

Ministry of Education and Science of Ukraine
Sumy National Agrarian University
Faculty of Veterinary Medicine
Department of Internal Medicine, Pharmacy and Biochemistry

Syllabus of the educational component

EK 24. Clinical and laboratory diagnostics of animal diseases

mandatory

Specialty	211 "Veterinary Medicine"
Educational program	"Veterinary Medicine"
Level of higher education	second (master's)

Sumy 2026 year

Developer:  Rymma DOLBANOSOVA, Candidate of Science in
(signature) Vet., Associate Professor (surname, initials) (academic degree and title, position)

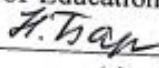
Reviewed, approved and ratified at the department meeting internal medicine, pharmacy and biochemistry	protocol from 2026 No.
	Manager departments <u></u> <u>Oleksandr NECHIPORENKO</u> (signature) (last name, initials)

Agreed:

Educational program guarantor  Oleksandr CHEKAN
(signature) (full name)

Dean of the Faculty,
where the educational program is implemented  Lyudmila NAGORNA
(signature) (full name)

A review of the work program (attached) was provided by:  Halyna REBENKO
(Full name)
 Oleksandr LUCHEPUS
(Full name)

Methodologist of the Department of Educational Quality,
licensing and accreditation  N. Baranish
(signature) (full name)

Registered in the electronic database: date: 16.06. 2026.

1. GENERAL INFORMATION ABOUT THE EDUCATIONAL COMPONENT

1.	Name OK	OK 24. Clinical and laboratory diagnostics of animal diseases		
2.	Faculty/department	Veterinary medicine/ internal medicine, pharmacy and biochemistry		
3.	Status OK	Mandatory		
4.	Program/Specialty (programs), part of which is the OK for (<i>filled in for mandatory OKs</i>)	Veterinary medicine /211 Veterinary medicine		
5.	The OK can be offered for (<i>filled in for selective OKs</i>)	-		
6.	NRC level	7th		
7.	Course, semester and duration of study	3rd year, 5-6th semester, 15+15 weeks		
8.	Number of ECTS credits	10.0		
9.	Total hours and their distribution	Contact work (classes)		Independent work
		Lectures	Practical/seminar	Laboratory
		14		46
		30		60
10.	Language of instruction	Ukrainian		
11.	Teacher/Educational Component Coordinator	Dolbanosova Rimma Valentinivna Musienko Oleksiy Volodymyrovych		
11.1	Contact information	e- mail - rimma19-82@ukr.net , aleksey_musya@ukr.net		
12.	General description of the educational component	" Clinical and laboratory diagnostics of animal diseases" is one of the profile clinical disciplines that form a doctor of veterinary medicine. It teaches the principles of recognizing animal diseases and is the methodological basis of clinical veterinary medicine. For effective treatment of animals, prognosis of diseases, the ability to recognize diseases, group them into pathogenetically related symptom complexes and based on this to draw a conclusion - to establish a diagnosis. All clinical disciplines are based on diagnostics. Clinical examination methods are used in the diagnosis of diseases of various etiology - internal, surgical, gynecological, infectious, parasitic. The importance of the discipline for the formation of a veterinary doctor is increasing with the introduction of specialization of farms, the use of the latest technologies for keeping and feeding productive animals, and the growth of the number of domestic animals.		
13.	Purpose of the educational component	The purpose of studying the educational component is to form in students a holistic system of knowledge about the methods of clinical and laboratory diagnostics necessary for the detection, assessment and control of pathological processes in animals. Students must to master modern methods of clinical research and laboratory analysis , learn interpret received results in combination with clinical manifestations diseases . The educational component is also aimed at developing students' skills in working with modern diagnostic equipment, laboratory test systems, electronic databases and standards,		

		which will ensure the readiness of future specialists for practical veterinary activities, scientific research and the implementation of the latest technologies in the field of veterinary medicine.
14.	Prerequisites for studying OK, connection with other educational components of OP	1. The educational component, being the basis for clinical subjects, is based on the foundation of general theoretical disciplines: anatomy, physiology, pathological physiology, chemistry, without the knowledge of which it is impossible to successfully master this subject. 2. The educational component is the basis for internal non-communicable diseases, obstetrics, surgery, epizootology, parasitology
15.	Logistics and technical support for the implementation of the OK	The SNAU practice bases for conducting student internships are the Veterinary Office of the Veterinary Medical Center « Vet camp » FVM, SNAU clinic (vivarium) . Private veterinary clinics in Sumy " Health " Center , " Vetservice " , "10 Friends" Veterinary Center. Practice bases meet the following requirements: availability of information support for interns regarding the latest technologies used in the field of veterinary medicine, the right to use technical and other documentation necessary for the implementation of the practice program.
16.	Academic Integrity Policy	Learning of the OK with observance of academic integrity, plagiarism is prohibited. In case of violation of these requirements, it is proposed to retake the assessment (test, exam, credit, etc.), in case of repeated violation. Use of electronic devices during the final knowledge control - suspension from performing the work, retaking the final control. In case of participation in any other activity related to violation of the rules and norms of academic integrity - re-study of the OK.
17.	Keywords	animal diagnostics, clinical examination, general condition of the animal, physiological parameters, laboratory methods, differential diagnostics, interpretation of results, examination protocols https://cdn.snau.edu.ua/moodle/course/view.php?id=4409

2. LEARNING OUTCOMES BY EDUCATIONAL COMPONENT AND THEIR RELATIONSHIP WITH PROGRAM LEARNING OUTCOMES

Learning outcomes for OK: After studying the educational component, the student is expected to be able to...	Program learning outcomes that the OC aims to achieve (indicate the number according to the numbering)			How is RND assessed?
	PRN 4.	PRN 5.	PRN 7.	
DRN 1. Analyze complex anamnestic and clinical data taking into account the species, age and production characteristics of animals. Assess the clinical condition of animals based on the integration of the results of physical , laboratory and instrumental examinations. To justify the choice and sequence of application of diagnostic, therapeutic and preventive measures in complex clinical cases. Develop individualized diagnostic and treatment-and-prophylactic algorithms taking into account the risks and prognosis of the disease.	+	+	+	– analysis of clinical cases (case-study) ; – practical work on clinical examination of animals; – oral interview with justification of diagnostic decisions; – modular control (situational tasks); – exam (theoretical + practical part).
DRN 2. Analyze comprehensive laboratory test results in relation to clinical symptoms and disease course. Evaluate the diagnostic significance and limitations of laboratory methods in specific clinical and production settings. To justify clinical and diagnostic conclusions based on evidence-based interpretation of laboratory, instrumental and clinical data. Develop strategies for further diagnostic support and monitoring of the condition of animals.		+	+	– interpretation of laboratory protocols; – solving situational problems; – test control with analytical questions; – written conclusions based on the results of clinical and laboratory studies; – exam.
DRN 3. Evaluate the effectiveness of animal housing, feeding, and treatment systems	+	+	+	– analysis of production situations; – individual tasks/ projects ;

based on clinical, laboratory, and production and economic indicators. Analyze the cause-and-effect relationships between technological solutions and the level of morbidity and productivity of animals. To justify management and veterinary preventive decisions from the standpoint of evidence-based veterinary medicine and biosafety . Develop comprehensive programs for the prevention and correction of technological processes for farms of various types.				- preparation of analytical reports and recommendations ; - modular control ; - final exam .
--	--	--	--	--

3. CONTENT OF THE EDUCATIONAL COMPONENT (COURSE PROGRAM)

Topic. List of issues to be addressed within the topic	Distribution within the overall time budget				Recommended reading ¹ from the list in point 6
	Classroom work			Self-work	
	Luke	Software	Lab .		
5th semester					
Topic 1. Clinical research methods. Basic methods research . Auxiliary methods research	2		2 - Study of safety techniques when working with animals. Methods of clinical research. 2 – Basic research methods. 2 – Thermometry. Clinical study scheme. 2 - Instrumental and functional research methods.	8	[1, 4, 7, 8, 9, 19, 22]
Topic 2. Symptoms and syndromes of diseases. Diagnosis. Prognosis.	2		2 – Symptoms of diseases. syndromes of diseases. diagnosis. Prognosis of the disease. History of the disease.	10	[1, 7, 8, 9, 15, 18]
Topic 3. Study of the general condition of animals	2		2 – Habit study. Skin study. 4 - Physiological properties of the skin and their changes. Pathological changes of the skin and subcutaneous tissue Studying the stages of disease recognition 2 - Examination of mucous membranes. Examination of lymph nodes.	14	[1, 7, 8, 9, 18, 22, 24]
Topic 4. Study of the cardiovascular system. Basic research methods Auxiliary research methods	2 2		2 - Study of the heart impulse. Heart sounds. 4 – Diagnosis of heart defects . Electrocardiography. 2 - Examination of peripheral vessels. Measurement of arterial blood pressure 4 – Cardiac arrhythmias. 2 - Functional diagnostics of the cardiovascular system 2 – Main syndromes of	14	[1, 6, 7, 8, 9, 10, 16, 18, 19]

			cardiovascular failure		
Topic 5. Study of the respiratory system			2 – Respiratory system examination scheme. Examination of the nose. Examination of the larynx and trachea.	14	[1, 4, 5, 7, 8, 9, 10, 15, 16, 18]
Basic research methods	2		2 – Chest examination.		
Additional research methods	2		2 – Auscultation of the chest		
			2 - Study of the functional state of the respiratory system		
			2 – Additional methods of studying the respiratory system		
			2 – Laboratory methods for studying the respiratory system		
Total for 5 semesters	14		46	60	
6th semester					
Topic 6. Study of the digestive organs. Study of the liver.	4		2 - Visual observation of the animals' intake of food and water, detection of deviations from the norm. Examination of the mouth and oral cavity organs.	14 / 4	[1, 7, 8, 9, 12, 15, 16, 18, 23]
			2 – Examination of the pharynx. Examination Esophagus . Animal sounding		
			2 – Abdominal examination . Examination foregut and abomasum ruminants .		
			2 - Research horse stomach . Research stomach of pigs. Research stomach of dogs.		
			2 – Intestinal examination .		
			2 – General clinical methods of liver research. Research of the functional state of the liver. Main syndromes in liver diseases.		
Topic 7. Study of the urinary system	4		2 – Urine test. Kidney test.	12/4	[1, 2, 7, 8, 9, 11, 13, 15, 16, 18]
			2 - Examination of the ureters. Examination of the bladder, examination of the urethra		
			2 – Urine examination. Main syndromes of urinary system diseases		

Topic 8. Study of the nervous system of animals .	4		2 – Study of animal behavior. Study of the skull and spine. Study of the sensory organs. 2 – Sensitivity study. Motor area study. Reflex study 2 – Examination of the autonomic nervous system. Examination of cerebrospinal fluid.	12/4	[1, 7, 8, 16, 18]
Topic 9. Study of the blood system.	4		4 – Methods of obtaining blood. Determination of physical properties of blood. Biochemical examination of blood. 2 - Determination of trace elements. Determination of glucose in the blood. Determination of ketone bodies. Study of the morphological composition of the blood 2 – Spleen examination. Immune system examination. Clinical significance of resistance indicators	10/4	[1, 3, 6, 7, 8, 10, 16, 18, 19]
Topic 10. Diagnosis of metabolic disorders	6		2 – Features of the course and diagnosis of metabolic diseases. Diagnosis of disorders of protein and carbohydrate-lipid metabolism. 2 – Diagnosis of disorders of macro and microelement metabolism. 2 – Diagnosis of vitamin metabolism disorders. Diagnosis of water-salt metabolism disorders.	10/4	[1, 2 3, 6, 7, 8, 10, 11, 12, 13, 15, 16, 18, 22, 24]
Topic 11. Study of endocrine glands	4		2 – Thyroid gland examination. Pancreas examination. Parathyroid gland examination.	8/2	[1, 3, 6, 7, 8, 16]
Topic 12. Peculiarities of research on small domestic animals	2		2 – General condition study 4 – Research on individual systems	8/4	[1, 2, 3, 5, 6, 7, 8, 9, 13, 15, 16, 17, 18, 19, 24]
Topic 13. Features of bird research.	4		2 – Embryo research. Bird research. 2 – General study of poultry. Study of individual systems.	8 /2	[1, 3, 7, 8, 21]
Topic 14. Fundamentals of veterinary radiology. Ultrasound diagnostics	-		2 – Nature of X-rays. Methods of their production. X-ray apparatus. Methods of X-ray examination. 2 – Safety techniques when working with X-ray machines.	8/2	[1,4, 5, 7, 8, 16, 18]

			Use of X-ray examination for the diagnosis of skeletal diseases. 2 – The use of X-ray examination for the diagnosis of respiratory diseases, diseases of the cardiovascular and digestive systems. 2 – Ultrasound diagnostics. Endoscopic research methods. 2 – Instrumental and functional research methods.		
Total for 6 semesters	30		60	90 (60/30)	

4. TEACHING AND LEARNING METHODS

DRN	Teaching methods (work that will be carried out by the teacher <u>during classroom lessons</u> , consultations)	Number of hours	Teaching methods (what types of learning activities should <u>the student perform independently</u> *)	Number of hours
DRN 1	Analysis of complex anamnestic and clinical data. Assessment of the condition of animals of different species based on the integration of survey methods Justification of the choice of diagnostic and therapeutic measures Development of individual algorithms and forecasting Using platforms for synchronous interaction: Zoom , Microsoft Teams , Google Meet , etc.	50	Independent solution of situational tasks, where the student must make a preliminary diagnosis and justify a plan for differential diagnosis based on the description of symptoms and a set of test results. The student independently describes the results of a clinical examination of healthy and sick animals during independent training, comparing species norms. The student builds logical schemes "from symptom to diagnosis" (for example, a diagnostic algorithm for jaundice or cough syndrome). Independent training of manual skills (for example, pulse counting technique, determining liver boundaries) using checklists provided by the teacher. Using distance learning methods: Moodle , Google Classroom , https :// kahoot . com / , https :// www . mentimeter . com / , https :// www . polleverywhere . com /	50/10
DRN 2	Analysis of a clinical case, evaluating the results of the physical examination and laboratory test forms (CBC, biochemistry, urinalysis). Use of multimedia tools to demonstrate pathological processes (ultrasound video, blood smear microscopy).	56	Working with the data "packages" provided by the teacher (anamnesis + clinical picture + ZAK/BAK results). The student independently establishes a pathogenetic relationship between abnormalities in the tests and physical symptoms. Independently compiling a list of laboratory markers for the main	34/10

	Emphasis on how changes in laboratory parameters reflect the dynamics of the disease course (acute, subacute, chronic). Discussion of the diagnostic value and limitations of specific tests, for example, a rapid test can give a false positive result or why high enzyme activity does not always mean irreversible damage to the organ in specific production conditions. Clinical reasoning of the proposed measures, which force the student to prove his conclusion. Designing schemes for monitoring the condition of a sick animal. Using platforms for synchronous interaction: Zoom, Microsoft Teams, Google Meet, Skype, etc.		clinical syndromes, taking into account the stage of the disease. Independently searching and analyzing information on the limitations of laboratory tests. Processing educational materials on the influence of the conditions of sampling, storage and transportation of biomaterial on the reliability of the results in specific production (farm) or clinical conditions. Written formulation of a diagnostic conclusion for a specific case, where the student must argue each point, based on integrated data. Independently comparing the obtained laboratory data with international standards (for example, IDEXX laboratory references) to confirm the evidence of the conclusions. Drawing up a plan for further research in cases where the initial results are questionable Development of monitoring checklists: Independent creation of dynamic patient monitoring tables, which indicate which laboratory parameters and with what frequency should be monitored to assess the effectiveness of treatment or the risk of relapse. Using distance learning methods: Moodle, Google Classroom, https://kahoot.com/, https://www.mentimeter.com/, https://www.pollevywhere.com/	
DRN 3	Working with a production case, where there is data from a specific farm (microclimate indicators, rations, morbidity graphs and productivity reports) and there is a need to recognize a systemic problem in the maintenance or feeding of animals with specific clinical manifestations of pathological processes. Analysis of situations, how clinical indicators are transformed into production and economic losses of the farm. Search for the root causes of morbidity. Comparative analysis of animal maintenance and	44	Independent analysis of the provided farm indicators and their comparison with the clinical status of the animals. Independent comparison of the costs of treating a specific pathology with the potential profit from implementing the proposed prevention and monitoring scheme. Independent creation of logical schemes (e.g., diagrams) that demonstrate how a specific technological solution (type of flooring, stocking density, manure removal method) affects the occurrence of specific clinical symptoms. Processing of data on the reasons for the rearrangement of animals on the farm and establishing a connection between	36 /10

	feeding technologies and assessment of their impact on injuries, the condition of ungulates and epizootic safety. Situational tasks, where the student must convince the "farm manager" of the need for investments in veterinary prevention (for example, replacing the ventilation system), based on the predicted reduction in morbidity. Interpretation of the results of laboratory monitoring of the herd to develop strategies for correcting feeding. Using platforms for synchronous interaction: Zoom , Microsoft Teams , Google Meet , Skype, etc.		clinical diagnoses and errors in the maintenance technology. Independent search in scientific databases (e.g., PubMed , Scopus) for the results of clinical studies that confirm the effectiveness of the selected biosecurity strategy for a specific type of farm. Creation of an individual diagnostic research algorithm for new animals entering the farm in order to minimize the risks of introducing infections. Independent development of a comprehensive clinical and laboratory monitoring program for the farm. Creating a roadmap for correcting technological processes. Using distance learning methods: Moodle , Google Classroom , https:// kahoot.com/, https :// www . mentimeter . com / , https :// www . polleverywhere . com /	
--	--	--	--	--

*NOTE. Features of the implementation of the independent component of the discipline. The level of mastery of topics intended for independent study by the student is assessed during the defense of the abstract for independent work, during the thematic survey in laboratory classes and solving individual situational tasks. To achieve the goal and fulfill the tasks of educational practice, each student, working in subgroups, is obliged to complete the individual task received for the period of practice in accordance with its content, during the period of practice.

5. EVALUATION BY EDUCATIONAL COMPONENT

5.1. Diagnostic assessment (indicated as needed)

5.2. Summative assessment

5.2.1. To assess the expected learning outcomes, it is planned in the fall semester

No.	Summative assessment methods	Points / Weight in the overall score	Date of compilation
1.	Thematic poll	30 points / 30%	Weekly
2.	Working with animals. Protection of independent work (presentation materials, videos, etc.).	20 points / 20%	According to the LPP schedule and module schedule
3.	Solving situational problems	20 points / 20%	According to the schedule
4.	Testing (multiple choice test)	30 points/30%	According to schedule

5.2.2. For the assessment of expected learning outcomes, the following is provided in the spring semester:

No.	Summative assessment methods	Points / Weight in the overall score	Date of compilation
1.	Thematic survey , testing	30 points / 30%	According to the educational process schedule
2.	Working with animals. Protection of independent work (presentation materials, videos, etc.) .	20 points / 20 %	According to the LPZ schedule
3.	Solving situational problems	10 points / 10%	According to the schedule
4.	Teaching practice	10 points / 10%	According to the educational process schedule
5.	Exam - multiple choice test and written work	30 points / 30%	16 weeks, on schedule

5.2.3. Evaluation criteria

Component	Unsatisfactorily	Satisfactorily	Good	Perfectly ²
Thematic survey	<20 points	21 - 30 points	31- 39 points	40 points
	<10 points	11-15 points	16-19 points	20 points
	The student can only play individual fragments from the course.	The student has certain knowledge provided for in the discipline program, possesses the basic provisions studied at a level defined as the minimum acceptable	The student generally has a good command of the material, knows the main provisions of the material, makes an analysis of possible situations based on them and is able to apply them when solving typical practical tasks, but allows for some	The student demonstrates complete and solid knowledge of the educational material in the volume that corresponds to the discipline program, correctly and reasonably makes the necessary decisions in various non-standard

			inaccuracies.	situations.
Working with animals	<7 points	8-13 points	14-19 points	20 points
	Task requirements not met	Most requirements are met, but individual components are missing or insufficiently disclosed, there is no analysis of other approaches to the issue	All task requirements were met, but with a violation of the methods	Task performed methodically, correctly and qualitatively. The student is able to realize theoretical position disciplines in practice
Solving situational problems	<3 points	3-5 points	6-8 points	9-10 points
	The student is not prepared to solve the problems, the answer is incomplete, some components are missing or not sufficiently disclosed	Using the basic theoretical provisions, the student has difficulty completing the tasks. The completion of the tasks is significantly formalized: there is compliance with the algorithm, but there is no deep understanding of the work	The student has mastered the basic material, understands the problem statement, has suggestions for the direction of their solutions. Understands the main provisions that are decisive in the course, can solve similar problems based on those discussed with the teacher, but allows a small number of inaccuracies	True answer. When performing tasks showed skill independently solve delivered task
Teaching practice	<3 points	3-5 points	6-8 points	9-10 points
	The student is not prepared to solve the problems, the answer is incomplete, some components are missing or not sufficiently disclosed	Using the basic theoretical provisions, the student has difficulty completing the tasks. The completion of the tasks is significantly formalized: there is compliance with the algorithm, but there is no deep understanding of the work	The student has mastered the basic material, understands the problem statement, has suggestions for the direction of their solutions. Understands the main provisions that are decisive in the course, can solve similar problems based on those discussed with the teacher, but allows a small number of	True answer. When performing tasks showed skill independently solve delivered task

			inaccuracies	
Defense of the abstract of independent work	<7 points The student lacks a complete understanding of the subject material. The student is not prepared to independently solve the problems outlined in the goal and objectives of the discipline.	8-13 points Despite the fact that the student completed the program of the academic discipline, he worked passively, his answers during the design of the works are mostly incorrect, unfounded	14-19 points Knows the characteristics of the main provisions that are of decisive importance in completing tasks and explaining decisions made, within the discipline being studied. Errors in the answers are not systemic.	20 points When performing tasks, he demonstrated the ability to independently solve the assigned tasks. The abstract is designed flawlessly, logically situated material with understanding relationships processes disclosed on this topic.
Test - Final testing (multiple choice test)	< 5 points 25% correct answers	5-8 50% correct answers	8-14 points 75% correct answers	15 points 100% correct answers
Exam - multiple choice test (or written paper)	< 11 points Task requirements not met	12-20 points Most requirements are met, but individual components are missing or insufficiently disclosed, there is no analysis of other approaches to the issue	26-29 points Most requirements are met, but some components are missing	30 points All task requirements were met, creativity and thoughtfulness were demonstrated, and an original solution to the problem was proposed.

5.1. Formative assessment:

To assess current progress in learning and understand areas for further improvement,

No.	Elements of formative assessment	Date
1	Oral poll during laboratory classes (concepts of symptom, prognosis, diagnosis , syndrome, fixation of animals, methods of implementation laboratory works)	During the lesson
2	Oral feedback from the teacher while working on solving situational tasks (oral: registration and collection of anamnesis, use of the obtained data for further animal research) during classes	During the lesson
3	Written feedback from the teacher after the review self-study notes for the discipline	Within a week, after execution
4	Exam - multiple choice test (or written assignment)	16 weeks, on schedule

Self-assessment can be used as an element of summative assessment or formative assessment.

5.2. Evaluation scale (summary) – generally accepted for the University:

Sum points by all kinds educational activities	ECTS score	Rating by national scale
		for the exam

90 – 100	AND	perfectly
82- 89	IN	good
75- 81	WITH	
69- 74	D	satisfactorily
60- 68	THERE ARE	
42-59	FX	unsatisfactorily with opportunity repeated drafting
0- 41	F	unsatisfactorily with mandatory repeated studying the course

6. LEARNING RESOURCES (LITERATURE)

Main sources

1. Clinical diagnostics of animal diseases : textbook / V.I. Levchenko, V.V. Vlizlo, I.P. Kondrakhin , V.I. Golovakha , D.V. Morozenko and others. Bila Tserkva: BNAU, 2017. 544 p.
2. Morozenko D.V., Tymoshenko O.P. Research dog and cat urine in diagnostics internal medicine: educational manual : Kharkiv : PPV "Nove Slovo", 2012. 106 p.
3. Clinical assessments results biochemical research animal blood / D.V. Kibkalo , D.V. Morozenko, O.P. Timoshenko [and others]. Kharkiv : FOP Brovin O.V., 2017. 148 p.
4. Tumanska N.V., Barska K.S., Skrynchenko S.V. Radiological research methods: a textbook for students: Zaporizhzhia: ZDMU, 2016. 82 p.
5. Milka V.I. X-ray diagnostics . Vinnytsia: Nova kniga, 2005. 352p.

Methodical software

6. Kysterna O.S., Nechyporenko O.L., Ulko L.G., Musienko O.V., Dolbanosova R.V., Shvachych D.V. (2026) Clinical diagnostics. Internal diseases of animals. Conducting clinical blood tests in animals. Methodology, interpretation of clinical studies. Methodological instructions for students of 3-5 years of specialty 211 "Veterinary medicine", OS "Master" full-time study. Sumy, 2026 – 48p.
7. Dolbanosova R.V., Musienko O.V. (2026). Clinical and laboratory diagnostics of animal diseases : Methodological guidelines for laboratory and practical classes of students of the Faculty of Veterinary Medicine of the educational program "Veterinary Medicine". Sumy, 2026 – 50p.
8. Dolbanosova R.V., Musienko O.V. (2026) Lecture notes for students of the Faculty of Veterinary Medicine of the educational program “Veterinary Medicine”. Sumy, 2026 – 90p.
9. Musienko O.V., Nechyporenko O.L., Ulko L.G., Dolbanosova R.V., Kovalenko N.E., Grek V.A. (2024). Clinical and laboratory diagnostics of animal diseases . Workbook for laboratory and practical classes for students of the Faculty of Veterinary Medicine of full-time education, educational degree "Master". Sumy.2024. – 174 p.
10. Levchenko V.I., Sokolyuk V.M., Bezukh V.M. et al. Animal blood research and clinical interpretation of the results. Methodological recommendations. Bila Tserkva, 2002. 56 p.
11. Levchenko V.I., Tyshkivskyi M.Ya., Sakhnyuk V.V. et al. Urine research. Methodological recommendations. Bila Tserkva, 2005. 74 p.
12. Lokes P.I., Kurman A.F., Kirdan S.V. Fecal examination in dogs and cats. Methodological guidelines. Poltava, 2002. 42 p.
13. Lokes P.I., Kurman A.F. Urine research in dogs and cats. Methodological guidelines. Poltava, 2002. 50 p.
14. Novozhytska Yu.M., Kucheryuk D.P., Golubets O.V. Methodological guidelines for the use of biochemical studies of biological material in state laboratories of veterinary medicine in the diagnosis of infectious diseases.; Min. agr. policy of Ukraine, State . dep. vet . med. of Ukraine. – Kyiv, 2000. 85 p.
15. Tsvilikhovsky M.I., Sudakov M.O., Chumachenko V.Yu. et al. Syndromes of the most common internal non-communicable diseases of animals. Methodological guidelines. K., 2000. 32 p

Additional sources

16. Suslova N.I., Antonenko P.P., Sklyarov P.M. et al. Practical course on clinical diagnostics of animal diseases for laboratory classes and independent work of students. Dnipropetrovsk State Agrarian University, Department of Clinical Diagnostics and Internal Diseases of Animals – Dnipropetrovsk: Publishing House of DDAU, 2013. 274 p.
17. Kozachok V.S., Skyba O.O., Tsvilikhovsky M.I. Clinical examination of exotic animals: Textbook. Kyiv: Aristei , 2010. 252 p.
18. Mazurkevich A.Y., Tarasevich V.L., Klyugi J. Animal Pathophysiology. Kyiv: Higher School, 2000. 352 p.

Other sources

19. Dolbanosova R.V., Koliienko K.O. (2022). Hypertrophic cardiomyopathy in small domestic animals. The problem and its solution. Bulletin of the Sumy National Agrarian University. Series "Veterinary Medicine", issue 4 (59), 2022. Sumy, 17-23
20. Nagorna L.V., Proskurina I.V., Dolbanosova R.V., Tomik A.M. (2024). Characteristics of the insect fauna of livestock farms. DNDIK of veterinary drugs and feed additives, Lviv, 2024, 101-107 DOI: 10.36359/scivp.2024-25-1.13.
21. Kasyanenko , O., Sh., Kh., & Dolbanosova , R. V. (2024). Alternative methods of prevention of infectious diseases of poultry. Bulletin of Sumy National Agrarian University. Series: Veterinary Medicine, (1(64), 3-10. <https://doi.org/10.32782/bsnau.vet.2024.1.1>
22. Nagorna L. V, Dolbanosova R. V. (2025). Peculiarities of pest control in industrial pig farming. National Research Institute of Veterinary Medicine and Feed Additives, Lviv, 2025, 127-135. DOI: 10.36359/scivp.2025-26-1.15
23. Dolbanosova R.V., Dumenko.O.I ., Zaitsev Yu.A., (2025). Abomasal displacement in cows. Materials of the scientific-practical conference of teachers, postgraduates and students of Sumy NAU (April 14-18, 2025). Sumy, 2025, P. 289
24. Dolbanosova R.V., Bubela O.O. Therapeutic effect of holistic feed with honey in allergic alimentary diathesis in dogs. Materials of the scientific-practical conference of teachers, postgraduates and students of Sumy National Academy of Sciences (April 14-18, 2025). Sumy, 2025, P. 279

6.3. Software

- Computers with software for practical work
 - Microsoft Power Point – data visualization Microsoft Power BI – data analytics and visualization
 - Multimedia projector, flipchart and screen;
- Moodle distance learning and control system :
<https://cdn.snau.edu.ua/moodle/course/view.php?id=4409>