [www.nbu.gov.ua/](http://www.nbu.gov.ua/) – Національна бібліотека України імені В. І. Вернадського
8. [www.dnsgb.com.ua](http://www.dnsgb.com.ua) – Національна Наукова Сільськогосподарська Бібліотека Національної Академії Аграрних Наук
9. <http://dspace.nubip.edu.ua/> – Наукова бібліотека Національного університету біоресурсів і природокористування України