

NATIONAL UNIVERSITY
OF LIFE AND ENVIRONMENTAL SCIENCES OF UKRAINE

Department of Veterinary Hygiene named after prof. A.K. Skorokhodko



«APPROVE»

Dean of the Faculty of Veterinary Medicine

Mykola TSVILIKHOVSKY

15" 05 2023

«APPROVED»

at the meeting of the Department
Veterinary Hygiene
named after prof. A.K. Skorokhodko
№ 9 from 11.04.2023

Head of the Department

Maria KUCHERUK

«REVIEWED»

Guarantor of EP «Veterinary medicine»

Natalia GRUSHANSKA

WORKING PROGRAM OF EDUCATIONAL DISCIPLINE

ANIMAL HYGIENE

Specialty 211 – «Veterinary Medicine»

Educational program «Veterinary Medicine»

Faculty of Veterinary Medicine

Developers: Doctor of Vet. Sci., Associate prof. Maria Kucheruk; PhD, Senior Lecturer Roman Dymko

Kyiv – 2023

1. DESCRIPTION OF THE DISCIPLINE «ANIMAL HYGIENE»

Field of knowledge, direction of training, specialty, educational and qualification level		
Field of knowledge	21 – «Veterinary Medicine»	
direction of training		
specialty	211 «Veterinary Medicine»	
educational and qualification level	Master	
Characteristics of the discipline		
View	basic	
Total number of hours	165	
Number of ECTS credits	5,5	
Number of content modules	4	
Form of control	Test, exam	
Indicators of academic discipline for full-time and part-time forms of education		
	full-time education	part-time study
Year of preparation	2-3	
Semester	IV-V	
Lectures	30 hours	
Practical, seminar classes	30 hours	
Laboratory classes	30 hours	
Independent work	75 hours	
Individual tasks		
Number of weekly hours	3 hours	

2. PURPOSE, OBJECTIVES AND COMPETENCIES OF THE EDUCATIONAL DISCIPLINE

The purpose of the discipline is to provide students with knowledge of the basics of modern zoohygienic science and practice for them in the economy of a set of veterinary measures aimed at maintaining health, improving productivity and quality and safety of livestock products.

The course goal is to develop the legislation and organizational structure of the State Veterinary Service of Ukraine at the enterprises of the meat, dairy and fishing industries, at the border and transport, objects and methods of state veterinary control conditions for keeping animals.

The course objective is to familiarize students with the veterinary legislation of Ukraine with the basics of deontology and jurisprudence in veterinary medicine, veterinary records management in the field of animal hygiene, prevention of diseases of various etiologies, control and regulation of microclimate parameters of livestock facilities.

The task of studying the discipline.

The task of studying the discipline "Animal Hygiene" is theoretical knowledge and practical skills in order to professionally carry out:

- organization of sanitary and hygienic measures aimed at creating an optimal microclimate for animals;
- control and organization of measures for the prevention of infectious invasive and non-communicable diseases of animals;
- providing animals with high-quality feed resources, compliance with the rules and regimes of feeding and watering animals, taking into account species, age and productive characteristics;
- introduction into the practice of animal husbandry of modern technologies of keeping, exploitation of animals, as well as their rehabilitation (exercise, hardening, insolation, etc.);
- objective professional evaluation of the so-called modern industrial technologies, taking into account the positive and negative consequences of their use in animal husbandry;

The primary task of modern hygiene is the timely detection of harmful environmental factors and the development of preventive measures to eliminate them. It is important to take into account when implementing new

technological techniques or new technologies physiological features of the animal body.

As a result of studying the discipline, the student must

know: the terminology and the main provisions of national and international legislation.

Acquisition of competencies:

General Competences (GC):

1. Knowledge and understanding of the subject area and profession.

Professional (special) competencies (FC):

1. Ability to apply methods of working with national and international regulations, scientific papers, methodological developments, recommendations, instructions, etc. in professional activities.

2. Development and support of biosafety measures, maintenance of animal hygiene, best practices in animal health, careful use of veterinary drugs, principles of preventive medicine, application of animal health and ethology, assessment and reduction of risk factors that provoke disease and negatively affect productivity.

3. Ability to plan sanitary measures, develop procedures and monitor compliance with hygiene requirements at facilities for the production of safe food, feed and feed additives, etc.

4. Ability to organize and conduct state control of hygienic requirements and sanitary measures in agri-food markets and facilities.

5. Ability to carry out state (internal) veterinary and sanitary control at the facilities for the production and circulation of sanitary measures, to apply appropriate methods of sampling, handling and results of their tests (research).

6. Ability to carry out veterinary and sanitary control of production and circulation of feed, feed additives, premixes, etc. at controlled facilities, competently use their research methods and conduct their sanitary assessment.

7. Ability to control the hygienic requirements of the facilities for the production and processing of livestock products, veterinary facilities, etc.

8. Ability to control the effectiveness of capacity rehabilitation in accordance with the requirements of national and international regulations.

3. PROGRAM AND STRUCTURE OF THE DISCIPLINE «ANIMAL HYGIENE» FOR FULL TERM OF FULL-TIME EDUCATION

Names of content modules and topics	Number of hours					
	Full-time					
	total	including				
lec		pr	lab	ind	ind. w	
1	2	3	4	5	6	7
Module 1						
1. Introductory lecture. Physical properties of the air environment.	6	2	2			2
	4		2			2
2. Air temperature. Air humidity.	6	2	2			2
	4		2			2
3. Air velocity. Atmospheric pressure.	6	2	2			2
	4		2			2
4. Solar radiation.	6	2	2			2
	4		2			2
Together on the content module 1	40	8	16			16
Module 2						
5. Chemical composition of the air.	6	2	2			2
	4		2			2
6. Biological properties of the air. Dust, its classification.	6	2	2			2
	4		2			2
7. Sanitary and hygienic requirements for feed. Hygienic requirements for the feeding regime of animals.	6	2	2			2
	4		2			2
8. Manure removal systems in livestock premises. Methods of storage and disinfection of manure	5	1	2			2
Together on the content module 2	35	7	14			14

Total hours per semester	75	15	30			30
Module 3						
9. Ventilation systems for livestock premises	7	2		2		3
10. Heat balance of livestock facilities,	5			2		3
11. Soil, its hygienic value	7	2		2		3
12. Sanitary and hygienic value of water.	5			2		3
13. Collections and utilization of biowaste	7	2		2		3
14. Sanitary-hygienic estimation of forage quality	5			2		3
15. Evaluation of disinfection quality	7	2		2		3
16. Sanitary and hygienic requirements for transportation of animals	5			2		3
Together on the content module 3	48	8		16		24
Module 4						
17. Systems and methods of keeping cattle	7	2		2		3
18. Hygienic requirements for keeping young cattle	5			2		3
19. Hygiene of pigs	7	2		2		3
20. Hygiene of sheep	5			2		3
21. Hygiene of horses	7	2		2		3
22. Hygiene of poultry	5			2		3
23. Hygiene of rabbits Hygiene of bees and pond fish farming	6	1		2		3
Together on the content module 4	42	7		14		21
Total hours per semester	90	15		30		45
Total hours	165	30	30	30		75

4. TOPICS OF PRACTICAL AND LABORATORY CLASSES

№ n / a	Topic title	Topic content	Volume, hours
Module 1 (Physical properties of the air)			
1	Physical properties of the air environment and methods of their research	Basic safety rules when performing laboratory work. Devices, equipment, laboratory glassware, reagents. Precursors, characteristics, storage requirements. Obtaining distilled, double-distilled and deionized water.	2
2	Physical properties of the air environment and methods of their research	Air, composition, properties. Acquaintance with a structure of devices for definition of temperature, atmospheric pressure. Conducting research and performing individual tasks.	
3	Physical properties of the air environment and methods of their research	Determination of hygrometric values of the air environment. Devices for determination of hygrometric quantities. Conducting research and performing individual tasks. Problem solving. Determination of hygrometric values by psychrometer August and Assman.	2
4	Physical properties of the air environment and methods of their research	Determination of air velocity in livestock premises and atmosphere. Conducting research and performing individual tasks.	2
5	Physical properties of the air environment and methods of their research	Development of methods for determining the level of natural and artificial lighting of livestock facilities.	2
6	Rehabilitation of livestock air	Solutions. Classification. Preparation. Use in veterinary practice.	2
7	Rehabilitation of livestock air	Methods of improving the air of livestock premises. (Disinfection, disinsection, deratization)	2
8	Expert assessment of the microclimate of the livestock premises	Determination of microclimate parameters on the example of stables of NULES of Ukraine.	2
9	Colloquium 1		2
Module 2 (Chemical composition of the air)			
10	Chemical properties of the air environment and methods of their research	Determination of carbon dioxide and ammonia content in the air of livestock premises. Conducting research and performing individual tasks. performance of individual tasks.	2

11	Chemical properties of the air environment and methods of their research	Determination of hydrogen sulfide content in the air of livestock premises. Conducting research and performing individual tasks.	2
12	Biological properties of the air	Determination of bacterial air pollution in livestock premises	2
13	Hygiene of livestock premises	Ventilation of livestock premises. Methods for calculating the hourly volume of ventilation.	2
14	Hygiene of livestock premises	Calculation of hourly ventilation volume with natural air draft. Problem solving.	2
15	Colloquium 2		2
Module 3 (Sanitary and hygienic components of animal health)			
16	Physical properties and chemical composition of soil.	Determination of physical properties and chemical composition of soil.	2
17	Veterinary and sanitary requirements for soils.	Determination of hygienic and sanitary indicators of soil.	2
18	Physical properties of water	Determination of physical properties of water.	2
19	Sanitary and topographic inspection of the water source	Compilation of a sanitary-topographic map of the water source survey (on the example of Holosiivskyi ponds).	2
20	Chemical composition of water	Determination of ammonia, nitrites, nitrates, sulfates, chlorides, iron in water. Conducting research and performing individual tasks.	2
21	Hygienic indicators of water	Determination of oxidation, concentration of dissolved oxygen in water (HSC, BSC), active chlorine content in chlorinated lime.	
22	Feed hygiene and methods of quality control	Hygiene of roughage and succulent feed. Methods of feed sampling for laboratory analysis. Conducting research and performing individual tasks.	2
23	Colloquium 3		2
Module 4 (Special Hygiene)			
24	Veterinary and sanitary requirements in animal husbandry	Veterinary and sanitary measures at livestock enterprises. Preventive disinfection. Veterinary and sanitary facilities and their purpose. Disinsection, deratization. Assessment of the sanitary condition of the enterprise	2
25	Veterinary and sanitary requirements in pig	Veterinary and sanitary measures at pig enterprises. Veterinary and sanitary treatment of animals, buildings, equipment of the	2

	breeding	territory. Assessment of the sanitary condition of the enterprise	
26	Veterinary and sanitary requirements in poultry farming	Veterinary and sanitary measures at poultry enterprises. Disinfection of poultry houses, equipment, inventory, buildings and structures. Assessment of the sanitary condition of the enterprise	2
27	Veterinary and sanitary requirements in sheep and goat breeding	Veterinary and sanitary measures at sheep and goat enterprises. Disinfection of buildings and structures, premises, equipment and inventory. Assessment of the sanitary condition of the enterprise	2
28	Veterinary and sanitary requirements in horse breeding	Veterinary and sanitary measures at horse breeding enterprises. Disinfection of buildings, structures, premises, equipment and inventory. Assessment of the sanitary condition of the enterprise	2
29	Veterinary and sanitary requirements in rabbit breeding, animal husbandry and fish farming	Veterinary and sanitary measures at rabbit, animal and fish farms. Disinfection of buildings, structures, premises and equipment. Assessment of the sanitary condition of the enterprise	2
30	Colloquium 4		2
Total			60

5. SAMPLES OF CONTROL QUESTIONS, TESTS TO DETERMINE THE LEVEL OF KNOWLEDGE ACQUISITION BY STUDENTS

Topic 1

1. Define the definition of animal hygiene as a science and indicate its main tasks.
2. Formulate what are the main tasks facing the livestock of Ukraine at the present stage of development of this industry.
3. The role of hygienic measures in environmental protection.
4. Sources of accumulation of moisture in the air of livestock premises and its hygienic value. Measures to prevent high humidity in the premises.
5. Air temperature. What factors contribute to the occurrence of hypo- and hyperthermia in animals.
6. Thermoregulation in animals. Features of thermoregulation in newborns of different species.
7. Zone of thermal indifference. Critical temperatures and their role in heat exchange of animals.
8. Thermoregulatory systems in animals.

9. Ways of heat consumption by the body of animals. Physical thermoregulation, factors influencing it.
10. Hardening of animals. What systems of keeping animals contribute to their hardening? What time of year is best for hardening animals?
11. Hygienic value for the body of animals of air movement and measures to prevent drafts in the premises. Wind rose and its practical significance.
12. Biological action of sunlight, their impact on animal health and productivity.
13. Disclose the concepts of weather, climate and microclimate, their impact on animals. The role of climate in the zoning of animals by climatic zones of the country.

Topic 2

1. Hygienic value of soil for animals.
2. Chemical composition of the soil and its impact on the quality of feed and animal health.
3. Biogeochemical provinces and zoning of the territory of Ukraine.
4. Biological properties of soil and their role in the circulation of substances and self-purification of soil.
5. Hygienic characteristics of soils. What soils are called healthy?
6. Pathogens of which infectious and invasive diseases can be spread through water?
7. Physiological and sanitary-hygienic value of water.
8. What chemicals can be used to judge the contamination of water with organic compounds.
9. Biological properties of water and their role in water self-purification in nature.
10. Sanitary and hygienic significance of the process of self-purification of water. Factors affecting its speed.
11. The main stages of decomposition of organic matter in water (mineralization).
12. Organization of water supply and watering of farm animals. Calculate the need for water in the winter keeping lactating cows (100 heads, keeping period 200 days). Factors influencing the need of animals for water.
12. Describe the methods of sanitary and hygienic assessment of water in the farm.
13. The main methods of water purification and disinfection, their advantages and disadvantages.
14. Organization of watering animals during summer camp.
15. Sanitary and hygienic control over the procurement, storage and use of feed. Methods of research of forage quality.
16. What poisonous plants are found in pastures? Give their hygienic characteristics.
17. Prevention of hypovitaminosis in animals. Measures for the prevention of hypovitaminosis for suckling piglets.
19. What are the hygienic requirements for feed quality and animal feeding regime in winter? Prevention of feed poisoning and diseases.

19. What is the importance of choosing the right site for the apiary and hives?
20. The role of hygienic measures in the prevention of diseases of young animals of different species.
21. Basic hygienic and sanitary requirements when choosing a site for construction of livestock facilities.
22. Sanitary and hygienic requirements for the maintenance and care of animals that prevent the reduction of the body's natural resistance and productivity.
23. The role of thermal and hygroscopic properties of building materials in creating a thermal balance of livestock facilities.
24. Hygienic requirements for floors, sewer system and bedding material. Calculate the required amount of litter material (for lactating cows for a retention period of 200 days).
25. Hygienic measures during storage of different types of feed.
26. Blocking of premises and constructions of livestock комплексы (ферм).

Topic 3

1. The role of air exchange of livestock premises in conditions of intensive keeping of farm animals. Theoretical foundations of ventilation.
2. Describe the VIME ventilation system and give it a critical analysis.
3. What is the principle of calculating the volume of ventilation by water vapor and carbon dioxide?
4. What factors affect the formation of the microclimate of the premises for animals? Indicative air exchange rates (m^3 / h per live weight) for pigs.
5. Describe the hygienic requirements for building materials of livestock premises and their individual parts: foundation, plinth, walls, floors, ceilings and windows. The role of temperature of enclosing structures in the process of heat transfer of animals.
6. Describe the composition and properties of solar radiation, the preventive value of artificial irradiation of farm animals.
7. The essence of geometric and lighting methods for determining the natural light of premises for animals. Which method of calculation gives a more complete description of indoor lighting?
8. Determine the light factor (SC) of one of the farm premises. If the length of the room is 48 m, width 14 m, window dimensions 0.85x1.0, number of windows 30.
9. Explain why for separate rooms arrange windows with double frames? What area in the wall should the windows occupy?
10. The main disadvantages of pipe ventilation systems with natural draft.
11. Describe the rules of natural and artificial lighting for different species of animals.
12. Photoperiodism, its significance for animals.

13. Hygienic requirements to the land plot at a choice of a place for the equipment of a summer camp and locations of tyrl, livestock and auxiliary rooms during the summer keeping of animals.

14. Organization and technique of grazing animals. What is the folding system of grazing animals and its importance in the prevention of invasive diseases?

15. Hygienic requirements for summer keeping of cattle.

16. Assignment of sanitary and fire breaks in livestock enterprises.

17. From which side in relation to the settlement should be located livestock farms? Justify the answer.

19. Methods of rehabilitation (rehabilitation) of livestock premises.

19. Deratization of livestock premises. Describe rodent control measures in livestock facilities.

20. The main measures for the improvement of livestock farms. Which greenery has a bactericidal effect?

21. Describe what methods of storage and disinfection of manure. The essence of the aerobic process of manure and slurry storage.

22. What is the hygienic value of grazing animals? Requirements for cultivated pastures.

23. Hygienic requirements for the preparation of animals for summer keeping. Why the transition from stable to pasture should be done consistently and vice versa?

Topic 4

1. Organization and features of summer keeping of animals of different species and groups.

2. Prevention of animal diseases during the grazing period.

3. Physiological justification of the need for animal skin care.

4. Animal care. Impact of care on health, disease resistance and animal productivity. Organization and carrying out of exercise of animals on a dairy farm. Give the norms of the area of walking areas for different sex and age groups of animals.

5. Basic sanitary and hygienic requirements for walking areas for animals, their standards for different species of animals.

6. Describe the features of care for different species of animals in winter and summer.

7. What is the care of the mammary gland of cows and what diseases can be prevented by care.

8. Features of keeping farm animals on slotted floors (on the example of one of the animal species).

9. Hygienic requirements (features) for keeping young cattle during fattening in specialized and farms.

10. Features of grazing animals in different areas of Ukraine. Cultural pastures and their hygienic value.

11. Describe the measures of sanitary protection of water supply sources, its features in rural areas.
12. Hygienic requirements for the daily routine on livestock farms and complexes.
13. Systems and methods of keeping cattle, their hygienic assessment.
14. Leash method of keeping cattle, its characteristics, positive and negative sides. Hygienic requirements for the internal equipment of the cowshed.
15. Features of the internal equipment of cowsheds and norms of a microclimate at flow-shop system of production of milk and reproduction of a herd.
16. Hygienic requirements for cowsheds when using a loose method of keeping animals in deep litter.
17. Boxing of cattle and hygienic measures during its implementation.
18. Colostrum and its hygienic value. Methods of raising calves and their hygienic assessment.
19. Features of ventilation equipment of the maternity ward and prophylaxis for calves. Microclimate standards in them.
20. Hygiene of foals of mares and breeding of foals at various systems of keeping (stable and herd).

6. TEACHING METHODS.

The organization of training at NUBiP of Ukraine is provided by means of combining classroom and extracurricular forms of education, namely:

- lectures;
- practical classes (laboratory work, laboratory workshop);
- independent classroom work of students;
- independent extracurricular work of students;
- consultations;

To control the quality of knowledge and skills of students are used:

- individual interviews;
- colloquiums;
- scoring.

7. FORMS OF CONTROL.

Control and evaluation of students' educational achievements is an important component of the educational process in a higher educational institution.

Control in the didactics of higher school should be understood as pedagogical support, observation and verification of the success of educational and cognitive activities of students.

The control process carried out by the teacher involves several stages:

- 1) verification (identification of the level of knowledge, skills and abilities acquired by students);
- 2) assessment (measuring the level of knowledge, skills and abilities and comparing them with certain standards outlined by the requirements of the curriculum);
- 3) accounting (fixation of results in the form of grades, scores, ratings in the journal, scoring book, scoring or examination information).

Controlling the educational and cognitive activities of students, the teacher directs his efforts to solving the following tasks:

- identification of the quality of assimilation of educational material, the degree of compliance of the acquired skills and abilities with the goals and objectives

of the discipline;

- identification of difficulties in students' assimilation of educational information and typical errors in order to correct and eliminate them;
- determination of the effectiveness of organizational forms, methods and means of training;
- diagnosis of the level of readiness of students to perceive new material.

Pedagogical control performs the following functions:

- educational (educational), which consists in ensuring that control measures contribute to the deepening, expansion, improvement and systematization of students' knowledge, skills and abilities, provide feedback in learning;
- diagnostic and corrective, aimed at determining the level of knowledge, skills and abilities, as well as typical mistakes, gaps and difficulties in learning, the reasons for failure and ensuring measures to eliminate them;

- evaluation, which consists in finding out the state of knowledge, skills and abilities of both individual students and the academic group as a whole, and also ensures the accounting and openness of control results, which contributes to objective assessment and better learning;

- stimulating, which implies the approval of the success achieved by students and the formation of a positive motivation for learning, systematic educational and cognitive activity, the development of a sense of responsibility for its effectiveness;

- developmental, which consists in the fact that under conditions of systematic, pedagogical expedient control, memory, attention, thinking, oral and written speech, abilities, cognitive interests, activity and independence of students develop;

- educational, aimed at the formation of discipline, organization, self-discipline skills, a positive attitude to learning, the formation of the need for constant self-education and self-improvement;

- predictive and methodological, which concerns both the teacher (who receives fairly accurate information on the effectiveness of his activities) and students, since

the choice of the optimal teaching methodology, improvement of teaching methods, can significantly affect the final result – the quality of professional training of a university graduate.

The following types of control are used: preliminary, current, thematic, final.

Preliminary control is carried out in order to identify the level of preparedness of the student for the perception of new material. Such a check can be carried out in the form of test tasks, written control robots, frontal oral survey in practical classes, individual or group consultations.

Thematic knowledge test is aimed at determining the level of assimilation by students of a particular topic or several interrelated topics (modules). One of the main tasks of thematic verification is to create prerequisites for understanding and generalizing sufficiently large amount of educational information. For thematic control, which can be carried out at the final seminar, colloquium or in the process of modular or thematic control work, tasks are selected and constructed in such a way as to eliminate the elements of chance and objectively evaluate the educational achievements of students in all sections of the topic.

The final control is aimed at checking the level of assimilation of knowledge, practical skills and skills of students for a long period of time of study semester, for the entire period of study at the university. The purpose of the final control of knowledge is to identify the structure and system of knowledge of students. The components of such control are semester control and state certification. The student is allowed to the final control, provided that he performs all types of work provided for by the curriculum for a semester in this discipline.

8. DISTRIBUTION OF POINTS THAT STUDENTS RECEIVE.

The assessment of the student takes place in accordance with the provisions of the "On examinations and tests at NUBiP of Ukraine" dated 27.02.2019 minutes No. 7 from Table.

The relationship between national assessments and the rating of a higher education applicant

Student rating, points	Assessment of national for assembly	
	Examinations differentiated tests	tests
90 - 100	Perfectly	Credited
74 - 89	Well	
60 - 73	Satisfactory	
00 - 59	Disappointing	Not counted

To determine the rating of the student (listener) in the assimilation of the discipline RDISS (up to 100 points), the received rating for certification (up to 30 points) is added to the rating of the student (listener) in the educational work R HP (up to 70 points): $R_{DIS} = R_{HP} + R_{JSC}$.

9. EDUCATIONAL AND METHODOLOGICAL SUPPORT.

Методичні вказівки до проведення лабораторних занять із дисципліни „Гігієна тварин” / М.О. Захаренко, Д.А.Засєкін, В.М. Поляковський та ін. – К.:Арістей. – 2005. – 144 с.

10.RECOMMENDED SOURCES OF INFORMATION.

Basic

1. Law of Ukraine "On Veterinary Medicine" dated 16.11.2006 No 361-V.
2. Law of Ukraine "On liability of enterprises, institutions and organizations for violation of the legislation on veterinary medicine" dated 05.12.1996 No 569/96-BP.
3. Law of Ukraine "On Food Safety and Quality" dated 06.09.2005 No2809-IV.
4. Методичні вказівки до проведення лабораторних занять із дисципліни „Гігієна тварин” / М.О. Захаренко, Д.А.Засєкін, В.М. Поляковський та ін. – К.:Арістей. – 2005. – 144 с.

Information web-resources

1. <http://svynarstvo.in.ua/>
2. <http://agroua.net/animals/>
3. <http://www.horses.dp.ua/>
4. <http://www.milkua.info/uk/>
5. <http://kombikorm.com.ua/news/>
6. <http://www.ptahy.org.ua/>