NATIONAL UNIVERSITY OF LIFE AND ENVIRONMENTAL SCIENCES OF UKRAINE

Department of Internal Animal Diseases

CURRICULUM OF ACADEMIC DISCIPLINE
CLINICAL DIAGNOSIS OF ANIMAL DISEASES

Area of knowledge Veterinary medicine

Specialty _211 - "Veterinary medicine"_____

Academic programme _Master_____

Faculty (Education and Research Institute) Internal Animal Diseases

Developed by: A. O. Zemlianskyi, PhD Associate Professor_____

(position, academic degree, academic rank)

Kyiv – 2025

Description of the discipline "Clinical Diagnosis of Animal Diseases" is one of the first clinical subjects that teaches students the principles of recognizing animal diseases. It serves as an introductory foundation for studying other specialized clinical disciplines and is a methodological basis of clinical veterinary medicine.

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

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

Aim: train students to apply clinical, instrumental, and lab diagnostic methods systematically when examining animals, analyzing symptoms, and diagnosing logically.

Competences acquired:

Integral competence (IC): Solve complex problems in veterinary medicine involving research and innovation under uncertain conditions.

General competence (GC):
- Abstract thinking, analysis, synthesis
- Application of knowledge in practice
- Understanding of field and profession
- Research capability
- Lifelong learning
- Decision-making
- Quality assurance
- Special (professional) competence (SC):

- Use diagnostic tools and equipment
- Ensure occupational safety, asepsis, antisepsis
- Conduct clinical examinations
- Handle biological samples
- Organize and analyze lab diagnostics
- Treat infectious and non-infectious diseases
- Develop disease prevention strategies

Program Learning Outcomes (PLOs)

PLO 1 – Know and correctly use veterinary medical terminology.

PLO 2 – Use information from domestic and international sources to develop diagnostic, therapeutic, and business strategies.

PLO 3 – Understand the essence of physical, chemical, and biological processes in animal organisms under both normal and pathological conditions.

PLO 4 – Collect anamnesis during registration and examination of animals, and make decisions regarding effective diagnostic, treatment, and disease prevention methods.

PLO 5 – Establish a connection between clinical symptoms and laboratory findings.

PLO 10 – Propose and apply appropriate innovative methods and approaches to solve professional challenges.

PLO 20 – Possess specialized software tools for professional tasks.

Expected learning outcomes (ELO):

- Understand veterinary practice management, legal frameworks, and economic and emotional contexts.
- Apply principles of effective interpersonal interaction, including communication, leadership, teamwork, respect, and other soft skills.
- Think critically, review and evaluate literature and presentations.
- Analyze evidence critically, manage incomplete data, handle unpredictable situations, and adapt knowledge and skills to different contexts.
- Perform comprehensive clinical examinations and make independent clinical decisions.
- Develop and implement appropriate treatment plans in the best interest of each animal.
- Provide emergency and first aid to common species, prioritizing and allocating resources appropriately.
- Communicate clearly and collaborate with diagnostic institutions, incorporating test results into patient case histories.
- Use basic diagnostic equipment and conduct animal examinations according to best practices in health and biosecurity, and current regulations.
- Understand the role of digital tools and artificial intelligence in modern veterinary medicine.

2. Programme and structure of the discipline

Modules and topics	weeks	total	including				
			l	p	lab	ind.	s.st.
1	2	3	4	5	6	7	8
Module 1. GENERAL DIAGNOSTICS							
Topic 1. Essence and significance of the discipline, its connection with other subjects. Concepts of symptoms, syndromes, diagnosis, prognosis. Clinical examination protocol. Full clinical history of the patient and the concept of early disease detection. Communication skills with clients, colleagues, and support staff in written and oral form. Preliminary acquaintance with the animal: registration and anamnesis.	1-2	12	2		6		4
Topic 2. Examination of hair coat, skin, and subcutaneous tissue. Diagnostic significance of pathological changes.	3-4	13	3		6		4
Topic 3. Diagnostic significance of examining visible mucous membranes and lymph nodes. Thermometry.	5-6	10	2		4		4
Total for Module 1		**35**	**7**		**14**		**12**
Module 2. CARDIOVASCULAR SYSTEM EXAMINATION							
Topic 4. Cardiovascular system examination protocol. Inspection, palpation.	7-8	10	2		4		4
Topic 5. Examination of heart sounds by auscultation. Changes in heart sounds under pathological conditions.	9-10	10	2		4		4
Topic 6. Heart murmurs. Heart defects and their diagnosis.	11-12	8	2		4		2
Topic 7. Concept of "early detection" of cardiovascular diseases. Electrocardiography. Visual diagnostics: Ultrasound and radiographic examination of the heart.	13-14	8	2		4		2
Topic 8. Arrhythmias. Analysis of clinical cases of cardiovascular pathology.	15	6	2		2		2
Total for Module 2		**42**	**10**		**18**		**14**
Module 3. RESPIRATORY SYSTEM EXAMINATION							
Topic 9. Respiratory system examination protocol. General clinical methods for upper respiratory tract examination. Concept of early detection of respiratory diseases.	1	10	2		4		4
Topic 10. Diagnostic significance of chest examination in the lung area by inspection, palpation, and percussion.	2	8	2		2		4
Topic 11. Lung auscultation and its diagnostic significance. Basic respiratory sounds and their changes under physiological and pathological conditions. Visual diagnostics: Radiographic examination of the respiratory system. Clinical case analysis.	3	10	2		4		4
Total for Module 3		**30**	**6**		**10**		**12**
Module 4. DIGESTIVE SYSTEM AND LIVER EXAMINATION							
Topic 12. Digestive system examination protocol. Clinical significance of oral cavity, pharynx, esophagus, crop, and rumen examination.	4	14	2		6		6

Topic	Week	Total					
Topic 13. External examination of the abdominal cavity organs and its clinical significance (pre-stomach, abomasum, and stomach examination). General clinical methods for liver examination.	5	14	2		8		4
Topic 14. Examination of stomach and intestines in monogastric animals. Visual diagnostics: Endoscopy. Concept of early detection of digestive diseases. Clinical case analysis.	6	14	2		8		4
Total for Module 4		**42**	**6**		**22**		**14**
Module 5. URINARY AND NERVOUS SYSTEM EXAMINATION							
Topic 15. Urinary system examination protocol. Early detection concept. Diagnostic significance of clinical methods for kidney and urinary tract examination. Visual diagnostics: ultrasound, X-ray, biopsy, cystoscopy.	7	10	2		4		4
Topic 16. Examination of physical-chemical properties of urine and their diagnostic significance. Urine sediment examination. Clinical case analysis.	8-9	12	4		4		4
Topic 17. Nervous system examination protocol. Early detection concept. Visual diagnostics: radiography, MRI, CT, EEG, chronaximetry, myelography, radiotelemetry.	10	8	2		4		2
Topic 18. Examination of animal behavior, skull, spine, sensory organs and their diagnostic significance. Sensitivity, reflex, coordination, seizure, paresis, and paralysis examination. Clinical case analysis.	11	5	2		2		1
Total for Module 5		**35**	**10**		**14**		**11**
Module 6. BLOOD SYSTEM EXAMINATION							
Topic 19. Blood system examination protocol. Diagnostic significance of physical and morphological blood indicators. Leukogram and its diagnostic value. Leukocytosis, leukopenia and their clinical relevance.	12-13	14	4		6		6
Topic 20. Biochemical blood examination. Clinical cases: analysis of blood indicators in various pathologies in animals.	14	12	2		4		6
Total for Module 6		**28**	**6**		**10**		**12**
Topic 21. Summary of the course "Clinical Diagnostics of Animal Diseases". Diagnostic logic based on knowledge, skills, and competencies. Clinical history of a patient (through clinical cases).	15	2			2		
Course work							
Total Hours		**210**	**45**		**90**		**75**

3. Topics of lectures

No.	Topic	Hours
1.	Clinical examination protocol. Full clinical history of the patient and the concept of early disease detection. Communication skills with clients, colleagues, and support staff in written and oral form.	2
2.	Examination of hair coat, skin, and subcutaneous tissue	2
3.	Diagnostic significance of examining visible mucous membranes and lymph nodes	2
4.	Cardiovascular system examination protocol	2
5.	Examination of heart sounds by auscultation	2
6.	Heart murmurs	2
7.	Electrocardiography. Visual diagnostics: Ultrasound and radiographic examination of the heart	2
8.	Arrhythmias	2
9.	Respiratory system examination protocol.	2
10.	Diagnostic significance of chest examination in the lung area by inspection, palpation, and percussion	2
11.	Lung auscultation and its diagnostic significance	2
12.	Digestive system examination protocol	2
13.	. External examination of the abdominal cavity organs and its clinical significance (pre-stomach, abomasum, and stomach examination).	2
14.	Examination of stomach and intestines in monogastric animals. Visual diagnostics	2
15.	Urinary system examination protocol	2
16.	Examination of physical-chemical properties of urine and their diagnostic significance	2
17.	Nervous system examination protocol.	2
18.	Examination of animal behavior, skull, spine, sensory organs and their diagnostic significance	4
19.	Blood system examination protocol	2
20.	Biochemical blood examination	2
21.	Diagnostic logic based on knowledge, skills, and competencies. Clinical history of a patient (through clinical cases).	3

Total 45 hours

4. Topic of laboratory (practical, seminars) classes

№	Topic Title	Hours
	Module 1	
1	General Diagnostics. Approach to animals and their restraint	4
2	Registration and anamnesis. Determination of body condition	2
3	Examination of hair (fur) cover, skin, and subcutaneous tissue	4
4	Examination of visible mucous membranes	2
5	Examination of lymph nodes. Thermometry	2
	Module 2	
6	Examination of the cardiovascular system. Heart impulse. Percussion and its clinical significance	4
7	Auscultation of the heart. Heart sounds	4
8	Heart murmurs. Defects	4
9	ECG	2
10	Examination of vessels. Venous and arterial pressure	2
11	Arrhythmias	2
	Module 3	
12	Examination of the respiratory system. Upper airways	2
13	Inspection, palpation, percussion of chest area	4
14	Auscultation of lungs and its clinical significance	4
15	Radiological examination of respiratory organs	2
	Module 4	
16	Examination of digestive system. Appetite, feed and water intake	2
17	Examination of oral cavity, pharynx, esophagus	2
18	Probing of esophagus, stomach, rumen, crop, reticulum	4
19	External examination of abdominal organs in cattle (rumen, reticulum, omasum, abomasum, intestines)	4
20	External examination of abdominal organs in horses, pigs, and small animals	2

21	Intestinal examination. Rectal examination	4
22	Radiological examination of abdominal organs	2
23	Clinical methods of liver examination	2
Module 5		
24	Examination of urinary system. Clinical methods	2
25	Catheterization of urethra and bladder	2
26	Physical and chemical properties of urine. Sediment examination	4
27	Ultrasound and X-ray of kidneys	2
28	Nervous system examination. Behavior, sensory organs, sensitivity, reflexes	4
Module 6		
30	Blood system examination. Blood sampling, morphology, smear preparation, fixation, staining	4
31	Leukogram interpretation	4
32	Study of biochemical indicators of blood	2

Total 90 hours

5. Topics of self-study

№	Topic Title	Hours
1	Features of developing communication skills with clients, colleagues, and auxiliary personnel in veterinary practice	2
2	Use of auscultation in veterinary medicine and its diagnostic and practical significance	4
3	Introduction to additional methods of clinical examination of animals	6
4	Modern diagnostic methods for cardiovascular diseases: visual diagnostics and electrocardiography	6
5	Analysis of diagnostic aspects of clinical cases with cardiovascular pathology	6
6	Additional methods for examination of the respiratory system in animals and their analysis	6
7	Analysis of diagnostic aspects of clinical cases with respiratory pathology	6
8	Additional methods for examination of the digestive system in animals and their analysis	6
9	Analysis of diagnostic aspects of clinical cases with digestive system pathology	6
10	Additional methods for examination of the urinary system in animals and their analysis	6
11	Application of modern non-invasive methods for diagnosis of the nervous system in animals	6
12	Methods of blood sampling in poultry. Morphological examination of poultry blood	6
13	Diagnostic reasoning based on acquired knowledge, practical skills, and competencies. Clinical history of the patient (based on case studies)	6

Total 75 hours

6. Methods of assessing expected learning outcomes:
(select necessary or add)
– oral or written survey;
– interview;
– test;
– defending laboratory/practical, design/graphical works, projects;
– peer-to-peer assessment, self-assessment.

7. Teaching methods *(select necessary or add):*
– problem-based method;
– practice oriented studying method;

– case method;
– project education method;
– flipped classroom, mixed education method;
– research based method;
– learning discussions and debates method;
– team work, brainstorm method
– gamification studying method.

8. Results assessment.

The student's knowledge is assessed by means of a 100-point scale converted into the national grades according to the "Exam and Credit Regulations at NULES of Ukraine" in force

8.1. Distribution of points by types of educational activities

Type of Educational Activity	Learning Outcome	Assessment
Module 1. GENERAL DIAGNOSTICS (5th semester)		
Lecture 1	-	-
Lab Work 1	Understand the discipline's role, terms (symptom, diagnosis, etc.), restraint, clinical protocol	10
Lab Work 2	Conduct animal registration, anamnesis; apply collected data	5
Lab Work 3	Determine animal habitus, assess general condition	10
Independent Work 1	Know auscultation method and diagnostic significance	5
Lecture 2	-	-
Lab Work 4	Know examination sequence; examine skin/hair in different species	10
Lab Work 5	Distinguish skin pathologies; analyze/interpret data; use modern diagnostic tests	10
Independent Work 2	Know additional diagnostic methods	5
Lecture 3	-	-
Lab Work 6	Examine mucous membranes, identify changes, interpret results	10
Lab Work 7	Examine lymph nodes, perform thermometry; analyze data	5
Module Control Work	-	30
Total for Module 1	-	**100**
Module 2. CARDIOVASCULAR SYSTEM EXAMINATION		
Lecture 4	-	-
Lab Work 8	Know cardiovascular protocol; inspect/palpate; assess heart impulse	10
Lecture 5	-	-
Lab Work 9	Palpate/percuss heart; assess tone changes; interpret findings	10
Lecture 6	-	-
Lab Work 10	Distinguish murmurs; diagnose heart defects; understand causes	10
Lab Work 11	Measure pulse, blood pressure; interpret data	10
Lecture 7	-	-
Lab Work 12	Apply ECG, ultrasound, X-ray; analyze and interpret results	10
Lecture 8	-	-
Lab Work 13	Understand arrhythmias and ECG interpretation	10
Independent Work 3	Know theoretical basis for cardiovascular diagnostics	10
Module Control Work	-	30
Total for Module 2	-	**100**
Module 3. RESPIRATORY SYSTEM EXAMINATION (6th semester)		
Lecture 9	-	-
Lab Work 1	Perform upper airway examination; interpret results	10
Lab Work 2	Understand percussion of chest; inspect, palpate, percuss thorax	10
Independent Work 1	Know additional diagnostic methods for respiratory system	20

Lecture 10	-	-
Lab Work 3	Distinguish lung sounds; master auscultation; interpret results	10
Lab Work 4	Master radiological exam; evaluate findings from auscultation and radiology	20
Module Control Work	-	30
Total for Module 3	-	**100**
Module 4. DIGESTIVE ORGANS AND LIVER EXAMINATION		
Lecture 11	-	-
Lab Work 5	Know digestive protocol; inspect oral cavity, esophagus, forestomachs	10
Lab Work 6	Probe esophagus in various species	10
Lecture 12	-	-
Lab Work 8	Inspect/palpate abdomen; assess forestomachs and interpret results	10
Lab Work 9	Know and apply liver exam techniques	10
Lecture 13	-	-
Lab Work 7	Perform stomach and intestine exams in monogastrics; interpret findings	10
Lab Work 10	Use radiology in GI exams; identify pathology	10
Independent Work 2	Know GI exam methods; understand endoscopy in animals	10
Module Control Work	-	30
Total for Module 4	-	**100**
Module 5. INVESTIGATION OF THE URINARY AND NERVOUS SYSTEMS		
Lecture 14	Urinary system examination protocol. "Early detection" concept in urinary diseases. Diagnostic value of clinical methods for kidney and urinary tract examination. Imaging diagnostics: ultrasound, X-ray, biopsy, cystoscopy.	-
Lab Work 11	Know the protocol and clinical/special methods for kidney and urinary tract examination. Be able to examine kidneys and urinary tract. Analyze identified changes. Understand results of clinical and special methods. Distinguish normal and pathological findings. Use these methods to assess urinary system.	10
Lab Work 12	Know indications and technique of catheterization in animals. Be able to perform catheterization in different species.	10
Lecture 15	Physical and chemical properties of urine and their diagnostic significance. Urine sediment analysis. Case analysis of urinary system pathology.	
Lab Work 13	Know methods of urine sediment collection and examination. Analyze and interpret findings. Distinguish normal from pathological results. Use data for clinical interpretation.	10
Lab Work 14	Know methods of urine collection and storage; determination of physical and chemical properties. Be able to perform and analyze these tests. Distinguish normal from pathological results. Use data for clinical interpretation.	10
Lecture 16	Nervous system examination protocol. "Early detection" of nervous system diseases. Imaging diagnostics: X-ray, MRI, CT, EEG, chronaximetry, myelography, radiotelemetry. Diagnostic value of behavior, skull, spine, sensory organ assessment. Diagnostics of sensitivity, reflexes, coordination, seizures, paresis, paralysis.	-
Lab Work 15	Know protocol and methods of nervous system examination in animals. Understand behavioral and neurological assessments. Analyze and interpret findings. Distinguish normal from pathological conditions.	10

Self-study 3	Know additional diagnostic methods for animal nervous system.	10
Module Control Work	-	30
Total for Module 5	-	**100**
Module 6. INVESTIGATION OF THE BLOOD SYSTEM		
Lecture 17	. Blood system examination protocol. Diagnostic value of physical and morphological blood indices. Leukogram: leukocytosis, leukopenia and their clinical significance. Blood biochemistry. Case analysis: blood parameters in various pathologies.	
Lab Work 16	Know and be able to collect blood from different animal species. Know storage times for tests.	10
Lab Work 17	Know methods for determining erythrocytes and their diagnostic significance. Distinguish normal from pathological changes.	10
Lab Work 18	Know methods for determining leukocytes. Understand diagnostic value. Distinguish normal from pathological changes.	10
Lab Work 19	Know techniques for preparing and staining blood smears. Understand differences in staining methods.	10
Lab Work 20	Understand changes in leukogram components and their clinical significance. Analyze and interpret leukocyte changes.	10
Lab Work 21	Be able to perform biochemical blood tests. Interpret findings and their clinical significance.	10
Self-study 4	Be able to collect blood from poultry. Know specific features of blood analysis in poultry.	10
Module Control Work	-	30
Total for Module 6	-	**100**
Lecture 18	. Summary of the discipline "Clinical Diagnostics of Animal Diseases". Logic of diagnosis based on acquired knowledge, skills, and competencies. Clinical case history (using clinical case examples).	
Semester Academic Work	Based on average of M3–M6, weighted 70%	<70
Exam	–	30
Total for Course	Academic Work + Exam	<100
Coursework	–	100

8.2.   Scale for assessing student's knowledge

Student's rating, points	National grading (exam/credits)
90-100	excellent
74-89	good
60-73	satisfactory
0-59	unsatisfactory

8.3.   Assessment policy

Deadlines and exam retaking rules	*EXAMPLE:* works that are submitted late without valid reasons will be assessed with a lower grade. Module tests may be retaken with the permission of the lecturer if there are valid reasons (e.g. a sick leave).
Academic integrity rules	*EXAMPLE:* cheating during tests and exams is prohibited (including using mobile devices). Term papers and essays must have correct references to the literature used
Attendance rules	*EXAMPLE:* Attendance is compulsory. For good reasons (e.g. illness, international internship), training can take place individually (online by the faculty dean's

	consent)

9. **Teaching and learning aids:**

- electronic training course of the academic discipline (on the educational portal of the NUBiP of Ukraine eLearn:

Lecture notes, presentations (in electronic form)

Textbooks, manuals, workshops:

1. Clinical diagnosis of animal diseases: Manual / M.I. Tsvilikhovskii, O.M. Yakymchuk, M.O. Maryniuk, A.O. Zemlianskyi. Kyiv : NUBiP Ukraine, 2024. 340 p.

2. Tymoshenko O.P., Zemlianskyi A.O. «Lipid metabolism in internal pathology of dogs» Kyiv, KOMPRINT Publishing House, 2024 – 183 p.

3. Morozenko, D., Dotsenko, R., Vashchyk, Y., Zakhariev, A., Zemlianskyi, A., Seliukova, N., & Dotsenko, E. (2021). Biochemical markers of connective tissue metabolism in the diagnostics of respiratory diseases in human and animals: retrospective analysis (1984–2010). ScienceRise: Biological Science, (4 (29)), 30-35

4. Dotsenko, R., Vashchyk, Y., Zakhariev, A., Zemlianskyi, A., Seliukova, N., Gliebova, K., & Kostyshyn, L. M. (2022). Prevalence of internal diseases of dogs and cats: a retrospective analysis (1994–2014). ScienceRise: Biological Science, (2 (31)), 8-12.

5. Dotsenko, R., Vashchyk, Y., Zakhariev, A., Zemlianskyi, A., Seliukova, N., Gliebova, K., & Kostyshyn, L. M. (2022). Prevalence of internal diseases of dogs and cats: a retrospective analysis (1994–2014). ScienceRise: Biological Science, (2 (31)), 8-12.

6. Morozenko, D., Dotsenko, R., Vashchyk, Y., Zakhariev, A., Zemlianskyi, A., Seliukova, N., ... & Kostyshyn, L. M. (2022). The role of connective tissue biopolymers in the pathogenesis of dog bronchopneunmonia and cat brochnial asthma. ScienceRise: Biological Science, (2 (31)), 13-17.

7. Biochemical parameters of blood in cats with cardiogenic arterial thromboembolism and acute heart failure Ukrainian Journal of Veterinary Sciences, 14(1), 74-89. doi: 10.31548/veterinary1.2023.74.

8. Tsvilikhovskyi M.I., Yakymchuk O.M., Maryniuk M.O., Yakymchuk I.M., Bondar V.O. Clinical diagnostics of animal diseases. Textbook. K.: "CP "Komprint", 2022. 387 p.

9. Tsvilikhovskyi M.I., Yakymchuk O.M., Maryniuk M.O., Bondar V.O., Yakymchuk I.M. Workshop on clinical diagnostics of animal diseases; edited by M.I. Tsvilikhovsky. K.: "TsP Komprint", 2019. 307 p.

10. Tsvilikhovskii M.I., Yakymchuk O.M., Maryniuk M.O., Yakymchuk I.M. Clinical study of animal organs and systems. Textbook. K., Komprint, 2023. 372 p.

11. Tsvilikhovskii M.I., Yakymchuk O.M., Maryniuk M.O., Zemlianskyi A.O. Clinical diagnosis of animal diseases: Manual . Kyiv : NUBiP Ukraine, 2024. 340 p.

12. Tsvilikhovskii M.I., Yakymchuk O.M., Bondar V.O., Maryniuk M.O., Obruch M.M., Yakymchuk I.M. Clinical study organs and systems of animals: a textbook. K., "TsP" KOMPRINT". 2017. 382 p.

13. Tsvilikhovsky M.I., Yakymchuk O.M., Marynyuk M.O., Bondar V.O., Yakymchuk I.M., Ivanchenko N.Yu. Clinical diagnostics of animal diseases. Part 1. Instrumental methods of studying the heart of animals: a textbook. K., "TsP" KOMPRINT". 2017. 126 p.

14.   Clinical diagnostics of internal diseases of animals / Ed. V.I. Levchenko. Bila Tserkva. 2017. 544 p.

Methodological materials for studying the academic discipline
1.   Tsvilikhovsky M.I., Yakymchuk O.M., Marynyuk M.O., Kostyuk O.S., Yakymchuk I.M. Modern methods of studying the heart. K., "TsP "KOMPRINT", 2020. 24 p.
2.   Tsvilikhovskyi M.I., Yakymchuk O.M., Marynyuk M.O., Yakymchuk I.M. Diagnosis of diseases of the cardiovascular system. K., "Central Research Center "COMPRINT", 2020. 26 p.
3.   Tsvilikhovskyi M.I., Yakymchuk O.M., Marynyuk M.O., Kostyuk O.S., Yakymchuk I.M. Modern electrocardiography of animals. K., "Central Research Center "COMPRINT", 2020. 22 p.
4.   Tsvilikhovskyi M.I., Yakymchuk O.M., Marynyuk M.O., Yakymchuk I.M. Diagnosis of diseases of the respiratory system of animals. K., "Central Research Center "COMPRINT", 2020. 24 p.
5.   Palyukh T.A., Nemova T.V., Pavelytsya O.O., Bereza V.I., Tsvilikhovsky M.I. Heart diseases of animals (in questions and answers). K.: "CP "COMPRINT", 2020. Boyko N.I., Nemova T.V. Laboratory equipment and features of blood sampling from different species of animals for hematological studies. Compprint, 2021. 21 p.
6.   Boyko N.I., Nemova T.V., Boyko G.V. Counting the number of erythrocytes in different species of animals and their interpretation. Compprint, 2021. 19 p.
7.   Boyko N.I., Nemova T.V., Drobot M.V. Counting the number of leukocytes in different species of animals and their interpretation, Compprint, 2021. 21 p.
8.   Boyko N.I., Nemova T.V., Palyukh T.A. Counting the number of platelets in different species of animals and their interpretation. Compprint, 2021. 26 p.
9.   Tsvilikhovsky M.I., Yakymchuk O.M., Marynyuk M.O., Yakymchuk I.M., Yakymchuk M.S. Clinical and laboratory changes in the body of dogs and cats with pathologies of the urinary system. K.: "Central Research Center "KOMPRINT", 2021. 42 p.
10.   Tsvilikhovsky M.I., Yakymchuk O.M., Marynyuk M.O., Yakymchuk I.M. Changes in blood parameters of animals with pathologies. K.: "Central Research Center "KOMPRINT", 2022. 49 p.
11.   Tsvilikhovsky M.I. Yakymchuk O.M., Marynyuk M.O., Yakymchuk I.M. Diagnosis of heart defects". Methodological instructions for performing laboratory and independent work on the discipline "Clinical diagnostics of animal diseases". K., Central Research Center "Komprint", 2023. 24p.
12.   Tsvilikhovsky M.I., Yakymchuk O.M., Marynyuk M.O. "MICROSCOPIC RESEARCHES OF URINARY SEDIMENT OF ANIMALS". Methodological instructions for performing laboratory and independent work on the discipline "Clinical diagnostics of animal diseases". K., CP "Komprint", 2023. 40 p.
13.   Nemova T.V., Palyukh T.A., Marynyuk M.O., Zemlyansky A.O. Diary for completing educational practice on the discipline "Clinical diagnostics of animal diseases" for 3rd year students of the OS "Master". K.: "CP "KOMPRINT", 2025. 38 p.
14.   Nemova T.V., Palyukh T.A., Marynyuk M.O., Zemlyansky A.O. Methodological instructions for writing a course work on the discipline "Clinical diagnostics of animal diseases" for 3rd year students of the Master's degree program. Kyiv: "Comprint Publishing House", 2025. 36 p.

Practice program: attached

15. Recommended sources of information

1. Golopura S.I., Tsvilikhovsky M.I. Metabolic disorders and colostral immunity in cattle and their correction: Monograph . K., CP "COMPRINT". 2021. 408 p.

2. Plysyuk V. M., Palyukh T. A., Tsvilikhovsky M.I. Diagnosis of cardiomyopathies in a domestic cat. Monograph. Kyiv., NUBiP of Ukraine, 2024. – 139 p.

3. Lokes-Krupka T.P., Tsvilikhovsky M.I., Zarytsky S.M. Clinical signs of hypothyroidism in domestic dogs. Scientific Bulletin of the Lviv National University of Veterinary Medicine and Biotechnology named after S.Z. Gzhytsky. Series: Veterinary Sciences. 2021, T. 22. No. 99. P. 80-83.

4. Koshchavka M.M., Boyko N.I., Tsvilikhovsky M.I. Results of morphological study of blood of cows during heat shock depending on the stages of temperature-humidity index. Scientific reports of NUBiP of Ukraine, 2020. No. 6 (88).

5. Lokes-krupka T. P., Tsvilikhovsky M. I., Kanivets N. S., Kravchenko S. O., Burda T. L. Structural changes in the internal organs of domestic cats and dogs in case of obesity caused by diabetes mellitus // Bulletin of Poltava DAA. - 2020. - No. 2(97). - P.194-202.

6. Sirenko R.P., Tsvilikhovsky M.I. Multicenter retrospective study on the prevalence of idiopathic cystitis in domestic cats in a megalopolis. Scientific Veterinary Bulletin. 2021. Issue 2. P.126-135.

7. Kaziev Zh., Golopura S., Tsvilikhovsky M., Boyko N. Ushkalov A. Diagnostic studies for enterotoxemia in rabbits Ukrainian Journal of Veterinary Sciences", Vol. 15, No. 3, 2024 https://doi.org/10.31548/veterinary3.2024.94

8. Tretyakova K. M., Nemova T. V., Solomon V. V., Ishchenko V. D. Preclinical studies of the phytocomplex Atoxvet. Monografia pokonferencejna. Science, research, development No. 37. Warszawa, 2021. pp. 54-60.

9. Holopura S., Boiko N., Nemova T., & Tsvilikhovskiy M. Impact of stress on the body of service dogs and alleviation methods: Literature overview. Scientific Reports of the National University of Life and Environmental Sciences of Ukraine, 2024, 20(6), 138-150. doi: 10.31548/dopovidi/6.2024.138

10. Farafonov S., Yaremko O., Verkholiuk M., Muzyka L., Gutyj B., Marenkov O., Lykhach V., Nemova T., Khmelova O., Mylostyvyi R. Determining Trace Elements in the Hair of Beef Cattle as a Non-Invasive Method for Assessing Mineral Metabolism. Journal of Animal Health and Production. 2024, Vol. 12, Sp. Iss. 1, P. 332-337.