Ministry of Education and Science of Ukraine
Sumy National Agrarian University
Faculty of Veterinary Medicine
Department of Veterinary and Sanitary Inspection, Microbiology, Hygiene and Pathological Anatomy

MODULE SYLLABUS

Implemented within the educational program 21 VETERINARY MEDICINE
in specialty 211 VETERINARY MEDICINE

Level of higher education: the second master's level of higher education

Sumy-– 2026

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Module syllabus agreed at the Department of Veterinary and Sanitary Inspection, Microbiology, Hygiene and Pathological Anatomy	protocol dated 2. 06.2026 № 15
	The Head of Chair R.V. Petrov

Agreed:

Guarantor of the educational program _____ Oleksandr CHEKAN

Dean of the faculty,
where educational programs implemented _____ Lyudmila NAGORNA

Syllabus review (attached) is provided by: _____ P. B. Dodatchenko
_____ (Yu. S. L. D.)

Representative of the Department of Education Quality assurance,
licensing and accreditation _____ N. Baran
(N. Baranik)

Registered in electronic data base 22.06 2026

Syllabus review data:

The academic year in which changes are made	The Academic program attachment number with changes description	Changes revised and approved		
		Minutes No and date of the department meeting	Head of Department	Guarantor of the Academic program

1. MODULE OVERVIEW

	Name OK	BIOETHICS, BIOSAFETY, BIOSECURITY AND ECOLOGY			
2.	Faculty / department	Faculty of Veterinary Medicine			
3.	Type (compulsory or optional)	compulsory			
4.	Program(s) to which module is attached (to be filled in for compulsory types)	Veterinary medicine 211			
5.	Module can be suggested for (to be filled in for optional types)	Veterinary medicine 211 The second master's level of higher education			
6.	Level of the National Qualifications Framework	7			
7.	Semester and duration of study	11, 12 rd semester			
8.	ECTS credits number	5			
9.	Total workload and time allotment	Contact work (classes)			Individual work
		Lectures	Practical / seminar	Laboratory	
10.	3d semester	-/16		26/30	34/44
11.	Language of instruction	English			
12.	Module leader	Fotina Tetiana			
1 1. 1	Contact Information	Sumy NAU, Faculty of Department of Veterinary and Sanitary Inspection, Microbiology, Hygiene and Pathological Anatomy. Room. 65 a tif_ua @ meta.ua			
13.	General description of the educational component	The educational component “Bioethics, Biosafety, Biosecurity and Ecology” provides students with theoretical knowledge and practical competencies related to ethical aspects of veterinary professional activity, principles of biosafety and biosecurity, biological risk management, environmental safety, and implementation of the One Health concept. The course covers fundamental principles of bioethics and professional ethics, animal welfare, biosafety in veterinary practice, biosecurity measures, biological safety levels (BSL-1–BSL-4), handling of pathogenic biological agents, prevention of biological threats and bioterrorism, antimicrobial resistance, environmental consequences of anthropogenic activities, and the role of veterinary medicine in protecting animal, human, and environmental health. Particular attention is given to the international standards and recommendations of WOAH, WHO, and FAO and to the implementation of the One Health approach.			
14.	The purpose of the	The aim of the educational component is to provide future			

	educational component	veterinary medicine professionals with a comprehensive system of knowledge regarding bioethical principles, biosafety, biosecurity, environmental safety, prevention of biological threats, and implementation of the One Health concept in professional practice.
15.	Prerequisites for studying OK, the relationship with other educational components of OP	The educational component is based on the knowledge acquired through the study of: Biology; Medical and Biological Physics; Biochemistry; Cytology, Histology and Embryology; Anatomy of Domestic Animals; Animal Physiology. The course serves as a foundation for the further study of: Epizootiology; Infectious Diseases of Animals; Veterinary Sanitation; Veterinary Pharmacology; Veterinary Virology; Veterinary Public Health; Food Safety and Quality; Veterinary Immunology; Veterinary Mycology. The acquired competencies are applied during practical training and in the professional activities of veterinary medicine specialists.
16.	The policy of academic integrity	Students are informed about the value of acquiring new knowledge, the principles and functions of academic integrity, and the importance of avoiding plagiarism. They are encouraged to complete all academic tasks independently and provide proper references when using scientific sources. Cheating during tests and examinations, including the use of electronic devices, is prohibited. Written assignments must contain appropriate citations and references. Violations of academic integrity may result in the following sanctions: Academic plagiarism – grade 0 and resubmission of the assignment. Academic dishonesty (cheating, deception, presenting another person's work as one's own) – cancellation of obtained results, repeated assessment, and completion of a new assignment. Use of electronic devices during final assessment – removal from the examination, grade 0, and repeated completion of the final assessment.
17.	Educational component keywords	Bioethics, Biosafety, Biosecurity, One Health, Animal Welfare, Environmental Safety, Antimicrobial Resistance.
18.	Access to Moodle.	ttps://cdn.snau.edu.ua/moodle/course/view.php?id=3273

2. CORRELATION BETWEEN MODULE LEARNING OUTCOMES (MLOs) AND PROGRAM LEARNING OUTCOMES (PLOs)

3d semester MLOs: On successful completion of the module the learner will be able to:	Program learning outcomes to be achieved by the OK (indicate the number according to the numbering given in the OP)		How assessed
	PL7	**PLOs 17**	
MLO 1. Demonstrate knowledge of the fundamental principles of bioethics, professional ethics of veterinary practitioners, and legal regulations concerning animal protection. Apply	+	+	survey of theoretical issues, performing tasks in laboratory and practical classes, testing,

ethical principles when making professional decisions.			performing tasks of independent work
MLO2. Explain the principles of the One Health concept and the interrelationship between human, animal, and environmental health. Assess zoonotic disease risks and their potential consequences		+	survey of theoretical issues, performing tasks in laboratory and practical classes, testing, performing tasks of independent work
MLO 3 Demonstrate knowledge of biosafety and biosecurity principles in veterinary medicine. Assess biological risks and propose appropriate risk mitigation measures.	+	+	survey of theoretical issues, performing tasks in laboratory and practical classes, testing, performing tasks of independent work
MLO 4. Explain the classification of biological agents, biological safety levels (BSL-1–BSL-4), and requirements for handling pathogenic biological agents. Apply biosafety measures in professional practice	+	+	survey of theoretical issues, performing tasks in laboratory and practical classes, testing, performing tasks of independent work
MLO 5. Understand the role of veterinary services in ensuring national biosafety, preventing biological threats, and responding to emergency situations.	+	+	survey of theoretical issues, performing tasks in laboratory and practical classes, testing, performing tasks of independent work
MLO 6. Environmental Safety and Sustainable Development. Environmental risks. Veterinary waste management. Ecological monitoring. Environmental consequences of anthropogenic activities. Biosafety in wartime and post-war recovery.	+	+	survey of theoretical issues, performing tasks in laboratory and practical classes, testing, performing tasks of independent work

MODULE INDICATIVE CONTENT 3d semester

Topics	**Distribution of hours**			**Learning resources**
	Directed study		**Self-directed study**	
	Lectures	lab		Learning resources)
Topic 1. Introduction to Bioethics and Professional Ethics in Veterinary Medicine. Bioethics as a science. History and development of bioethics. Fundamental	2	10	10	1,7,8.

principles of bioethics. Professional ethics of veterinary practitioners. Ethical decision-making in veterinary medicine				
Topic 2 Animal Welfare and Ethical Standards. Animal welfare concept. Five Freedoms. International and European animal welfare legislation. Ethical treatment of animals in veterinary practice.	2	10	10	2, 3,8.
Topic 3. One Health Concept. History and development of One Health. Interrelationship between human, animal and environmental health. Role of veterinary medicine in One Health implementation.	2	10	10	4, 5, 12.
Topic 4. Biosafety and Biosecurity in Veterinary Medicine. Principles of biosafety and biosecurity. Biological risks and risk assessment. Biosafety levels (BSL-1–BSL-4). Prevention of biological threats and bioterrorism	4	10	10	5, 6,13.
Topic 5. Antimicrobial Resistance and One Health Approach. Causes and mechanisms of antimicrobial resistance. MDR, XDR and PDR microorganisms. Global strategies of WHO, WOAH and FAO. Responsible use of antimicrobials in veterinary medicine.	2	10	18	1, 4, 7, 9.
Topic 6. Environmental Safety and Sustainable Development. Environmental risks. Veterinary waste management. Ecological monitoring. Environmental consequences of anthropogenic activities. Biosafety in wartime and post-war recovery.	4	6	20	4,5,9
	16	56	78	

METHODS OF TEACHING AND TEACHING

MLOs	Teaching methods (directed study)	Learning methods (self-directed study)	Hours
MLO1. Demonstrate knowledge of the fundamental principles of bioethics, professional ethics of veterinary practitioners, and legal regulations concerning animal protection. Apply ethical	**Methods of teaching by source of knowledge:** *Verbal:* story, explanation, conversation (heuristic and reproductive), lecture, instruction. *Visual:* demonstration, illustration, observation. **Active methods:** (use of technical teaching aids, use of training and control tests) **Interactive teaching methods:** (use of multimedia technologies.	**Methods of teaching by source of knowledge:** *Verbal:* work with a book (reading, translation, writing, taking notes, making tables, graphs, reference notes), *Visual:* observation. **Teaching methods by the nature of the logic of cognition** (analytical, *synthesis methods,* and *inductive method, deductive method, translational method).* **Active methods (brainstorming**, crossword puzzles, debates, round tables, binary classes, business and role-playing games, group research)**.** **Interactive learning technologies** (use of multimedia technologies, dialogue	42

principles when making professional decisions.		learning, student cooperation (cooperation)	
MLO 2. Explain the principles of the One Health concept and the interrelationship between human, animal, and environmental health. Assess zoonotic disease risks and their potential consequences	**Methods of teaching by source of knowledge:** *Verbal:* story, explanation, conversation (heuristic and reproductive), lecture, instruction. *Visual:* demonstration, illustration, observation. **Active methods:** (use of technical teaching aids, use of training and control tests) **Interactive methods will present ting :** (use of multimedia technologes.	**Methods of teaching by source of knowledge:** *Verbal:* work with a book (reading, translation, writing, taking notes, making tables, graphs, reference notes), *Visual:* observation. **Teaching methods by the nature of the logic of cognition** (analytical, *synthesis methods,* and *inductive method, deductive method, translational method).* **Active methods (brainstorming**, crossword puzzles, debates, round tables, binary classes, business and role-playing games, group research)**.** **Interactive technologies teach ting** (use of multimedia technology, learning dialogue, cooperation of students (cooperation).	40
MLO 3 Demonstrate knowledge of biosafety and biosecurity principles in veterinary medicine. Assess biological risks and propose appropriate risk mitigation measures.	**Methods of teaching by source of knowledge:** *Verbal:* story, explanation, conversation (heuristic and reproductive), lecture, instruction. *Visual:* demonstration, illustration, observation. **Active methods:** (use of technical teaching aids, use of training	**Methods of teaching by source of knowledge:** *Verbal:* work with a book (reading, translation, writing, taking notes, making tables, graphs, reference notes), *Visual:* observation. **Teaching methods by the nature of the logic of cognition** (analytical, *synthesis methods,* and *inductive method, deductive method, translational method).* **Active methods (brainstorming**, crossword puzzles, debates, round tables, binary classes, business and role-playing games, group research)**.** **Interactive technologies teach ting**	40
MLO 4. Explain the classification of biological agents, biological safety levels (BSL-1–BSL-4), and requirements for handling pathogenic	**Methods of teaching by source of knowledge:** *Verbal:* story, explanation, conversation (heuristic and reproductive), lecture, instruction. *Visual:* demonstration, illustration, observation. **Active methods:** (use of technical teaching aids, use of training and	**Methods of teaching by source of knowledge:** *Verbal:* work with a book (reading, translation, writing, taking notes, making tables, graphs, reference notes), *Visual:* observation. **Teaching methods by the nature of the logic of cognition** (analytical, *synthesis methods,* and *inductive method, deductive method, translational method).* **Active methods (brainstorming**, crossword puzzles, debates, round tables, binary	40

biological agents. Apply biosafety measures in professional practice	control tests) **Interactive methods will present ting :** (ie use of multimedia technologies, spreadsheets.	classes, business and role-playing games, group research)**.** **Interactive technologies teach ting** (use of multimedia technology, learning dialogue, cooperation	
MLO 5. Understand the role of veterinary services in ensuring national biosafety, preventing biological threats, and responding to emergency situations.	**Methods of teaching by source of knowledge:** *Verbal:* story, explanation, conversation (heuristic and reproductive), lecture, instruction. *Visual:* demonstration, illustration, observation. **Active methods:** (use of technical teaching aids, use of training and control tests) **Interactive methods will present ting :** (ie use of multimedia technologies, spreadsheets.	**Methods of teaching by source of knowledge:** *Verbal:* work with a book (reading, translation, writing, taking notes, making tables, graphs, reference notes), *Visual:* observation. **Teaching methods by the nature of the logic of cognition** (analytical, *synthesis methods*, and *inductive method, deductive method, translational method).* **Active methods (brainstorming**, crossword puzzles, debates, round tables, binary classes, business and role-playing games, group research)**.** **Interactive learning technologies** (use of multimedia technologies, dialogue learning, student cooperation	40
MLO 6. . Environmental Safety and Sustainable Development. Environmental risks. Veterinary waste management. Ecological monitoring. Environmental consequences of anthropogenic activities. Biosafety in wartime and post-war recovery.	**Methods of teaching by source of knowledge:** *Verbal:* story, explanation, conversation (heuristic and reproductive), lecture, instruction. *Visual:* demonstration, illustration, observation. **Active methods:** (use of technical teaching aids, use of training and control tests) **Interactive methods will present ting :** (ie use of multimedia technologies, spreadsheets.	**Methods of teaching by source of knowledge:** *Verbal:* work with a book (reading, translation, writing, taking notes, making tables, graphs, reference notes), *Visual:* observation. **Teaching methods by the nature of the logic of cognition** (analytical, *synthesis methods*, and *inductive method, deductive method, translational method).* **Active methods (brainstorming**, crossword puzzles, debates, round tables, binary classes, business and role-playing games, group research)**.** **Interactive learning technologies** (use of multimedia technologies, dialogue learning, student cooperation	38

5. ASSESSMENT

5.1. Diagnostic assessment

5.2. Summative assessment

5.2.1. Intended learning outcomes methods: 3d semester

№	Summative assessment methods	Grades	Deadline
1.	Thematic survey	*20 points / 20 %*	Weekly
2.	Execution of tasks in laboratory- practical classes	*35 points / 35 %*	According to the schedule
4.	Report with a presentation on the subject of independent study of the discipline	*45 points / 45 %*	According to the schedule of delivery of modules

5.2.2. Grading criteria

Summative assessment method	**Unsatisfactory**	**Satisfactorily**	**Good**	**Excellent**
Thematic survey	*<12 points*	*12-15 points*	*15-18 points*	*20 points*
	The student can play only individual fragments of the course.	Most requirements are met, but some components are missing or insufficiently disclosed, there is no analysis of other approaches to the issue	All requirements of the task are fulfilled	All requirements of the task are fulfilled, creativity, thoughtfulness is shown, own solution of a problem is offered
Execution of tasks in laboratory- practical classes	*<12 points*	*12-15 points*	*15-18 points*	*20 points*
	Task requirements not met	Most of the tasks are performed using the basic theoretical principles, the student has difficulty explaining the rules for solving laboratory- practical problems. Execution of individual control tasks is significantly formalized, there is no deep understanding of the work	The student learned the basic material, and understands and performs lab-practical tasks and has suggestions for the direction of their solutions. Understands the main provisions that are decisive in the course, can solve similar problems with those discussed with the teacher, but allows a small number	Competitor realism is a theoretical ground material discipline in carrying lab-practical s work , able to analyze and correlate the results obtained from the discipline acquired knowledge , skills , practical skills

			of inaccuracies .	
Multiple choice test	*≤ 5 points*	*6-9 points*	*10–13 points*	*14-15 points*
	The student gives the correct answer to several questions (≤ 33% of the correct answers) .	The student has some knowledge provided in the program of the discipline, has the basic provisions being studied and gives the correct answer to several questions (34-59% of correct answers) .	The student is generally well versed in the material, knows the basic provisions of the material, and gives the correct answer to several questions (60-89% of the correct answers).	The student demonstrates complete and solid knowledge of the study material in the amount that corresponds to the program of the discipline, correctly answers the test questions (90 -100% of correct answers).
Design and presentation report independently of the processed material	*< 9 points*	*1 0 - 19 points*	*20 - 39 points*	*4 0 - 45 points*
	The student does not have a complete understanding of the material on the discipline. The student is not performed independently is processing material.	Despite the fact that the program of discipline complied by student, but some components are missing, a student worked passively.	Know the basic and provisions ting with crucial at performing independent work / individual tasks. Errors in the answers are not significant .	All requirements, tasks are fulfilled, creativity, thoughtfulness is shown, own solution of a problem is offered.

Formative assessment

Formative exercises are designed to enable students to develop particular aspects of their learning, prior to summative assessments. Formative exercises are designed to help students use feedback and self-reflection to manage and develop their learning so that they can see how to improve their work.

№	**Formative Assessment elements**	**Date**
1	Oral feedback after studying topics 1 - 3 , 6-8	3 weeks
2	Written feedback after studying topics 4 - 5	8 weeks
3	Written feedback from the teacher while working on	Within 1 week after

	laboratory-practical tasks			execution
4	Oral feedback from the teacher after the story with a presentation on the topic of independent study of the discipline			During classes
№	**Summative assessment methods**	**Grades**		**Deadline**
	Autumn semester			
2.	Thematic survey	*20 points / 20 %*		Weekly
3.	Execution of tasks in laboratory-practical classes	*35 points / 35 %*		According to the schedule
5.	Report with a presentation on the subject of independent study of the discipline	*45 points / 45 %*		According to the schedule of delivery of modules
Summative assessment method	**Unsatisfactory**	**Satisfactorily**	**Good**	**Excellent**
Thematic survey	*<12 points*	*12-15 points*	*15-18 points*	*20 points*
	The student can play only individual fragments of the course.	Most requirements are met, but some components are missing or insufficiently disclosed, there is no analysis of other approaches to the issue	All requirements of the task are fulfilled	All requirements of the task are fulfilled, creativity, thoughtfulness is shown, own solution of a problem is offered
Execution of tasks in laboratory-practical classes	*<12 points*	*12-15 points*	*15-18 points*	*20 points*
	Task requirements not met	Most of the tasks are performed using the basic theoretical principles, the student has difficulty explaining the rules for solving laboratory-practical problems. Execution of individual control tasks is significantly formalized, there	The student learned the basic material, and understands and performs lab-practical tasks and has suggestions for the direction of their solutions. Understands the main provisions that are decisive in the course, can solve similar problems with those discussed with the	Competitor realism is a theoretical ground material discipline in carrying lab-practical s work , able to analyze and correlate the results obtained from the discipline acquired knowledge ,

		is no deep understanding of the work	teacher, but allows a small number of inaccuracies .	skills , practical skills
Multiple choice test	*≤ 5 points*	*6-9 points*	*10–13 points*	*14-15 points*
	The student gives the correct answer to several questions (≤ 33% of the correct answers) .	The student has some knowledge provided in the program of the discipline, has the basic provisions being studied and gives the correct answer to several questions (34-59% of correct answers) .	The student is generally well versed in the material, knows the basic provisions of the material, and gives the correct answer to several questions (60-89% of the correct answers).	The student demonstrates complete and solid knowledge of the study material in the amount that corresponds to the program of the discipline, correctly answers the test questions (90 -100% of correct answers).
Design and presentation report independently of the processed material	*< 9 points*	*1 0 - 19 points*	*20 - 39 points*	*4 0 - 45 points*
	The student does not have a complete understanding of the material on the discipline. The student is not performed independently is processing material.	Despite the fact that the program of discipline complied by student, but some components are missing, a student worked passively.	Know the basic and provisions ting with crucial at performing independent work / individual tasks. Errors in the answers are not significant .	All requirements , tasks are fulfilled, creativity, thoughtfulness is shown, own solution of a problem is offered.

6. LEARNING RESOURCES

Main Literature

1. Kundiiev, Yu. I. (Ed.). Bioethics: textbook. Kyiv: Avicenna Publishing House, 2021. 392 p.
2. Zaporozhan, V. M., Aryaiev, M. L. Medical and Biological Ethics: textbook. Kyiv: Zdorovia, 2025. 288 p.
3. Fotina, T. I., Berezovskyi, A. V., Rozputnii, M. V., Fotina, H. A. General and Veterinary Ecology: study guide. Kyiv: DIA, 2022. 501 p.
4. Ibatullin, I. I., Kandyba, V. M., Honcharenko, I. V. et al. Farm Animal Welfare: study guide. Kyiv: Agrarian Education, 2020. 256 p.

5. Law of Ukraine "On Veterinary Medicine" No. 1206-IX of 04 February 2024.
6. Law of Ukraine "On Protection of Animals from Cruelty".
7. Strategy for Ensuring Biosafety and Biosecurity Based on the One Health Approach.
8. World Organisation for Animal Health (WOAH). Terrestrial Animal Health Code. Paris: WOAH.
9. Fotina, H. A., Fotina, T. I., Nahorna, L. V. et al. Fundamentals of Biosafety, Biosecurity, Bioethics and Veterinary Ecology. Veterinary Biosafety and Ecology Aspects: Methodological Guidelines for Laboratory-Practical Classes and Independent Study for Students of Specialty 211 Veterinary Medicine. Sumy: Sumy National Agrarian University, 2024.
10. Fotina T. I., Petrov R. V., Berezovskyi A. V., et al. Veterinary and Sanitary Inspection of Fish, Marine Mammals, Invertebrates, and Biological Foundations of Fisheries: Monograph. Sumy, 2023. 249 p.=

Additional References

11. Fotina, T. I., Fotina, H. A. Environmental Protection and Animal Advocacy in Ukraine. In: Nellist C. (Ed.). Climate Crisis and Sustainable Creaturely Care. Newcastle upon Tyne: Cambridge Scholars Publishing, 2021. Chapter 5.
12. Novoselska, L. P., Ivashchenko, T. H., Hanziura, V. P., Kulinich, O. P. Fundamentals of Biosafety: study guide. Kyiv: Institute of Environmental Management and Sustainable Nature Use, 2017. 180 p.
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14. One Health – 2025: Proceedings of the International Scientific Conference. Kyiv: National University of Life and Environmental Sciences of Ukraine, 2025. 281 p.

Information Resources

15. Sumy National Agrarian University Repository. Available at: https://repo.snau.edu.ua
16. World Organisation for Animal Health (WOAH). Available at: https://www.woah.org
17. https://cdn.snau.edu.ua/moodle/course/view.php?id=3273

Other Sources

18. Wang, Y., Wang, X., Xu, Y., Fotina, H. Effects of probiotic Clostridium butyricum on performance, immunocompetence and digestive function of poultry. Ukrainian Journal of Veterinary and Agricultural Sciences. 2020. Vol. 3, No. 1. P. 27–33.
19. Tion, M. T., Shima, F. K., Ogbu, K. I., Omobowale, T. O., Amine, A. A., Nguetyo, S. A. et al. Genetic diversity of canine parvovirus variants circulating in Nigeria. Infection, Genetics and Evolution. 2021. Vol. 94. Article 104996.
20. Xu, P., Fotina, H., Fotina, T., Wang, S. Use of plant-derived drugs in the prevention and treatment of dairy cow mastitis. Ukrainian Journal of Veterinary and Agricultural Sciences. 2021. Vol. 4, No. 1. P. 24–28.
21. Zhao, X., Fotina, H., Wang, L., Hu, J. Antimicrobial peptides as novel alternatives to antibiotics. Scientific Messenger of Lviv National University of Veterinary Medicine and Biotechnologies. Series: Veterinary Sciences. 2020. Vol. 22, No. 98. P. 74–78.