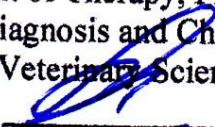


MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
SUMY NATIONAL AGRARIAN UNIVERSITY
VETERINARY MEDICINE DEPARTMENT
Department of Therapy, Pharmacology Clinical Diagnosis and Chemistry

"APPROVED"

Department of Therapy, Pharmacology
Clinical Diagnosis and Chemistry
Doctor of Veterinary Science,

Professor  L.G. Ulko
the 30 of June in 2020

WORKING PROGRAM OF THE DISCIPLINE

PP. 14 VETERINARY PHARMACOLOGY



Training direction: 211 "Veterinary Medicine"

Education program: OPP "Veterinary Medicine"

Faculty – «Veterinary medicine»

Work program of " **VETERINARY PHARMACOLOGY** " was worked out for the third year students of training direction 211 "Veterinary medicine"

Authors:

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Candidate of Veterinary Science, Associate Professor,

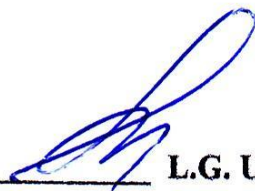


The work program on the academic disciplines of "Veterinary pharmacology" has been approved on the of the Department of Therapy, Pharmacology Clinical Diagnosis and chemistry Meeting.

Minutes of 03.05.20, № 14

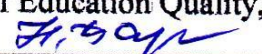
Head of of the Department, Doctor of Veterinary Science,
Professor  L.G. Ulko

Coordinated by:

Guarantor of the education program  L.G. Ulko

Dean of the Faculty of Veterinary Medicine

 (O.L. Nechiporenko)

Methodist of the Department of Education Quality,
licencing and accreditation 



Registered in the electronic data base: 06.07. 2020

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1. DESCRIPTION OF THE PRIORITIZED DESCRIPTION

Name of the value	Industry of the knowledge and direction of training, education level	Characteristics of the training programmer		
		full-time education		
Amount of credits - 4	Branch of knowledge: <i>21 «Veterinary medicine»</i>	<i>Normative</i>		
Modules - 5	<i>Training direction 211 "Veterinary Medicine"</i>	Year of training: 2020 - 2021		
Zmistovih moduliv: 5		Course 3		
		Semester		
Total hour count - 90 (90) 180		The 5 th semester	The 6 th semester	
		Lectures		
Weekly hours for day time education: auditory in twice semestr – 1 (1) and Independent work of students – 5 (5).	Educational degree: bachelor (3 years)	4	6	
		Practical, seminar		
		Laboratory		
		10	10	
		Independent work		
		76	74	
		Individual tasks: prescription design in workbook		
Credit	Ekzamen (pidsumkovy test)			

Note: daily based education / for full-time 30/150 (16%/84%).

OBJECTIVES AND TASKS OF THE DISCIPLINE:

The purpose and objectives of the discipline (derived from the educational program):

Goal:

The purpose of studying the discipline "Veterinary Pharmacology" is to study the general principles of action of drugs on the animal, their pharmacodynamics, pharmacokinetics, biotransformation, direct and indirect action of drugs, the mechanism of side effects, study and assimilation of the main pharmacological groups of drugs and their mechanism of action. animal body. Study of the structure and rules of prescribing drugs in the prescriptions, the concept of "dose" and the principles of their dosage for different species of animals. Observance of safety of use of medicines and mechanisms of their removal (correction) from an organism of productive animals.

Task:

The main objectives of the study of Veterinary Pharmacology are the acquisition of knowledge about:

- the concept of pharmacies, pharmacy, features of storage of drugs, lists "A" and "B";
- recipes of various dosage forms, awareness of the recipe for practical use, the ability to calculate doses;
- various dosage forms of drugs, features of their practical application;
- technologies for the manufacture of basic dosage forms;
- the concept of veterinary pharmacology, the principles of medical treatment of animals, dosage, features of drugs, routes of administration of drugs depending on the dosage form, their biotransformation, excretion and accumulation of drugs;
- the main pharmacological groups of drugs, their features of use, indications, contraindications;
- forecasting the expected and side effects of drugs;
- ability to navigate in different drug groups, new drugs, based on classical knowledge, to know the main points of pharmacodynamics of drug groups, to compare their features of action, to choose the optimal drug, using knowledge of the mechanism of action of drugs.
- safety of use of medicines during their storage, treatment of animals and entry into agricultural products and the environment.

As a result of studying the discipline the student must:

know:

- Structure of terms of veterinary pharmacology (drug, dosage form, original drug and generic, etc.).
- Basics of veterinary pharmacy (structure of pharmacies, storage, disposal of drugs).
- The concept of recipe and its practical application, the rules of prescribing, the use of basic Latin terms in the recipe.
- The concept of dosage forms and their types.
- Classification of the main pharmacological groups, names of original drugs and generic drugs of different pharmacological groups, features of their pharmacodynamics and application.

be able:

- Prescribe prescriptions and calculate doses of drugs for animals.
- Make basic dosage forms.
- Choose ways to administer drugs depending on the dosage form.
- Describe groups of drugs, their main properties and representatives for rational use in practice.
 - Analyze the pharmacodynamics and rotation of drugs in animals and assess the risks of their entry into products.
 - Evaluate new drugs, their properties that appear on the market, taking into account their classification and the concept of "active substance".

2. CHARACTERISTICS OF THE TRAINING PROGRAMME

approved by the State Institution "Scientific and Methodological Center Information and analytical support of higher educational institutions "Ahrosvita" in September of 2015

The 5 th semester, outthem semester

Modules – 1. General pharmacology and formulation.

Topic 1. General pharmacology and formulation.

1. Introduction. The subject and tasks of pharmacology. History of pharmacology.
2. Pharmacological. The mechanism of action of medicinal substances. Types of pharmacotherapy.
3. Ways of administration of medicinal substances. Absorption, distribution, biotransformation.
4. Physicochemical factors of penetration of drugs through membranes. Metabolism of drugs: recovery, hydrolysis, conjugation. Removal of medicinal substances from the body.
5. Types of action of medicinal substances. Excitation, oppression, resorptive action, direct and indirect, general, selective.
6. Factors affecting the effect of drugs. Side effects. Features of drugs for repeated administration (cumulation, synergism, antagonism).
7. The dose. The principle of dosing of drugs to animals. Dosage, depending on the chemical structure of drugs, dosage form, type, sex, age, general condition, various conditions.
8. Pharmacopoeia. General concepts of compounding. Recipient terms. The doctrine of recipes. Use of Latin terms and abbreviations in the recipe.
9. The structure of the prescription. Simple and complex recipes. Rules and schemes of prescription writing.
10. Solid, soft and liquid dosage forms. Their types and prescriptions in prescriptions.
11. The concept of a pharmacy.
12. Latin abbreviations.

Module 2. Special pharmacology. Drugs acting on the nervous system.

Topic 2. Special pharmacology. Drugs acting on the central nervous system (CNS).

1. General characteristics of drugs that affect the central nervous system. Means that depress the central nervous system (CNS). The concept of psychotropic drugs, their classification. Psychotropic drugs: tranquilizers, sedatives, sleeping pills, bromides, neuroleptics, muscle relaxants.
2. Drugs for anesthesia. Inhalational drugs. Non-inhaling drugs. Barbiturates (hexenal, thiopental, barbitol). Alcohol. And ether.
4. Narcotic analgesics. Non-narcotic analgesics. Other analgesics.
5. Psychostimulants. Analeptics. Preparations of strychnine acting on the spinal cord.

Topic 3-4: Remedies acting on the peripheral nervous system suppressing both excitatory and efferent nervous system.

1. Locally anesthetizing. Enveloping. Soothing. Astringents. Adsorbents. Enterosorbents.
2. Antiemetic. Ruminatory. Preparations for improving digestion. Emetic.
4. Cholagogue. Hepatoprotectors.
5. Laxatives.
6. **Topic 4.** Holinomimetiki: carbacholin, proserin, arecoline, cititon.
7. Holinolytics: atropine sulfate, platyphylline, spasmolitin.
8. Adrenergic drugs. (Adrenaline, ephedrine and others).

The 6 the semester, Spring semester

Module 3.

Special pharmacology. Drugs that act on the heart and blood. The Diuretics.

Topic 5: Special pharmacology. Drugs that act on the heart and blood.

1. Cardiological drugs. Cardiac glycosides. Classification.
2. Drugs that affect blood clotting. Coagulants, anticoagulants.
3. Drugs for infusion. Their kinds. Dosage for parenteral nutrition.
4. Diuretic drugs.

Module 4.

Special pharmacology. Drugs that affect metabolism, immunity.

Topic 6. Drugs affecting metabolism, immunity.

1. The physiological role of vitamins, the classification of vitamin preparations.
2. Preparations containing fat-soluble vitamins A, D, E, K. Features of the mechanism of action. Indicators for use.
3. Water-soluble vitamins. B group vitamins are basic (B1, B6, B12) and other vitamin B preparations. Vitamin C is ascorbic acid.
4. Multivitamin preparations.
5. Enzyme preparations, their classification, application. Amino acids and their characteristics. Bacterial preparations (probiotics), their characteristics.
6. Hormonal drugs.
7. Preparations of macrocars and trace elements.

Module 5.

Special pharmacology. chemotherapy drugs.

Topic 7: Antimicrobial (drugs).

1. The concept of "antimicrobial drugs", their distribution, classification.
2. Sulfonamide drugs.
3. Nitrofurans drugs.
4. Antibiotics. General concepts. Sources of receipt. Classification. Need for application. Features of the main pharmacological groups of antibiotics.
5. Anti-protozoal drugs.
6. Coccidiostatics drugs.

Topic 8: Antiseptic and disinfectants drugs.

1. Classification of disinfectants and antiseptics.
2. Preparations, give oxygen. Preparations of iodine.
3. Phenols, cresols and their derivatives.
4. Group of formaldehyde, sulfur.
5. Modern disinfectants.

Topic 9: Inject-acaricidini and anthelmintic agents.

1. Inject-acaricidal. Pharmacological groups. Dosage forms. Rules of use.
2. Anthelmintics. Pharmacological groups. Group a vermect init. Rules of use.
3. Deratization drugs.

3. STRUCTURE OF THE DISCIPLINE

Name of the contextual modules and topics	Hours					
	Full-time					
	Total	That's number				
		l	n	lab	ind	S.R.
1	2	3	4	5	6th	7th
The 5 th semester						
Module 1.						
Module 1. General pharmacology and formulation						
Topic 1. 1. Start. Subject i zavdannya pharmacology. History of pharmacology. 2. Pharmacodynamics. 3. Shliakhi introduced lekarskih ritovin. 4. Fiziko-chemichny chinniki pogramennnya likiv through the membrane. 5. See the children of the leucars. 6. Factories, how to pile on dyu likarskih ritovin. 7. The dose. The principle of dosing out likiv. 8. Pharmacopoeia. Загальні поняття рецептури. Загальні поняття рецептури. 9. Budova's recipe. Прості і складні рецепти. Rules, schema vipisuvannya. 10. Tverdi, m'yaki ta ridki likars'kyi formi. You see, it's written in recipes. 11. Know the pharmacy. 12. Latin shortcuts. 13. Design of a workbook with vet prescriptions	28	4	-	14	-	10
Module 1	28	4	-	14	-	10
Module 2.						
Module 2. Special pharmacology						
Topic 2. 1. Characteristics of drugs that affect the central nervous system: tranquilizers, sedatives, sleep, bromides, neuroleptics, miorelaxanti. 2. Drugs for anesthesia. Barbuturati (hexenal, thiopental, barbital). Alcohol. Drugs for euthanasia. 3. Stages of anesthesia. 4. Schemes for anesthesia. 4. Narcotic analgesics. Non-narcotic analgesics. 5. Antiallergic drugs. 6. Psychostimulant. Analeptics. Preparation stryhninu, scho dityut on the spine.	18	6	-	8		4

Topic 3: 1. Locally anesthetics. 2. Adsorbents. Enterosorbents. 3. Antiemetic. 4. Annoying drugs. Bitterness is pure, aromatic. 5. Expectorants. Ruminatory. Preparations for improving digestion. Emetic. 4. Choleric drugs. Hepatoprotectors. 5. Laxatives (drugs for diarrhea).	14	4		8		2
Topic 4: 1. Holinomimetiki: carbacholin, proserin, arecoline, cititon. 2. Cholinolytics: atropine sulfate, platyphylline, spasmolitin. 3. Adrenergic means. (Adrenaline, ephedrine and others).						
Module 2	32	10	-	16		6
Total for 5 semester	60	12	-	30	-	18
The 6 th semester						
Module 3. Special pharmacology.						
Topic 5: 1. Cardiac glycosides. Classification. Concepts. 2. Distribution, schemes of application of cardiac glycosides. 3. Antiarrhythmic drugs. 4. Drugs affecting the metabolism in the myocardium. 5. Drugs that affect blood clotting. Coagulants, anticoagulants. 6. Drugs for infusion. Blood substitutes. Their kinds. Dosage for parenteral nutrition.	14	4		4		6
1. The Diuretic drugs. Their classification. Features of groups.	2	-		2		-
Module 4. Special pharmacology.						
Topic 6. 1. The physiological role of vitamins, the classification of vitamin preparations. 2. Preparations containing fat-soluble vitamins A, D, E, K. Features of the mechanism of action. Indicators for use. 3. Water-soluble vitamins. B group vitamins are basic (B1, B6, B12) and other vitamin B preparations. Vitamin C is ascorbic acid.	16	4		4		8

4. Multivitamin preparations. 5. Enzyme preparations, their classification, application. Amino acids and their characteristics. Bacterial preparations (probiotics), their characteristics. 6. Hormonal drugs. 7. Preparations of macro and microelements.						
Module 4	16	24		4		8
Module 5. Special pharmacology						
Topic 7: 1. The term "antimicrobial agents", Their classification. 2. Sulfonamide preparations. 3. Nitrofurans preparations. 4. Antibiotics. General concepts. Sources of receipt. Classification. Need for application. Features of the basic farm. Groups of antibiotics. 5. Anti-protozoal. 6. Coccidiostatics. 7. Preparations of arsenic.	18	6		4		8
Topic 8: 1. Classification of disinfectants and antiseptics. 2. Preparations, sho viddayut kiln. Preparation of iodine. 3. Phenols, cresols and puffs. 4. Groups of formaldehydu, syrki. 5. Suchasni desinfectanti.	4					4
Topic 9: 1. Inject-acaricidal. Pharmacological groups. Dosage forms. Rules of application. 2. Anthelmintics. Pharmacological groups. Group a is vermectiniv. Rules of application. 3. Deratization drugs.	6			2		4
Design workbook for medicines						
Module 5	90	4	-	10	-	76
Total for 6 semester	90	6	-	10	-	74
Total for 5 and 6 semestrers	180	10		20		150

4. Lectures topic and plans

No. P / p	Topic	Hour quantity
The 5 th semester		
1	<p>Topic 1. General pharmacology. Physicochemical factors of penetration of drugs through membranes.</p> <p>Plan:</p> <ol style="list-style-type: none"> 1. Introduction. The subject and tasks of pharmacology. 2. History of pharmacology. 3. Pharmacological. Pharmacokinetics. Metabolism of medicines. 4. Ways of administration of medicinal substances. 5. Withdrawal of medicinal substances from the body. 	2
	<p>Topic 1: General Pharmacology. The mechanism of action of drugs. Factors affecting the effect of drugs. Dose. Principle and dosage of drugs to animals.</p> <p>Plan:</p> <ol style="list-style-type: none"> 1. Types of action of medicinal substances. Excitation, oppression, resorptive action, direct and indirect, general, selective. 2. Side effects of drugs on the macroorganism. Features of drugs for repeated administration (cumulation, synergism, antagonism). 3. Dosage, depending on the chemical structure of drugs, dosage form, type, sex, age, general condition, various conditions. 	
2	<p>Topic 2. Special pharmacology. Drugs acting on the central nervous system (CNS).</p> <p>Plan:</p> <ol style="list-style-type: none"> 1. General characteristics of drugs that affect the central nervous system. Means that depress the central nervous system (CNS). 2. The concept of psychotropic drugs, their classification. 3. Psychotropic drugs: tranquilizers, sedatives, sleeping pills, bromides, neuroleptics, muscle relaxants. 	2
	<p>Topic 2: Drugs that act on the central nervous system is suppressed.</p> <p>Narcotic drugs.</p> <p>Plan:</p> <ol style="list-style-type: none"> 1. The concept of anesthesia. Classification. 2. Stages of anesthesia. 3. Inhalational drugs. 4. Non-inhaling drugs (Chloral hydrate, ketamine). Barbiturates (hexenal, thiopental, barbitol). 	
Total of 5 th semester		4
The 6 th semester		
1	<p>Topic 5: Agents acting on the heart and blood.</p> <p>Plan:</p> <ol style="list-style-type: none"> 1. Cardiology drugs. Cardiac glycosides. Classification. Concepts. 2. Distribution, schemes of application of cardiac glycosides. 3. Antiarrhythmic drugs. 	2

	Subject: Drugs affecting the heart and blood. Plan: 1. Drugs that affect blood clotting. Coagulants, anticoagulants.	
2	Topic 7: Antimicrobial (drugs). Sulfadruugs. Nitrofuram drugs. Plan: 1. The concept of "antimicrobials", their distribution, classification. 2. Sulfanilamidnye drugs. 4. Nitrofuram drugs.	
3	Topic 7: Antimicrobial (drugs). Antibiotics. Plan: 1. General concepts. 2. Sources of antibiotics. 3. Classification. by groups of distribution. 4. The principles of rational use of P and antibiotics.	2
Total of 5 th semester		6
Total of the 5 and 6 semester		10

5. Topics for laboratory practic:

№	Topic	Hour quantity
The 5 th semester		
1	Topic 1. General pharmacology. The veterinary formulation. Pharmacopeia. General concepts of the formulation. Prescription periods. The doctrine of the recipes. The use of Latin terms and abbreviations used in the formulation. The structure of the recipe. Simple and complex recipes. Rules and schemes prescribing.	2
2	The veterinary formulation. The solid dosage forms. Povder, tablets, pills, Bricets, capsules, boluses, pills, charges. Theory and rules prescribing in recipes.	2
3	The veterinary formulation. Soft dosage forms. M ase, pastes, liniments, suppositories, patches slurry. Characteristics, classification, rules prescribing in recipes. Topic 1: The veterinary formulation. Liquid dosage forms. Solutions, extracts, potions, mucus, emulsions, tinctures, extracts, aerosols. Their classification, the extract in recipes.	2
4	Drugs that act on the central nervous system is suppressed. Analgesics. Plan: 1. Narcotic analgesics. 2. Non-narcotic analgesics. 3. Other analgesics and anti-inflammatory drugs.	2
5	Topic 2: Means stimulating the central nervous system. Their classification Plan: 1. Psychostimulants. Analeptics. 3. Preparations of strychnine acting on the spinal cord.	2
Total of 5 semester		10

The 6 th semester		
1	Topic 5: 1. Drugs for infusion. 2. Diuretics drugs.	2
2	Topic 6. Agents acting on the immune system. Vitamins and minerals.	2
3	Drugs affecting the metabolism, immunity. 1. Enzyme preparations, their classification and application. 2. Amino acids and their characteristics. 3. The bacterial preparations (probiotics), their characteristics. Application.	2
4	Hormonal drugs. Drugs affecting the metabolism, immunity. 1. General concept of hormonal preparations origin. 2. Pituitary Hormones (ACTH, pituitrin, oxytocin). 3. Adrenal hormones (cortisone, prednisolone, dexamethasone, hydrocortisone). 4. Estrogens, progestins. Prostaglandins. 5. The use of Regulations. Demonstration preparations. 6. Certification of the unit: "Drugs that affect the immune system and metabolism."	2
5	Topic 7: Antimicrobial (drugs). Antibiotics. Penicillins. Cephalosporins. Aminoglycosides. Fluoroquinolones. Lincomycin. Macrolides. Tetracycline. Chloramphenicol. Rifampicin. Antifungal. Antibiotics veterinary of different groups. Complex antibiotics or antimicrobial agents (a / b together with other antimicrobial cFe s). 1. The Rules of use of antibiotics. 2. Demonstration preparations. 3. Extract antibiotic prescriptions.	2
Total of 6 semester		10
Total of 5 and 6 semesters		20

6. Independent work

№	Topic	Hour quantity
The 5 th semester		
1	Topic 1. Pharmacies, their classification and requirements for pharmacies. Rules for working with toxic, potent, corrosive, flammable substances. Groups A and B units of weight and volume and their dimensions.	5
2	As drug action. Especially drug effects with repeated use. Incompatibility drugs. Poison medicinal substances	5
3	Design of a workbook with vet prescriptions and vet dgugs	24
4	Topic 2. Alcohol dgug. The alcohol in the practice of veterinary medicine and the second.	2
5	Stages of anesthesia.	5
6	Schemes for anesthesia.	5
7	Drugs for euthanasia.	2
8	Antiallergic drugs.	2

9	Topic 3. Locally anesthetics.	2
10	Adsorbents. Enterosorbents.	2
11	Antiemetic.	2
12	Annoying drugs. Bitterness is pure, aromatic.	2
13	Expectorants. Ruminatory. Preparations for improving digestion. Emetic.	2
14	Choleretic drugs. Hepatoprotectors.	2
15	Laxatives (drugs for diarrhea).	2
16	Topic 3. Expectorants. Ruminatory. Preparations for improving digestion. Emetic.	2
17	Choleretic drugs. Hepatoprotectors	2
18	Laxatives (drugs for diarrhea).	2
19	Topic 4. Holinomimetiki: carbacholin, proserin, arecoline, cititon.	2
20	Cholinolytics: atropine sulfate, platyphylline, spasmolitin.	2
21	Adrenergic means. (Adrenaline, ephedrine and others).	2
	Total of 5 semester	76
	The 6 th semester	
1	Design workbook for medicines.	34
2	Topic 6. Classification, features and application of immunomodulators (immunostimulants, immunomodulators, immunosuppressants, complex immune drugs). Vaccines, serums. Biological stimulants. The tissue preparations.	5
3	Topic 6. Hormonal drugs.	5
4	Topic 7. Sulfa drugs (individual representatives).	2
5	Nitrofurans (individual representatives).	2
6	Antibiotics (individual representatives).	5
7	Antiparasitic. Antiprotozoal (topics to explore in full). Pharmacological, application, main representatives.	2
8	Topic 8: Antiseptics and disinfectants. Plan: 1. Classification of disinfectants and antiseptics. 2. Drugs, give oxygen. 3. Preparations alkalis, acids, chlorine. 4. Preparations of iodine. 5. Phenols, cresols and derivatives thereof. 6. Group formaldehyde, sulfur. 7. Modern disinfectants.	2
9	Modern disinfectant that is used in the practice of veterinary surgeon. Examples. Features pharmacodynamics and use.	5

10	Topic 9: Insekto- acaricidal preparations (individual representatives).	5
11	Deratization drugs (Theme full). Zookumarin drugs.	2
12	Anthelmintics. 1 . Pharmacological group. Classification. Dosage forms. 2. Rules of application. 3 . Demonstration preparations. 4 . Group and vermektiniv. 5. Certification of the unit "and other drugs belonging to this topic."	5
	Total of 6 semester	74
	Total of the 5 and 6 semesters	150

7. Individual tasks

1. The peculiarity of the individual tasks of the "veterinary pharmacy" is writing prescriptions - tasks for individual we have the numbers, which are carried out in a special workbook after each studied subject, credited at the time a module and relating to independent work - design work notebook.

8. Methods of teaching

1. Methods of learning source of knowledge:

1.1. **Verbal:** explanation, conversation (heuristic) lecture, briefing, working with book (reading, writing out, a plan, summarizing, making tables, graphs, summaries of support, etc.).

1.2. **Demonstration:** observation.

1.3. **Practical:** laboratory technique, practical work, production and practices.

2. Methods of training in logic the nature of knowledge.

2.1. **Analytical.** .

2.2. **Synthesis.**

2.3. **The inductive method.**

3. Methods of studying the nature and level of independent intellectual activity of students.

3.1. **Problem**

3.2. **Part-search** (heuristic)

3.3. **Research**

4. Active learning methods - use of means of learning, problem situations, simulation teaching methods (built to simulate future careers), educational use and control tests, the use of basic lectures, etc.)

5. Interactive learning technologies - use of multimedia technologies).

9. Methods of control

1. Rating control a 100-point scale assessment ECTS
2. Implementation of the interim control during the semester (intermediate certification)
3. Assessment of current students:
 - the level of knowledge demonstrated in laboratory studies;
 - activity when discussing issues submitted to lessons;
 - the results of the laboratory work and protection;
 - independent study of the topic in general or specific issues;
 - writing essays, reports- test results;
 - writing assignments during the tests.

10. Distribution points that get students - in the form of control (test):

- when forma of control (Credit):

Current testing and independent work						Along with modules and CDS	Independent work	Amount	
Module 1			Module 2						CDS
T1			T2	T3		15	85 (70 + 15)	15	100
10	10	10	20	10	10				
30			40			15			

- when forma of control (exam):

Current testing and independent work						Along with modules and CDS	Independent work	the final test	Amount		
pithy module 3		pithy module 4		pithy module 5						CDS	
T4	T5	6 T		T7	T8	T9	15	55 (40 + 15)	15	30	100
5	5	10		10	5	5					
10		10		20		15					

11. The grading scale: national and ECTS

The sum of points for all kinds of learning activities	Assessment ECTS	Based on a national scale	
		For examination, course project (work), practice	for credit
90 - 100	A	excellent	Accepted
82 - 89	AT	OK	
75 - 81	FROM		
69 - 74	D	satisfactorily	
60 - 68	E		
35 - 59	FX	unsatisfactorily with possibility of re-drafting	not credited with re-drafting
1 - 34	F	unsatisfactorily with the mandatory repeated study of discipline	not credited with a mandatory re-examination of discipline

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3. Кистерна О. С., Улько Л.Г., Мусієнко О.В. Ветеринарна фармакологія «Основні ветеринарні препарати (групи та назви)». Veterinary pharmacology. Basic veterinary drugs (groups and names): methodical manual for laboratory and practical training and self-study of the 3rd and 4rd year foreign students; specialization in Veterinary Medicine, full-time education / Sumy, 2018, 80 p. *Протокол № 3 від 15 січня 2018 року*.
4. Кистерна О. С., Улько Л.Г., Мусієнко О.В. Ветеринарна фармакологія. Основні ветеринарні препарати для анестезії тварин. Veterinary pharmacology. Basic veterinary drugs for anesthesia of animals: methodical manual for laboratory and practical training and self-study of the 3rd and 4rd year foreign students; specialization in Veterinary Medicine, full-time education / Sumy, 2018, 140 с. *Протокол № 3 від 15 січня 2018 року*
5. Методичні вказівки для іноземних студентів англійською мовою для контролю знань (тести). Kysterna O. S. Veterinary pharmacology «Test to modules,-employed work and intermediate certification methodical instructions» for the control of knowledge of veterinary pharmacology in 6 semesters for students the 3rd year of the faculty of veterinary medicine. - Sumy, 2019. p. 40. *Протокол № 3 від 08.01.19 р.*
6. Методичні вказівки для іноземних студентів англійською мовою для формування практичних навичок, формування мислення фахівця. Kysterna O. S., Musiienko O. V. Veterinary pharmacology. Dosing of veterinary drugs: Methodological instructions for laboratory practical training and full-time education of foreign 2nd and 3rd year students; specialization in 211 – «Veterinary Medicine» – Sumy, 2018. p. 40. *Протокол № 3 від 08.01.19 р.*
7. Кистерна О. С. Ветеринарна фармакологія. Тести до модулів, самостійної роботи та проміжної атестації. Методичні вказівки для проведення контролю знань по ветеринарній фармакології у 6 семестрі для студентів 2 ст та 3 курсу факультету ветеринарної медицини спеціальностей: 211 - «Ветеринарна медицина», 212 - «Ветеринарна гігієна, санітарія і експертиза». – Суми, 2019. – 40 с. *Протокол № 3 від 08.01.19 р.*

12.2. Recommended reading.

Basic (English):

1. **Handbook of Veterinary Pharmacology** / Walter H. Hsu, Professor of Pharmacology Department of Biomedical Sciences College of Veterinary Medicine Iowa State University Ames, Iowa // Edition first published 2008 © 2008 Wiley-Blackwell
(Руководство. Ветеринарная фармакология)
2. **Veterinary Drug Handbook**,
7th Edition / Donald C. Plumb, Pharm.D // distributed by Blackwell Publishing, COPyriGHt © 2008 by donald C. Plumb
(Руководство к ветеринарным препаратам)
3. **A Textbook of Clinical Pharmacology and Therapeutics** / JAMES M RITTER, LIONEL D LEWIS, TIMOTHY GK MANT, ALBERT FERRO // This fifth edition published in Great Britain in 2008 by London School of Medicine, Guy's, King's and St Thomas' Hospitals, London, UK©2008 James M Ritter, Lionel D Lewis, Timothy GK Mant and Albert Ferro
(Учебник по клинической фармакологии и терапии)
4. **Veterinary Pharmacology and Therapeutics**, Ninth Edition / Jim E. Riviere, DVM, PhD, DSc (hon); Mark G. Papich, DVM, MS; Consulting Editor H. Richard Adams, DVM, PhD, Diplomate ACVECC (Hon) // Ninth Edition first published 2009, © 2009 Wiley-Blackwell
(Ветеринарная фармакология и терапия)
5. SAUNDERS HANDBOOK OF VETERINARY DRUGS: SMALL AND LARGE ANIMAL, THIRD EDITION
Copyright © 2011, 2007, 2002 by Saunders, an imprint of Elsevier Inc.
(Руководство по Ветеринарной фармакологии для мелких и крупных животных)

12. 3. Auxiliary (Ukraine):

- 1 Veterinary preparations, feed additives and feed foreign manufacture. Handbook in three volumes / PI Verbitsky MV Kosenko, YM Kosenko, LE Zaruma. - Lviv: Events, 2003. - 1082 p.
2. Green Pharmacy Ukraine for veterinary medicine. - M.:, 1993. - 120 p.
3. Mashkovskii MD Medicines: A Guide for Physicians. - 15th edition / M. D. Mashkovsky. - M: OOO "Publishing New Wave", 2005 - 1200: Ill...
4. PP Dostoevsky Directory of veterinary drugs: ed. PP Dostoyevsky. . - By: Vintage, 1986. - 352 p.
- 5 Kravtsiv RI Handbook "Modern means of veterinary medicine for dogs and cats" / RI Kravtsov, AV Kolesnik. - M: CPI "Contrast", 2004. - 284 p..
- 6 A. Kudrin Guide to laboratory work on pharmacology: Textbook / AN Kudrin, Ryashenov VV - Moscow: Medicine, 1989. - 512 p..
7. State Pharmacopoeia of Ukraine. First Edition. - H .: Roerig 2002.
8. Veterinary medicine / AI Buzzard, II Hariv, VM Gunchak, DF Gufry. [And etc.]. - Lviv, 2006. - 641 p.

9. Pharmacology: the textbook / IS Chekmaev, NA Gorchakov, VA Mists [et al.]. - M .: Higher School, 2001. - 598 p.

12.4. Informational resources (Ukraine)

1. Full catalog registered in Ukraine veterinary drugs. VET.in.UA - Veterinary Information Resources of Ukraine <http://vet.in.ua/menu/drugs.php>
2. Buzzard AI Faytelberg - Blank In . P ., Lizogub Yu . II . and et al . Clinical Veterinary Pharmacology : A Training Manual PDF ... A textbook for students of higher agricultural education by specialty " Veterinary medicine» www.twirpx.com/file/820440
3. Index veterinary preparations for pharmacologically groups: <http://webmvc.com/vet/leki/>
4. <http://www.vet.gov.ua>
5. Veterinary Medicine in The [country](#) . Veterinary information- analytical resource of Ukraine. <http://www.vet.in.ua>
6. All for the student. <http://www.twirpx.com>
7. Materials from veterinary encyclopedia. <http://www.vetwiki.com.ua>
8. Scientific Center of Preventive toxicology, food and chemical safety Academician LI Medved Ministry of Health of Ukraine. <http://www.medved.kiev.ua>
9. Single window access to veterinary resources. <http://window.edu.ru>

12.5. Information resources (for foreign students)

1. Romich, J.A. Pharmacology for Veterinary Technicians, 2nd edition. 2010.
2. Bill, R.L. Clinical Pharmacology and Therapeutics for the Veterinary Technician, 3rd edition. 2006.
3. Bill, R.L. Medical Mathematics and Dosage Calculations for Veterinary Professionals, 2nd edition. 2009.
4. <http://www.youtube.com/watch?v=YEYheg3AEWY>
5. <http://www.youtube.com/watch?v=YEYheg3AEWY>
6. http://www.youtube.com/watch?v=BHv_vji9MtQ
7. <http://www.youtube.com/watch?v=ZxusMGeuupk&feature=related>
8. <http://www.youtube.com/watch?v=0EwaIQ-U6QQ&feature=related>
9. <http://www.youtube.com/watch?v=ZOjPvFKn-sA&feature=related>
10. http://www.msnbc.msn.com/id/35286379/ns/health-pet_health/t/when-vets-make-mistakes-pets-pay-price/
11. <http://www.fda.gov/AnimalVeterinary/ResourcesforYou/ucm214772.htm>
12. <https://www.avma.org/KB/Policies/Pages/Guidelines-for-Veterinary-Prescription-Drugs.aspx>
13. <https://www.rcvs.org.uk/advice-and-guidance/code-of-professional-conduct-for-veterinary-surgeons/supporting-guidance/veterinary-medicines/>
14. https://www.deadiversion.usdoj.gov/pubs/manuals/pract/pract_manual012508.pdf
15. <https://www.pinterest.com/pin/350506783483752161/>
16. <http://lorrainespharmacy.com/compounding/suppositories.htm>
17. http://intranet.tdmu.edu.ua/data/kafedra/internal/lik_tex/classes_stud/en/pharm/prov_pharm/ptn/Pharmaceutical%20drugs%20technology/3/13.%20Infusions%20and%20decoctions%20from%20extracts%20-%20concentrates.htm

18. http://www.msnbc.msn.com/id/35286379/ns/health-pet_health/t/when-vets-make-mistakes-pets-pay-price/
19. <http://www.fda.gov/AnimalVeterinary/ResourcesforYou/ucm214772.htm>
20. <https://www.avma.org/KB/Policies/Pages/Guidelines-for-Veterinary-Prescription-Drugs.aspx>
21. <https://www.rcvs.org.uk/advice-and-guidance/code-of-professional-conduct-for-veterinary-surgeons/supporting-guidance/veterinary-medicines/>
22. https://www.deaiversion.usdoj.gov/pubs/manuals/pract/pract_manual012508.pdf
23. <https://www.pinterest.com/pin/350506783483752161/>
24. <http://lorrainespharmacy.com/compounding/suppositories.htm>
25. http://intranet.tdmu.edu.ua/data/kafedra/internal/lik_tex/classes_stud/en/pharm/prov_pharm/ptn/Pharmaceutical%20drugs%20technology/3/13.%20Infusions%20and%20decoctions%20from%20extracts%20-%20concentrates.htm

12.6. Recommended further reading for Veterinary Pharmacology

1.	Handbook of Veterinary Pharmacology / Walter H. Hsu, <i>Professor of Pharmacology Department of Biomedical Sciences College of Veterinary Medicine Iowa State University Ames, Iowa</i> // Edition first published 2008 © 2008 Wiley-Blackwell	https://www.google.ru/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwjKv6KxgY_XAhXoQpoKHJYJpAMgQFggvMAA&url=http%3A%2F%2Ffiles.books.elebd3.net%2Fdownload-pdf-ebooks.org-kupd-541.pdf&usg=AOvVaw2D4Rp4GpykmLhCFLip_FNY
2.	Veterinary Drug Handbook , Sixth Edition/Donald C. Plumb, Pharm.D // distributed by Blackwell Publishing, COPYRIGHT © 2008 by donald C. Plumb	https://www.google.ru/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0ahUKEwjuvsvDgY_XAhVpCZoKHBYBZB2UQFgg0MAE&url=http%3A%2F%2Fdownload-pdf-ebooks.org-kupd-190.pdf&usg=AOvVaw2iTi5JClD0jgDBZJx6IYW http://download-pdf-ebooks.org-kupd-190.pdf
3.	Pain Management in Small Animal Medicine / Steven M Fox, MS, DVM, MBA, PhD Surgical Specialist: New Zealand VMA Independent Consultant, Clive, Iowa USA Adjunct Assistant	https://www.google.ru/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwilzciig4_XAhXsCJoKHWggCIAQFggLMA

	Professor, College of Veterinary Medicine, University of Illinois Adjunct Associate Professor, Massey University NZ Program Chairman (2000-02), President (2004), Veterinary Orthopedic Society// © 2014 by Taylor & Francis Group, LLC CRC Press is an imprint of Taylor & Francis Group, an Informa business	A&url=https%3A%2F%2Fwww.crcpress.com%2FPain-Management-in-Small-Animal-Medicine%2FFox%2Fp%2Fbook%2F9781840761832&usg=AOvVaw3BCvacLDIX8oz19La1Qnqm
4.	A Textbook of Clinical Pharmacology and Therapeutics / JAMES M RITTER, LIONEL D LEWIS, TIMOTHY GK MANT, ALBERT FERRO // This fifth edition published in Great Britain in 2008 by London School of Medicine, Guy's, King's and St Thomas' Hospitals, London, UK©2008 James M Ritter, Lionel D Lewis, Timothy GK Mant and Albert Ferro	https://www.google.ru/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwiwvd-mo_XAhWsDpoKHeJ-DMEQFggIMAA&url=http%3A%2F%2Fwww.pharmaresearchlibrary.com%2Fwp-content%2Fuploads%2F2013%2F03%2FA-Textbook-of-Clinical-Pharmacology-and-Therapeutics-5th-edition.pdf&usg=AOvVaw1vEgH4Mw565GlzupomjVY9
5.	Small Animal Clinical Pharmacology Bk / An imprint of Elsevier Limited // © Elsevier Limited 2008. All rights reserved.	http://govelobook.top/2nlw3books_ml/small-animal-clinical-pharmacology-and-therapeutics-2ed-pb-2012.pdf
6.	Pharmacology. Workbook for practical classes for foreign students (General medicine) / V.I. Mamchur, A.A. Nefedov, V.I. Opryshko, A.E. Lievykh, E.A. Nefedova, E.V. Khomiak. – Dnipropetrovsk: «Serednyak T.K.», 2014. – 134 p.	ftp://ftp.dsma.dp.ua/209/ENG/Module_s/Pharmacology/Library/Workbook%202015.pdf
7.	Zoo animal and wildlife immobilization and anesthesia / Gary West, DVM, Dipl ACZM, Darryl Heard, BSc, BVMS, PhD, Dipl ACZM, Nigel Caulkett, DVM, MVetSc, Dipl ACVA // ©2007 Blackwell Publishing Chapters 23, 33, and 43 remain with the U.S. Government All rights reserved	http://szb.org.br/blog/conteudos/bibliografias/06-veterinaria/zoo-animal-wildlife-immobilization-and-anesthesia.pdf
8.	Veterinary Drugs / Dr. Barry BOUSFIELD and Dr. Richard BROWN // July 2012, Volume No. 1 Issue No. 9.	
9.	Drug Compounding for Veterinary patients / mark g. papich // <i>The AAPS Journal</i> 2005; 7 (2) Article 29 (http://www.aapsj.org).	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2750966/
10.	Prescription writing and record keeping	http://www.veterinaryirelandjournal.c

	requirements for a veterinary practitioner / Frank O'Sullivan, Chairman, One Health Committee, Veterinary Ireland // Veterinary Ireland Journal Volume 64 Number 4.	om/oldsite/Links/PDFs/CE-Large/CELA_apr_2011.pdf
11.	Anesthesia and Pain Management in Dogs and Cats / Jeff C Ko DVM, MS, DipACVA // Copyright © 2013 Manson Publishing Ltd	https://www.westernu.edu/bin/veterinary/vet-anesthesia-analgesia/perioperative-pain-management.pdf http://www.vasg.org/ https://www.aaha.org/professional/resources/pain_management.aspx
12.	Practitioner's Manual An Informational Outline of the Controlled Substances Act / United States Department of Justice Drug Enforcement Administration Office of Diversion Control // 2006	http://www.asipp.org/documents/PractitionersManual.pdf
13.	English-Russian and Russian-English Dictionary of Toxicology Англо-русский и русско-английский токсикологический словарь / Вольфберг Д. М., Лойт А. О. словарь: Ок. 6 000 терминов / Д. М. Вольфберг, А. О. Лойт. — СПб.: Филологический факультет СПбГУ; М.: Издательский центр «Академия», 2005. — 288 с.	http://academia-moscow.ru/ftp_share/books/fragments/fragment_18448.pdf
14.	Drug Therapy for Infectious Diseases of the Dog and Cat / Valerie J. Wiebe // This edition first published 2015 © 2015 by John Wiley & Sons, Inc	http://www.mediafire.com/file/0q7v3hmo2f7kugm/Drug+Therapy+for+Infectious+Diseases+of+the+Dog+and+Cat.pdf
15.	Ukrainian-Russian-English Dictionary of Basic Veterinary Terms. First edition / Sumy, 2017,. 88 p. Terms. First edition / Sumy, 2017,. 88 p.	Sumy National Agrarian University. Veterinary medicine Department. The Chair of Therapy, Pharmacology and Clinical Diagnostics.
16.	Veterinary pharmacology. Prescription. Different pharmaceutical forms: methodical manual for laboratory and practical training and self-study of the 2 nd and 3 rd year foreign students; specialization in Veterinary Medicine, full-time education / Sumy, 2017, 88 p.	Sumy National Agrarian University. Veterinary medicine Department. The Chair of Therapy, Pharmacology and Clinical Diagnostics.

