

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

SUMY NATIONAL AGRARIAN UNIVERSITY

FACULTY OF VETERINARY MEDICINE

Department of Internal Medicine, Pharmacy and Biochemistry

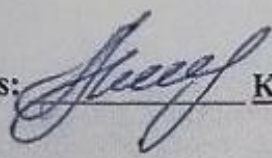
WORK PROGRAM (SYLLABUS) OF THE EDUCATIONAL COMPONENT

OK 23 VETERINARY PHARMACOLOGY

(required)

Specialty	211 "Veterinary Medicine"
Educational program	21 "Veterinary Medicine"
Level of higher education	second master's level of higher education



Developers:  Kisterna O.S., Candidate of Veterinary Sciences,
Associate Professor

(signature)

(surname, initials/academic title)

Reviewed, approved and ratified at a meeting of the Department of Therapy, Pharmacology, Clinical Diagnostics and Chemistry	protocol dated <u>01.06.2026</u> № <u>11</u>
	Manager Department <u></u> Oleksandr NECHIPORENKO

Agreed:

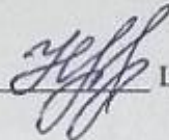
Guarantor of the educational program



Oleksandr CHEKAN

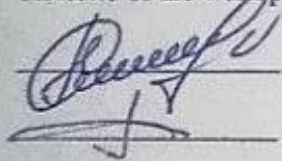
Dean of the Faculty,

where the educational program is implemented



Lyudmila NAGORNA

Reviews of the work program (attached) provided by:



Dolbanosova R.V. (full name)

Rebenko G.I. (full name)

Methodologist of the Department of Educational Quality,
 licensing and accreditation

H. Ivan

(signature)

Hagiro Nagornik

(full name)

Registered in the electronic database: date: 29.06. 2026.

Information on reviewing the work program (syllabus):

Academic year in which changes are made	Number of the appendix to the work program with a description of the changes	Changes reviewed and approved		
		Date and number of the department meeting minutes	Head of the Department	Educational program guarantor

1. GENERAL INFORMATION ABOUT THE EDUCATIONAL COMPONENT										
1.	Name OK	Veterinary pharmacology								
2.	Faculty/ chair	Faculty veterinary medicine Department of Internal Medicine, Pharmacy and Biochemistry								
3.	Status OK	Mandatory								
4.	Program/ Specialties (programs) that include OC for <i>mandatory OC</i>	Educational and professional program of the second master's level in the specialty 211 "Veterinary Medicine" Master of Veterinary Medicine								
5.	The OK can be offered for (<i>filled in for selective OKs</i>)	-								
6.	NRC level	7th								
7.	Semester and duration of study	5-7, 45 weeks								
8.	Number of ECTS credits	10								
9.	Total hours and their distribution	Contact work (classes)						Independent work/ teaching practice		
		Lectures			Laboratory					
		<i>semesters:</i>								
		5	6	7	5	6	7	5	6	7
		16	14	14	14	30	60	90	46	16
		44			104			152 (120/32)		
10.	Language of instruction	Ukrainian								
11	Teacher/ OK coordinator	Kisterna O.S.								
	Contact information	Lesya_sumy2008@ukr.net https://vet.snau.edu.ua/kafedri/kafedra-terapii-farmakologii-klinichnoi-diagnostiki-ta-ximii/sklad-kafedri/kisterna-olesya-sergiivna/								
1 2	General description OK	The OK "Veterinary Pharmacology" is a basic subject for the professional training of veterinary doctors. Mastering it gives the opportunity to acquire knowledge about veterinary drugs, their effect on the animal's body, the principles of their dosage and use in veterinary medicine, their sale and storage								
13	Purpose of the educational component	Study of terms, basics of formulation, dosage, concepts of "dose" and principles of their calculation for different species of animals; pharmaceutical groups of veterinary drugs, conditions of their storage and use; varieties of dosage forms and principles of their manufacture and use. Study of general principles of action of drugs on the body, their pharmacodynamics, pharmacokinetics, biotransformation.								

		direct and indirect action of drugs, side effects, study and mastery of principles of distribution of drugs into main pharmacological groups, their features and pharmacological effects. Compliance with safety of use of drugs for animals and humans, mechanism of their excretion (rooting), control of resistance of antimicrobial agents. Study of medicinal and poisonous plants and their use, manufacture of dosage forms from them and use of ready-made herbal preparations.
14	Prerequisites for studying OK, connection with other educational components of OP	The OK is based on the OPP for the specialty H6 "Veterinary Medicine" of the second master's level and is based on the results of training with OK : chemistry - types of solutions (colloidal, crystalloid, hypo-, iso-, hypertonic; concepts of alkalis, acids); Latin - Latin names, prescription terms; physiology, path. physiology - concepts of endo- and exogenous factors; inflammation, types of allergies; principles of wound healing; cytology - processes in cells and their structure, biochemical processes in the body; clinical diagnostics: basics of collecting anamnesis and clinical examination of an animal; microbiology, virology: types of pathogens (microorganisms, viruses, protozoa) and their effect on the body; parasitology, zoology: types of parasites (helminths, protozoa); obstetrics: hormonal processes in the body. The OK "Vet. Pharmacology" is the basis for studying the following OKs: Therapy (Internal Diseases of Animals), Clinical Pharmacology, Epizootology, Parasitology, Obstetrics, Surgery. <i>When studying the OK "Vet. Pharmacology" there are no restrictions, overlap with other OKs and elective disciplines.</i>
15	Logistics and technical support for the implementation of the OK	The SNAU practice bases for conducting students' training practice are the clinical, diagnostic and advisory center of the training laboratory "Clinic of Veterinary Medicine" of Sumy National Agrarian University (KDCC " Vet camp ") , veterinary clinics and pharmacies "UkrZOOvetprompostach", CVM "Hels", "Vetdopomoga", veterinary pharmacy "Hatiko" in the city. Sumy, Brovopharma enterprise. 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	SNAU Code of Academic Integrity: http://docs.snau.edu.ua/documents/education/quality/kodeks_akadem_dobrochesnosti.pdf When preparing workbooks, plagiarism is not allowed, the work is canceled with the right to resubmit. The same design of recipes is allowed if there are no errors in the test papers and the workbook, however, when checking recipes with the indication of the calculation of doses, description of the dissolution of drugs, attention will be paid to the presence of plagiarism, test papers on recipes are canceled with the right to resubmit. When designing a workbook on drugs, if duplication of pharmacological effects of drugs is detected, the work is sent for revision
17	Keywords	Veterinary pharmacology, medicines, drugs, dosage forms, prescriptions, pharmacies, pharmacodynamics, biotransformation, dose, side effects.
18	Distance learning course, Moodle: Veterinary Pharmacology	OK. 1. "Vet. Pharm. and Toxicology." for the 2nd year of the course, 2. "Vet. Pharmacology" for the 3rd-4th year : https://cdn.snau.edu.ua/moodle/course/view.php?id=2246

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 given in the OP)			How is RND assessed?
	PRN 10	PRN 14	PRN 15	
DRN 1. Know the basic pharmacological and prescription terms, dosage forms and the basics of the technology of their manufacture and practical application, the basics of prescribing, the principles of dosing and calculating doses of drugs of various dosage forms and dissolving antibiotics.	+			1. Workbook No. 1 (study of theoretical issues given in the workbook, preparation of recipes using examples). 2. Testing (Moodle platform). 3. Test work on recipes. 4. Individual work (IW) for the 5th semester of studying OK – calculating doses, writing out prescriptions in a workbook. 5. Practicing practical skills (teaching practice) :

				studying the rules for storing medicines, making dosage forms – designing a workbook, an in-house video on making dosage forms, visiting pharmacies, clinics, and farms.
DRN 2. Clearly understand the classification and distribution of drugs according to pharmaceutical groups, taking into account the affiliation of active substances and their characteristic pharmaceutical effects, regardless of the variety of drug manufacturers	+			1. Workbook No. 2 (prescribing the main representatives of drugs from modern manufacturing companies by pharmaceutical groups; analysis of pharmacodynamics, pharmaceutical effects according to pharmaceutical groups during semesters, where various pharmaceutical groups and their representatives are studied). 2. Testing (Moodle platform). 3. Oral administration of drugs (be able to name representatives of the pharmaceutical group, their characteristic pharmaceutical effects and features of action).
DRN 7. Be able to choose rational drugs or groups of drugs taking into account the characteristics of pharmaceutical effects depending on the species, age, sex, breed of animal, technology of cultivation and exploitation, epizootic situation, biogeochemical areas of animal keeping	+			1. Support notes (taken while attending lectures -to note down the basic terms and concepts on general pharmacology – the distribution of drugs in the body, the dependence of the action of drugs on various factors). 2. Testing (Moodle platform). 3. Oral administration of drugs (be able to name the main representatives of the pharmaceutical group, their characteristic pharmaceutical effects and features of action).
DRN 10. Be able to rationally choose drugs or	+			1. Supporting notes in a workbook (taken while

groups of drugs depending on etiotropic, pathogenetic, symptomatic, replacement therapy, taking into account the characteristic pharmacological effects of drugs. Analyze and prevent (predict) possible side effects (allergic reactions, overdose), control antibiotic resistance, drug addiction				attending lectures -to note down the basic terms and concepts on general pharmacology – the distribution of drugs in the body, the dependence of the action of drugs on various factors). 2. Testing (Moodle platform). 3. Oral interview (individual or group (team) interview, analysis of situational tasks)
DRN 14. Know the processes of biotransformation of drugs in the body, taking into account physico-biochemical factors through biological membranes, their absorption, manifestation of the effect, inactivation, excretion and rooting (inactivation time) - the ability of drugs to affect the quality and processing of biological raw materials		+		1. Support notes (taken while attending lectures -to note down the basic terms and concepts on general pharmacology – the distribution of drugs in the body, the dependence of the action of drugs on various factors). 2. Testing (Moodle platform). 3. Oral (individual or group (team) interview, analysis of situational tasks
DRN 15. Know the basic rules for storing medicines, their shelf life, routes of administration depending on the chemical origin, concentration and structure of body tissues. Understand the concept of their interaction (synergism, antagonism) in a syringe (in vitro) and a biological object (in vivo) both separately and when simultaneously administered to an animal and the risks of side effects, inactivation of drugs or enhancement of effects that arise in this case			+	1. Workbook No. 1 (study of theoretical issues given in the workbook regarding storage, rules for the sale of drugs; basics of pharmacy). 2. Support notes (taken while attending lectures -to note down the main terms and concepts on general pharmacology – synergism, antagonism of drugs). 3. Testing (Moodle platform). 4. Oral (individual or group (team) interview, analysis of situational tasks.

4. 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
	Audit work		CRC	
	Luke	LPZ.		
5th semester				
Topic 1. General pharmacology. 1. Introduction. Subject and tasks of pharmacology. History of pharmacology. 2. Pharmacodynamics. Mechanism of action of medicinal substances. Types of pharmacotherapy. 3. Routes of administration of medicinal substances. Absorption, distribution, biotransformation. 4. Physico-chemical factors of drug penetration through membranes. Biotransformation of drugs: reduction, hydrolysis, conjugation. Elimination of drugs from the body. 5. Types of action of medicinal substances. Excitation, inhibition, resorptive action, direct and indirect, general, selective. 6. Factors influencing the action of medicinal substances. Side effects. Features of drugs upon repeated administration (cumulation, synergism, antagonism). 7. Dose. The principle of dosing drugs to animals. Dosage depending on the chemical structure of the drug, dosage form, species, sex, age, general condition, and various conditions.	6	4	20	2,5,18,32
Topic 2. Recipe basics. 1. Pharmacopoeia. Terms and concepts. 2. The concept of a pharmacy. Their types. Storage of medicines. 3. General concepts of recipe. Recipe terms. The study of recipes. The use of basic Latin terms and abbreviations in recipe. 4. The structure of a prescription. Simple and complex prescriptions. Rules and schemes for writing prescriptions. The importance of prescriptions in the practice of a veterinarian. medicine.	10	10	70	1,6,7,8,14,17, 18,25,30, 42-46, 47-57

5. Solid dosage forms. Examples of calculating doses of the main dosage forms. 6. Soft and liquid dosage forms. Examples of calculating doses of the main dosage forms. 7. Liquid dosage forms. Examples of calculating doses of the main dosage forms. 8. Production of a dosage form and presentation in the form of a video. 9. Designing workbook No. 1				
Total for 5 semesters	16	14	90	
6th semester				
Topic 3. Special pharmacology. Drugs that act on the central nervous system (CNS). 1. General characteristics of drugs that affect the CNS. Drugs that depress the central nervous system (CNS). The concept of psychotropic drugs, their classification. Psychotropic drugs: tranquilizers, sedatives, hypnotics, bromides, neuroleptics, muscle relaxants. 2. Antihistamines. 3. The concept of anesthesia and groups of drugs for anesthesia. Drugs for premedication. The importance of the stages of anesthesia for the choice of drugs. 4. Drugs for inhalation anesthesia. 5. Drugs for non-inhalation anesthesia. 6. Anesthesia schemes for different animals. 7. Alcohol . Practical use of alcohol. 8. Narcotic analgesics. Features of action. 9. Non-narcotic analgesics. Steroidal and non-steroidal anti-inflammatory drugs. 10. Psychostimulants. Analeptics. Strychnine preparations acting on the spinal cord. 11. About the formation of workbook No. 2	5	15	20	2,3,4,5,13,15,16, 19, 26-29,31-33,35, 42-46
Topic 4. Drugs that act on the peripheral nervous system in a depressant and excitatory manner. 1. Local anesthetics. Enveloping. Emollients. Astringents. Adsorbents. Enterosorbents. 2. Antiemetics. Antiemetics. 3. Irritants. Pure, aromatic bitters. Expectorant. Emetic. Ruminating. Preparations for improving digestion. 4. Cholagogues. Hepatoprotectors.	5	15	20	2,3,5,19, 26-29,33,35, 42-46

5. Laxatives. Groups of laxatives.				
6. About the formation of workbook No. 2				
Topic 5. Drugs that act on the efferent nervous system. 1. Cholinomimetics. 2. Cholinolytics. 3. Adrenergic agents. 4. Designing workbook No. 2	4	5	6	2,3,5,19, 26-29,31- 33,35, 42-46
Total for 6 semesters	14	30	46	
7th semester				
Topic 6. Special pharmacology. Drugs that act on the heart and blood. 1. Cardiotonics. Cardiac glycosides. Classification. Concept. Distribution, schemes of use of cardiac glycosides. 2. Antiarrhythmic drugs. Drugs that affect metabolism in the myocardium. 3. Antihypertensives. Antispasmodics. 4. Drugs that affect blood clotting. Coagulants, anticoagulants, thrombolytic agents. 5. Blood substitutes (drugs for infusions). Their types and choice depending on the characteristics of subgroups. Dosage. 6. Diuretic drugs. Their classification. 7. About the formation of workbook No. 2	4	10	2	2,3,5,19,20- 21,23, 26-29, 31-33,35, 42-46
Topic 7. Drugs that affect metabolism and immunity. 1. Physiological role of vitamin preparations, their classification. 2. Preparations containing fat-soluble vitamins A, D, E, K. Features of the mechanism of action. 3. Water-soluble vitamins. The main B vitamins (B1, B6, B12) and other B vitamin preparations. Vitamin C. 4. Multivitamin preparations. 5. Preparations of micro and macroelements. Premixes. The concept of biogenic province for the use of preparations of this group. 6. Enzyme preparations, their classification, application. 7. Amino acids and their characteristics. 8. Bacterial preparations (probiotics, prebiotics), their characteristics. 9. Hormonal (steroid) drugs.	4	10	2	2,3,5,9,19,22,2 4, 26-29,31- 33,35, 42-46

10. Immunobiological, antiviral drugs. Immunostimulants. Immunosuppressants. Immunomodulators. 11. About the formation of workbook No. 2				
Topic 8. Antimicrobial (chemotherapeutic drugs). 1. The concept of "antimicrobial drugs", their distribution, classification. 2. Sulfonamide drugs. Their distribution. 3. Nitrofurans drugs. Their distribution. Rules of application. 4. Antibiotics. General concepts. Sources of production. Classification. The need and rules for the rational use of antibiotics. Features of pharmacological groups of antibiotics. Resistance to antimicrobial agents, types and mechanisms of its development. 5. Antiprotozoans. Their distribution. 6. Coccidiostats. Their distribution. 7. Arsenic preparations. Their distribution. 8. Medicinal dyes. Their distribution. 7. About the formation of workbook No. 2	4	10	5	2,3,5,10-12, 26-29,31-33,35, 42-46
Topic 9. Antiseptics and disinfectants. 1. Classification of disinfectants and antiseptics. Their distribution. Features of action. 2. Oxygen-donating drugs. 3. Iodine preparations. 4. Phenols, cresols and their derivatives. 5. Formaldehyde, sulfur group. 6. Modern disinfectants. 7. About the formation of workbook No. 2	2	10	5	2,3,5,26-29,31-33,35, 42-46
Topic 10. Insecto-acaricidal and anthelmintic agents. 1. Insecto-acaricidal. Pharmacological groups. Dosage forms. Rules of application depending on the species, age, dosage form. 2. Anthelmintics. Pharmacological groups. Macrocyclic lactone group . 3. Deratization agents. Pharmacological groups. 4. About the formation of workbook No. 2	2	4	2	2,3,5,26-29,31-33,35, 42-46
Total for 7 semesters	14	60	16	

4. TEACHING AND LEARNING METHODS

DRN No.	Teaching methods (work that will be carried out by the teacher <u>during classroom lessons</u> , consultations)	Number. hours	Teaching methods (what types of learning activities should <u>the student perform independently</u>)	Number. hours
DRN 1. Know the basic pharmacological and prescription terms, dosage forms and the basics of the technology of their manufacture and practical application, the basics of prescribing, the principles of dosing and calculating doses of drugs of various dosage forms and dissolving antibiotics	1. Lecture, story, explanation, instruction, work with books and other sources 2. Demonstration of the main dosage forms, their manufacturing technology and their features in practical application. 3. Teaching the basic principles of calculating doses of drugs of various dosage forms; rules for dissolving antibiotics	1 0	1. Preparation of workbook No. 1, recipes based on examples during the LPP. 2. Studying the theoretical questions given in the workbook. 2. Testing (Moodle platform). 3. Performing control work on recipes. 4. Preparation of individual work (SRS) – calculation of doses, writing out prescriptions in a workbook	1 0
DRN 2. Clearly understand the classification and distribution of drugs according to pharmaceutical groups, taking into account the affiliation of active substances and their characteristic pharmaceutical effects, regardless of the variety of drug manufacturers	1. Lecture, story, explanation, instruction, work with books and other sources to teach rational choice of drugs. 2. Study and analysis of pharmacological groups of drugs, active ingredients of drugs taking into account their belonging to different pharmaceutical groups. Evaluation of pharmaceutical effects of pharmaceutical groups 3. Demonstration of various pharmacological	50	1. Preparation of workbook No. 2 (prescribing the main representatives of drugs from modern manufacturing companies by pharmaceutical groups; analysis of characteristic pharmaceutical effects according to pharmaceutical groups during the semesters, where all available pharmaceutical groups are studied). 2. Testing (Moodle platform). 3. Oral administration of drugs (be able to name the main	5 0

	groups of drugs and their representatives from various pharmaceutical companies.		representatives of the pharmaceutical group, their characteristic pharmaceutical effects and features of action). 4. Preparation of individual work - SRS (project) for the 6th and 7th semesters of studying OK - a video about one of the pharmaceutical groups with examples of drugs from different manufacturers and characteristic pharmaceutical effects, features of the application of this group in practice	
PRN 7. Be able to choose rational drugs or groups of drugs taking into account the characteristics of pharmaceutical effects depending on the species, age, sex, breed of animal, technology of cultivation and exploitation, epizootic situation, biogeochemical areas of animal keeping	1. Lecture, story, explanation, instruction, work with books and other sources to teach rational choice of drugs. 2. Study and analysis of pharmacological groups of drugs, active ingredients of drugs, taking into account their belonging to different pharmaceutical groups. Evaluation of pharmaceutical effects of different pharmaceutical groups. 3. Demonstration of various pharmacological groups of drugs and their representatives from various	20	1. Preparation of a reference note (taken while attending lectures, -noting down the basic terms and concepts on general pharmacology – the distribution of drugs in the body, the dependence of the action of drugs on various factors). 2. Testing (Moodle platform). 3. Oral administration of drugs (be able to name the main representatives of the pharmaceutical group, their characteristic pharmaceutical effects and features of action).	20

	pharmaceutical companies.			
DRN 10. Be able to rationally choose drugs or groups of drugs depending on etiotropic, pathogenetic, symptomatic, replacement therapy, taking into account the characteristic pharmacological effects of drugs. Analyze and prevent (predict) possible side effects (allergic reactions, overdose), control antibiotic resistance, drug addiction	1. Lecture, story, explanation, instruction, work with books and other sources to teach rational choice of drugs. 2. Analysis of the pharmacological effects of drugs during their passage and interaction with the body. 3. Demonstration of various pharmacological groups of drugs and their representatives from various pharmaceutical companies.	2 0	1. Preparation of a reference note (taken while attending lectures -, noting down the main terms and concepts. 2. Testing (Moodle platform). 3. Oral (individual or group (team) interview, analysis of situational tasks	20
DRN 14. Know the processes of biotransformation of drugs in the body, taking into account physico-biochemical factors through biological membranes, their absorption, manifestation of the effect, inactivation, excretion and rooting (inactivation time) - the ability of drugs to affect the quality and processing of biological raw materials	1. Lecture, story, explanation, instruction, work with books and other sources to teach rational choice of drugs. 2. Analysis of the pharmacological effects of drugs during their passage and interaction with the body. 3. Demonstration of various pharmacological groups of drugs and their representatives from various pharmaceutical companies.	20	1. Preparation of a reference note (taken while attending lectures, -noting down the main terms and concepts. 2. Testing (Moodle platform). 3. Oral (individual or group (team) interview, analysis of situational tasks	20
DRN 15. Know the basic rules for storing	1. Lecture, story, explanation, instruction, work with	3 0	1. Preparation of a reference note (taken while attending	30

medicines, their shelf life, routes of administration depending on the chemical origin, concentration and structure of body tissues. Understand the concept of their interaction (synergism, antagonism) in a syringe (in vitro) and a biological object (in vivo) both separately and when simultaneously administered to an animal and the risks of side effects, inactivation of drugs or enhancement of effects that arise in this case	books and other sources to teach rational choice of drugs. 2. Analysis of pharmacological effects of drugs during their passage and interaction with the body, interactions with each other, prediction of side effects. 3. Demonstration of various pharmacological groups of drugs and their representatives from various pharmaceutical companies.		lectures, -noting down the main terms and concepts. 2. Testing (Moodle platform). 3. Oral (individual or group (team) interview, analysis of situational tasks	
Approximate distribution of hours for 10 credits (300 hours)		150		150

5. EVALUATION BY EDUCATIONAL COMPONENT

5.1. Summative assessment:

No.	Summative assessment methods	Points / Weight in the overall score	Date of compilation
5th semester			
1	Studying theoretical questions and checking their knowledge during testing on the Moodle platform	10 points/10%	at the end of each topic
2	Completion of workbook No. 1 (prescription, pharmacies, dosage forms) during laboratory and practical classes	10 points/10%	at the end of each topic
3	Preparation of individual assignment in workbook No. 1 – CRC – writing prescriptions and calculating drug doses	20 points/20%	at the end of each topic
4	Carrying out control work on calculating drug doses (prescriptions)	20 points / 20%	at the end of each topic
5	Completion of workbook No. 1 (practical part) during training practice	20 points/20%	after completing the topics from the teaching practice
6	Preparation of a video on the production of one dosage form during the training practice/or participation in the production of dosage forms during classroom practice of the training practice.	10 points/10%	after completing the topics from the teaching practice

7	Preparation of a video on storing medicines in clinics, pharmacies, farms in a place accessible to the student / or participation in thematic excursions and classroom practice of educational practice.	10 points/10%	after completing the topics from the teaching practice
Form of control – credit, total		60-100 points/60-100%	
6th semester			
1	Completion of workbook No. 2 (pharmaceutical groups of drugs) during lectures, laboratory and practical classes and SRS	40 points/40%	at the end of each topic
2	Studying theoretical questions and checking their knowledge during testing on the Moodle platform	30 points/30%	at the end of each topic
3	Oral administration of drugs by pharmacological groups	30 points/30%	at the end of each topic
Form of control – credit, total		60-100 points/60-100%	
7th semester			
1	Completion of workbook No. 2 (pharmaceutical groups of drugs) during lectures and laboratory and practical classes	30 points/30%	at the end of each topic
2	Studying theoretical questions and checking their knowledge during testing on the Moodle platform	20 points/20%	at the end of each topic
3	Oral administration of drugs by pharmacological groups	20 points/30%	at the end of each topic
4	Comprehensive exam (testing, exam questions, medication administration, prescription)	30 points/30%	according to schedule
Form of control – exam, together		60-100 points/60-100%	

5. 2. EVALUATION CRITERIA

No.	Component	Unsatisfactorily	Satisfactorily	Good	Perfectly
1	Preparing a reference note on key terms and concepts while attending lectures	Task requirements not met	Missing individual task components	All the components of the tasks are present	All the components of the tasks are present, the literature has been additionally reviewed.
2	Studying theoretical questions and checking their knowledge during testing on the Moodle platform	Task requirements not met	Correct answers in 50-69% of tasks	Correct answers in 70-90% of tasks	Correct answers in 91-100% of tasks
3	Completion of workbook No. 1 (prescription, pharmacies, dosage forms) during laboratory and practical classes	Task requirements not met	Individual component elements of the tasks are missing. The recipes are made selectively.	All the components of the tasks are present. The recipes are completed in full with minor errors.	All the components of the tasks are present. The recipes are fully completed with and without minor corrections.
4	Performing control work on calculating drug doses (prescriptions)	Task requirements not met	Not all recipes are partially completed. Calculations not given in recipes	All recipes were executed with minor errors. The following are	All recipes have been completed with minor corrections. Listed

				calculations in recipes	full calculations in recipes
5	Completion of workbook No. 2 (pharmaceutical groups of drugs) during lectures and laboratory and practical classes	Task requirements not met	The requirements of the tasks have been partially fulfilled, comparative tables of pharmaceutical groups of drugs have been partially drawn up, the most basic examples of drugs are given.	All task requirements have been met, all comparative tables of pharmaceutical groups of drugs have been drawn up, indicating examples of basic drugs	All task requirements have been met, all comparative tables of pharmaceutical groups of drugs have been prepared, indicating examples of basic drugs from different manufacturers.
6	Preparation of individual tasks in workbook No. 1 – SRS on the recipe and calculation of drug doses	Task requirements not met	The majority of recipes have been completed, there are errors in the design and calculations, the calculations are given for a limited number of recipes that require explanation.	All recipes are completed, there are minor errors in the design and calculations, calculations are provided for all recipes that require explanation	All recipes are completed, there are minor errors in the design of the recipes, calculations are provided for all recipes that require explanation
7	Oral (individual or group (team) interview, analysis of situational tasks	Task requirements not met	In the process of discussing topics, sometimes enters into the discussion	In the process of discussing topics, he constantly enters into the discussion, operates with theoretical knowledge	In the process of discussing topics, he constantly enters into the discussion, uses theoretical knowledge, and supports it with examples on preparations.
8	Oral administration of drugs by pharmacological groups	Task requirements not met	In the oral response, the pharmaceutical group and pharmaceutical effects of not all the proposed drugs were emphasized.	In the oral answer, the pharmaceutical group and pharmaceutical effects are emphasized. all the proposed drugs.	In the oral answer, the pharmaceutical group and pharmaceutical effects are emphasized. all proposed drugs with elements of comparison of drugs or pharmaceutical groups
9	Preparation of individual work - CRC (project) on 6th and 7th semesters – video	Task requirements not met	A layout for a thematic video was used, the main points of the topic were	A layout for a thematic video was used, the main points of the topic were	A layout for a thematic video clip is used, the main points of the topic are highlighted,

	about one of the pharmaceutical groups		highlighted, examples of drugs were given without a description of their belonging to the pharmaceutical group and their pharmacological effects.	highlighted, examples of drugs were given with a description of their belonging to the pharmaceutical group and their pharmacological effects.	examples of drugs are given with a description of their belonging to the pharmaceutical group and pharmaceutical effects. The features of the practical application of this group of drugs are separately highlighted.
10	Comprehensive exam	Task requirements not met	All tasks partially completed (test, theoretical question, answer on medications, prescription written, doses taken into account with errors in many tasks)	All tasks are fully completed (test, theoretical question, answer on medications, prescription written, doses taken into account with minor errors in individual tasks and incomplete answers)	All tasks are fully completed (test, theoretical question, answer to medications, prescription written, doses calculated without errors in all tasks and incomplete answers)

5.3. Formative assessment:

(for self-analysis and assessment of learning progress)

No.	Elements of formative assessment	Date /semester
1.	The main theoretical questions of the OK were studied and knowledge control was carried out during testing on the Moodle platform.	throughout 5-7 semesters
2.	Workbook No. 1 (prescription, pharmacies, dosage forms) was completed during laboratory and practical classes and educational practice	throughout 5th semester
3.	Control work on calculating drug doses (prescriptions) has been completed.	throughout 5th semester
4.	An individual task was prepared in workbook No. 1 – SRS according to the recipe and the dosage of drugs was calculated,	throughout 5th semester
5.	Preparation of individual work - SRS (project) for semesters 6 and 7 - video about the manufacture of dosage forms/storage of drugs in various institutions	throughout 5th semester
6.	Workbook No. 2 (pharmaceutical groups of drugs) was completed during lectures and laboratory and practical classes	throughout 6-7 semesters
7.	Oral administration of drugs was carried out, participation in individual or group (team) questioning (discussion) of situational tasks was taken	throughout 6-7 semesters

8.	Preparation for the comprehensive exam (testing, exam tasks, medication administration, prescription)	throughout 7th semester
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6. LEARNING RESOURCES (LITERATURE)

Pharmacology:

6.1. Main sources (textbooks, manuals):

1.	Kysterna O. S., Nechyporenko O. L., Ulko L. G., Musienko O. V. Veterinary pharmacology. Prescription. Examples of prescription writing: a textbook with elements of a workbook (module 1) for practical classes and independent work of students of 2–4 years of specialty 211 “Veterinary medicine”, OS “Master”, full-time study. Sumy: SNAU, 2025. 220 p.
2.	Khmelnyskyi G.O., Dukhnytskyi V. B. Veterinary pharmacology: textbook. Kyiv: "Komprint", 2017. 571 p. (Approved by the Ministry of Agriculture and Food of Ukraine as a textbook for students, teachers of veterinary medicine in higher educational institutions).
3.	Chumak V., Kryva O., Garashchuk M. Veterinary Formulation: Textbook. Dnipro: Lira, 2023. 142 p.

6.2. Methodological support:

1.	Kysterna O. S., Rebenko G. I., Musienko O. V. Veterinary pharmacology. Epizootology. Immunobiological drugs : a textbook for students of 3–5 years of specialty 211 "Veterinary medicine", OS "Master", full-time study. Sumy: [publishing house], 2025. 160 p.
2.	Kysterna O. S., Dolbanosova R. V., Grek V. A., Kovalenko N. E. Poisonous plants in veterinary medicine. Assistance in poisoning : methodological instructions for conducting laboratory and practical classes for students of 3–5 years of specialty 211 "Veterinary medicine", OS "Master", full-time study. Sumy, 2025. 30 p.
3.	Kysterna O. S., Dolbanosova R. V., Nechyporenko O. L., Musienko O. V., Ulko L. G. Antidotes in veterinary medicine : methodological guidelines for conducting laboratory and practical classes for students of 3–5 years of specialty 211 "Veterinary medicine", OS "Master", full-time study. Sumy, 2024. 48 p.
4.	Ulko L. G., Nechyporenko O. L., Sklyar O. I., Kysterna O. S., Musienko O. V., Dolbanosova R. V., Morozov B. S., Grek V. A., Kovalenko N. E. Dermatology. Specialized course in dermatology : a manual for lectures and laboratory and practical classes for students of specialty 211 "Veterinary medicine", OS "Master", full-time study. Sumy: SNAU, 2024. 151 p.
5.	Kysterna O. S., Ulko L. G., Nechyporenko O. L., Rokochyi A. V., Musienko O. V., Dolbanosova R. V. Veterinary Pharmacology" and "Veterinary Surgery". Disinfectants and antiseptics for surgical manipulations : methodological instructions for laboratory and practical classes for students of 3–6 years of the Faculty of Veterinary Medicine, specialty 211 "Veterinary Medicine", OS "Master", full-time study. Sumy: Sumy National Agrarian University, 2024. 150 p.

6.3. Other sources:

7.	Verbytskyi P.I., Kosenko M.V., Kosenko Y.M., Zaruma L.E. Veterinary drugs, feed additives and foreign-produced feeds: a reference book in three volumes. Lviv: Afisha. 2003. 1082 p.
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8.	State Pharmacopoeia of Ukraine: First Edition. Kharkiv: RERIG, 2002. 520 p.
9.	Kanyuka O.I., Khariv I.I., Hunchak V.M., Gufriy D.F. [and others]. Veterinary drugs. Lviv, 2006. 641 p.
4.	Kanyuka O. I., Faytelberg-Blank V. R., Lyzogub Y. P. [et al.]. Clinical Veterinary Pharmacology. Odesa: 2006. 291 p.
5.	Plumb Donald K. Pharmacological drugs in veterinary medicine / USA: Aquarium, 2002. 856 p.
6.	Olga Polatayko. Veterinary anesthesia: practice. abettor. Kyiv: VD "Periscope". 2009. 408 p.
7.	Yaroshenko V.I., Kuzovkin E.M., Vasiliev S.I. Workshop on the basics of veterinary medicine formulation. Kharkiv: 2000. 138 p.
8.	Yaroshenko V.I., Khmelnytskyi E.M., Kuzovkin E.M. [and others]. Workshop on the basics of dosage form technology in veterinary medicine: teaching manual. Kharkiv: Espada, 2003. 360 p.

6.4. Additional sources:

1.	Complete catalog of veterinary drugs registered in Ukraine. VET.in.UA – Veterinary information resource of Ukraine https://data.gov.ua/dataset/8f3e00b2-16e8-4b30-af7d-b9212837b0a6
2.	Kanyuka O.I., Faytelberg-Blank V.R., Lyzogub Y.P. et al. Clinical Veterinary Pharmacology: Textbook PDF ... Textbook for students of higher agricultural institutions in the specialty "Veterinary Medicine" www.twirpx.com/file/820440
3.	State Veterinary and Phytosanitary Service of Ukraine. http://www.vet.gov.ua
4.	Veterinary medicine in the country . Veterinary information and analytical resource of Ukraine. http://www.vet.in.ua
5.	Materials from the veterinary encyclopedia. http://www.vetwiki.com.ua
6.	Scientific Center for Preventive Toxicology, Food and Chemical Safety named after Academician L. I. Medved, Ministry of Health of Ukraine. http://www.medved.kiev.ua
7.	Bayer electronic catalog http://www.bayer.ua/products/products-from-a-to-z/
8.	Electronic catalog "Zooetis" http://www.zoetis.ru/products/
9.	Electronic catalog "UVT" http://uvt.kh.ua/catalog/
10.	Electronic catalog "Ukrvetprompostach" http://www.vetsnab.com.ua/ru/katalog
11.	Electronic catalog "Brovapharma" https://brovapharma.ua/ru/ausil-20g

6.5. State regulation of the production and sale of veterinary drugs in Ukraine (legislative framework)

1.	On approval of the Lists of poisonous and potent medicinal products	http://zakon.rada.gov.ua/laws/show/z1007-07
2.	LIST of potent medicinal products by international non-proprietary or common names	http://zakon.rada.gov.ua/laws/show/z1008-07
3.	On approval of the Lists of poisonous and potent medicinal products	https://www.apteka.ua/article/5402_i
4.	On approval of the Rules for the sale of veterinary medicines and preparations	http://zakon.rada.gov.ua/laws/show/z0786-01
5.	On approval of the Rules for the transportation	http://zakon.rada.gov.ua/laws/show/z1007-07

	and storage of veterinary drugs, substances, ready-made feeds, feed additives and veterinary medicine in veterinary pharmacies, their structural divisions, bases, warehouses, etc.	ow/z0719-02
6.	LIST of issues for the implementation by state bodies of veterinary medicine of planned measures of state supervision (control) over compliance with legislation in the field of veterinary medicine, economic activity in the production of veterinary medicines and preparations, wholesale and retail trade in veterinary medicines and preparations	http://www.gov.lica.com.ua/b_text.php?type=3&id=636546&base=1
7.	On approval of the list of psychotropic substances and precursors used in veterinary medicine	http://zakon.rada.gov.ua/laws/show/en/721-2011-п
8.	Procedure for the use of narcotic drugs, psychotropic substances and precursors in veterinary medicine	http://zakon.rada.gov.ua/laws/show/334-2008-п
9.	List narcotic drugs, psychotropic substances and precursors	http://zakon.rada.gov.ua/laws/show/770-2000-п
10.	Rules of good manufacturing practice for veterinary medicinal products	http://search.ligazakon.ua/l_doc2.nsf/link1/RE31559.html
11.	On approval of the Rules for the sale of veterinary medicines and preparations	https://zakon.rada.gov.ua/laws/show/z0786-01
12.	On approval of the Rules for prescribing and issuing prescriptions for veterinary drugs	https://zakon.rada.gov.ua/laws/show/z0544-08#Text
13.	Prescription issuance procedure	https://prihodko.com.ua/my-i-zmi/my-i-zmi/stattya/poryadok-vidachi-retseptiv-na-veterinarni-preparati-v-ukraini/

6.6. Information resources for non-formal education (additional):

1. A closed page on social networks from Veterinary Pharmacology, where students can find updated video lectures 24/7 and other materials:

SNAU Vet PHARM 2017 for students

https://www.facebook.com/groups/Lesyasumy2008?locale=uk_UA

2. Veterinary page for socialization of veterinary knowledge in society: **Vet rAzom/rozUm from the Faculty of Veterinary Medicine SNAU and FourPaws**

https://www.facebook.com/groups/3858523544368066?locale=uk_UA

6.7. Resources for distance learning:

1. Distance learning course, Moodle: Veterinary Pharmacology:

<https://cdn.snau.edu.ua/moodle/course/view.php?id=2246>

2. SNAU Vet PHARM 2017 for students:

<https://www.facebook.com/groups/Lesyasumy2008/>

3. SNAU Vet pharm for foreign students:
<https://www.facebook.com/groups/1757475244370215/>

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