NATIONAL UNIVERSITY OF LIFE AND ENVIRONMENTAL SCIENCES OF UKRAINE
Department of Veterinary Epidemiology and Animal Health

APPROVED
Faculty of Veterinary Medicine
« 4 » June 2025

WORKING PROGRAM OF EDUCATIONAL PRACTICES OF ACADEMIC DISCIPLINE VETERINARY VIROLOGI

Area of knowledge 21 Veterinarian
Specialty 211 «Veterinary Medicine»
Academic programme «Veterinary Medicine»
Faculty of Veterinary Medicine
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Kyiv – 2025

1. Introduction

Practical training of applicants in institutions of higher education is an integral part of the educational process, as a result of which theoretical knowledge is consolidated, the necessary practical skills and abilities are acquired for the professional activity of a veterinary medicine doctor. The application of acquired theoretical and practical knowledge by the students during the educational practice will provide an opportunity to expand their horizons and help them better navigate in their chosen profession. Educational practice in veterinary virology is a continuation of the educational process. During its implementation, students deepen the acquired theoretical knowledge and practical skills. In the conditions of a scientific laboratory, they consolidate knowledge on the diagnosis of infectious diseases of viral etiology. Therefore, the completion of educational practice in veterinary virology is an integral part of the curriculum for the training of a doctor of veterinary medicine at the "Master's" OS, specialty 211 "Veterinary Medicine.

The purpose of the educational practice is to prepare students to use theoretical knowledge from the discipline "Veterinary Virology" in practical conditions, as well as practical skills in organizing and conducting laboratory research during the diagnosis of viral diseases.

Description of the discipline

Tasks of educational practice:

1. Rules for working with virus-containing material and personal safety techniques.
2. Types of pathological material, its packaging and transportation.
3. Issuance of an accompanying document for pathological material.
4. Sequence of conducting virological and serological studies.
5. Express and retrospective methods of diagnosis of viral diseases.
6. Development of diagnostic schemes for viral diseases.

The performance of each type of work is preceded by a check of theoretical knowledge and safety rules.

As a result of the training practice in the discipline, the student should know:

- safety techniques for work and handling in the laboratory with virus-containing material and laboratory equipment;
- conservation methods and transportation rules for specific pathological material;
- the accompanying document form;
- diagnostic schemes of viral diseases for different groups of animals.

be able:

- choose the right dishes and tools for the selection of life and postmortem materials;
- properly select, preserve and pack virus-containing material;
- correctly draw up the accompanying document for the selected pat material;
- correctly draw up a scheme for diagnosing a viral disease.

The process of educational practice is aimed at forming the following competencies among students:

integral competencies (IC):

The ability to solve tasks and problematic issues in the field of veterinary medicine in relation to the implementation of veterinary preventive, diagnostic and therapeutic measures, the reproduction of brood stock, the implementation of safety and quality control of livestock products

and fodder, the promotion of veterinary knowledge, the implementation of educational work on hygiene issues, care, feeding and maintenance of animals

general competences (GC):

- ability to abstract thinking, analysis and synthesis;
- ability to apply knowledge in practical situations;
- ability to conduct research at the appropriate level;
- knowledge and understanding of veterinary virology;
- ability to make informed decisions;
- desire to preserve the environment.

professional (special) competences (PC):

- the ability to follow the rules of labor protection, asepsis and antiseptics during professional activities;
- the ability to carry out procedures for selection, packaging, preservation and forwarding of samples of biological material for virological research;
- the ability to organize, conduct and analyze the results of virological research;
- the ability to protect the environment from contamination during virological research.

First day competencies (FDC):

- To understand the methods of scientific research, the contribution of fundamental and applied research to science and the implementation of the principle of 3Rs (Replacement, Reduction, Refinement - Replacement, Reduction, Improvement);
- Understand and apply the principles of the One Health concept to ensure good clinical practice in veterinary medicine, as well as science-based and evidence-based veterinary medicine;
- Promote and monitor the preservation of health and safety of oneself, patients, animal owners, colleagues and the environment during the performance of professional activities; demonstrate knowledge of the principles of quality assurance; apply the principles of risk management in practice;
- Conduct autopsies of animal corpses of all common species, including sampling, sending them for research and reporting;
- Collect, store and transport specimens, select appropriate diagnostic tests, perform interpretation and have an understanding of the limitations of test results;
- Apply biosecurity principles and evaluate biosecurity protocols correctly.

2. Programmatic learning outcomes (PLP)

1. Know and correctly use the terminology of veterinary medicine.
2. To establish a connection between the clinical manifestations of the disease and the results of laboratory studies. To monitor the causes of the spread of diseases of various etiologies and biological pollution of the environment with livestock waste, as well as materials and means of veterinary use.
3. To understand the essence of the processes of production, storage and processing of biological raw materials.
4. Know the rules of storage of various pharmaceuticals and biological preparations, ways of their enteral or parenteral application, understand the mechanism of their action, interaction and complex action on the animal body.
5. Know the rules and requirements of biosafety, bioethics and animal welfare.

Bases of practice - in accordance with cooperation agreements.

3. Organization of practice

The place of educational practice is the educational laboratories of the Department of Veterinary Epidemiology and Animal Health of the NULES of Ukraine, laboratories of veterinary medicine, laboratories of scientific research institutes.

4. The content of the practice

- Students' mastery of modern methods, skills, abilities and ways of organizing work in various research laboratories.
- Formation of students on the basis of knowledge acquired at the university of professional skills and abilities for making independent decisions while working in specific research laboratories.
- Acquaintance with the principles of work of laboratories of various directions, systematic replenishment of knowledge about work in the laboratory, as well as the ability to analyze analytically and apply theoretical knowledge in practical activities.
- Study and consolidation in practice of certain methods of working with living objects.

4.1. Rough thematic plan

Topic name	Hours		
	total	including	
		classroom classes	independent work
Topic 1. Diagnostics of viral infections. Safety techniques, personal protective equipment, biosafety in virology.		6	
Topic 2. Selection of research material and its preparation for virological research.		6	
Topic 3. Obtaining cell culture. Study of the cytopathic effect of the virus on cell culture.		6	
Topic 4. Use of living systems to determine the tropism of viruses.		6	
Topic 5. Diagnostics of antigenic properties of the virus		6	
Total		30	

4.2. Approximate thematic plan of excursions (away classes)

Topic name	The base for conducting classes	Hours
Fluorescence microscopy. Neutralization reaction. Titration of sera for serological reactions	according to the cooperation agreements	4

Molecular genetic methods of diagnosis. Use of laboratory animals in virological research.	according to the cooperation agreements	4
Peculiarities of selection, transportation and work with virus-containing pathological material and its preparation for virological studies	according to the cooperation agreements	4
The structure and features of the functioning of a private veterinary laboratory. Features of diagnostics using ELISA	according to the cooperation agreements	4

4.3.Material-technical and educational-methodical support of students' practice

Type of work	Topic	Providing
EDUCATIONAL PRACTICES	The structure of the virological laboratory. Safety rules when working with viruses	1. educational films. 2. tasks on simulators. 3. familiarization with the organization of workplaces in the educational and scientific laboratory of virology (room 220).
	Equipment for sampling.	1. transport tubes with medium; 2. sterile disposable test tubes with hermetic screw caps and a tampon probe; 2. 3. sterile probe-tampons; 3. 4. sterile glass tubes with cotton-gauze plugs; 4. 5. a sterile plastic disposable glass with a lid; 5. 6. non-sterile plastic container with a lid; 6. 7. a sterile glass container with a metal lid; 7. 8. a test tube with a transport medium, tightly closed with a sterile rubber stopper; 8. 9. sterile disposable container for collecting urine; 9. 10. a sterile glass syringe without a needle; 10. 11. disposable sterile syringe with a needle; 11. 12. special disposable containers with a lid and a shovel for collecting feces; 12. 13. sterile test tubes with anticoagulant; 13. 14. sterile disposable tubes of the "Eppendorf" type; 14. 15. plastic sterile airtight glasses with a label; 15. 16. wide-necked glass bottles with metal lids; 16. 17. polypropylene containers; 17. 18. spatula, metal or plastic spoon; 18. 19. tweezers; 19. 20. tripod; 20. 21. scalpel; 21. 22. scissors; 22. 23. water container,

		23. 24. antiseptic soap, 24. 25. paper towels, 25. 26. disinfectants 26. 27. disposable overalls (gloves, mask, cap, gown or overalls, shoe covers), rubber boots, etc.
	Preservation of samples for virological studies	1. 1. sterile Hanks' or Earl's saline solutions; 2. 2. disposable syringes for sampling the solution; 3. 3. transport tubes and vials; 4. 4. cooling elements (rigid plates, flexible gel; balls) 5. 5. antibiotics of various pharmacological groups; 6. 6. models of simple and complex viruses
	Packaging and transportation of various types of virus-containing materials.	1. 1. different options of primary containers; 2. 2. packing material with absorbent properties (wadding, paper); 3. 3. hermetic polyethylene bags of various sizes; 4. 4. secondary containers of various types; 5. 5. containers for test tubes; 6. 6. impact-resistant material (paper, sawdust). 7. 7. thermoses (materials – metal, plastic, foam); 8. 8. fabric bags of various types; 9. 9. plastic or wooden boxes; 10. 10. marker, scotch tape, adhesive plaster
	Disinfection in farms Destruction of viruses in clinics and diagnostic laboratories	1. 1. educational films. 2. 2. models of different types of viruses; 3. 3. premises of educational and research laboratories, aseptic and tabletop boxes; 4. 4. premises of the clinic (corridors for waiting, operating room, manipulation room, hospital for keeping animals).
	Sterilization of dishes and equipment before and after working with virus-containing material. Preparation of intravital and postmortem virus-containing material for laboratory studies	1. overalls; 2. metal tools; 3. models of corpses of laboratory animals; 4. utensils used for feeding laboratory animals; 5. litter for cages of laboratory animals; 5. working table; 6. liquid waste (washing solution, nutrients); 8. infected pipettes and vials; 9. laboratory utensils (vials, test tubes, flasks, pipettes, syringes, filters, rubber and plastic caps, hoses); 10. used disinfectant solutions

	Modern methods of virological research Composition and purpose of growth and support media for cell cultures. Methods of working with cell cultures of various types	1. 1. growth media for cell cultures; 2. 2. components of supporting environments; 3. 3. mattresses of different volumes; 4. 4. glass vials for cell cultures; 5. 5. plastic clusters for cell cultures; 6. 6. viral vaccines; 7. 7. diagnostic tests; 8. 8. Hanks and Earl's saline solutions; 9. 9. spatulas for cleaning mattresses; 10. 10. trypsin solution; 11. 11. microscope for cell cultures; 12. 12. refrigerator; 13. 13. thermostat; 14. 14. desktop boxes for obtaining cell cultures.

5. Requirements for writing a report

The diary is the student's main document about the results of his educational practice. In the diary, the student reflects the scope and essence of the work performed for each day of practice. At the same time, he must complete and work out all the issues of the educational practice program.
At the end of the internship, the student submits to the Department of Veterinary Epidemiology and Animal Health of the NULES of Ukraine, personally to the supervisor, a diary of educational practice, which is a report and makes up a credit for the educational practice

6. Forms and methods of control

- - final (credit).

Means of diagnosing learning outcomes:

✓ exam;
✓ module tests.
✓ Protection of laboratory and practical classes

Teaching methods:

✓ verbal method (lecture, discussion, interview, etc.);
✓ practical method (laboratory, practical classes);
✓ visual method (illustration method, demonstration method);
✓ work with educational and methodical literature (summarizing, summarizing, annotating, reviewing, writing an essay);
✓ video method (remote, multimedia, web-oriented, etc.);
✓ independent work (task performance).

Evaluation methods:

✓ oral or written survey;
✓ modular testing;
✓ protection of laboratory work.

Distribution of points by types of learning activities

Type of learning activity	Classroom classes	Evaluation
Topic 1	Diagnostics of viral infections. Safety techniques, personal protective equipment, biosafety in virology.	15
Topic 2	Selection of research material and its preparation for virological research.	15
Topic 3	Obtaining cell culture. Study of the cytopathic effect of the virus on cell culture.	15
Topic 4	Use of living systems to determine the tropism of viruses.	15
Topic 5	Diagnostics of antigenic properties of the virus	10
Module test		30
Total for the module 1		**100**

Scale for assessing knowledge of a higher education applicant

Distribution of points that get students.

Assessment of student knowledge is on a 100-point scale and is translated into national assessments according to table. 1 "Regulations on examinations and tests in NULES of Ukraine"**.**

Student rating, points	The assessment is national	
	examination	test
90-100	Perfectly	Passed
74-89	Good	
60-73	Satisfactory	
0-59	Unsatisfactorily	Non passed

To determine the student's rating for mastering the discipline $\mathbf{R_{DIS}}$ (up to 100 points), the rating obtained from the certification $\mathbf{R_{SER}}$ (up to 30 points) is added to the student's rating for the educational work $\mathbf{R_{EW}}$ (up to 70 points): $\mathbf{R_{DIS} = R_{EW} + R_{SER}}$

7. **Evaluation Policy**

Deadline and resubmission policy	*EXAMPLE: Works submitted after the deadline without a valid reason will be graded lower. Modules can be re-assigned with the permission of the lecturer if there is a valid reason (e.g. sick leave).*
Policy on academic integrity	*EXAMPLE: Cheating during tests and exams is prohibited (including using mobile devices). Term papers and essays must have correct text references to the literature used*
Visitation Policy	*EXAMPLE: Attendance at classes is mandatory. For objective reasons (e.g. illness, international internship), studies may be conducted individually (online upon agreement with the dean of the faculty).*

9. Educational and methodological support:

- electronic training course of the academic discipline (on the educational portal of NUBiP of Ukraine eLearn - link) MANDATORY;
- lecture notes and their presentations (in electronic form);
- textbooks, study guides, workshops;
- methodological materials for studying the academic discipline for full-time and part-time higher education students;

- program of educational (industrial) practice of the academic discipline (if it is provided for by the curriculum).

10. Recommended sources of information:

1. General veterinary virology : textbook / M Radzykhovskyi., O. Dyshkant, L. Vygovska, V. Ukhovskyi, V. Melnyk, H. Kozlovska – Kyev : NULES of Ukraine, 2024. – 166 c.
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