Ministry of Agriculture of the Russian Federation
Federal State Budgetary Educational Institution
of Higher Education
"St. Petersburg State University of Veterinary Medicine"

APPROVED BY
Vice-Rector for Educational
Work and Youth Policy
_____Sukhinin A.A.
May 6, 2024

Department of Pharmacology and Toxicology

EDUCATIONAL WORK PROGRAM

for the discipline

« TOXICOLOGY »

The level of higher education
SPECIALIST COURSE

Specialty 36.05.01 Veterinary Medicine
Full-time education
Education starts in 2024

Reviewed and adopted
at the meeting of the department
on May 2, 2024.
Protocol No. 12

Head of the Department
of Pharmacology and Toxicology
Candidate of Veterinary Sciences, Associate Professor
_____ Lunegov A.M.

Saint Petersburg
2024

1. GOALS AND OBJECTIVES OF THE DISCIPLINE

The purpose of the discipline is to study the effect of toxic substances of anthropogenic and natural origin on the body of agricultural, wild and commercial animals, fish and bees, on their productivity, reproductive function and sanitary quality of livestock products. To achieve this goal, it is necessary to solve the following tasks:

to study: classifications of toxic substances by origin, degree of danger, effect on the body; to study methods for assessing the toxicity of drugs used in agriculture and veterinary medicine; features of the course of poisoning and principles of their diagnosis; rules for providing animals with different types of medical care for poisoning, taking into account the physico-chemical structure and action of toxic substances; principles of poisoning prevention toxic substances, plants, substandard feed, etc.; rules and regulations for sampling feed, water, pathological material, animal and plant products for chemical and toxicological analysis.

2. THE LIST OF THE PLANNED RESULTS OF THE DISCIPLINE (MODULE), CORRELATED WITH THE PLANNED RESULTS OF THE REALISED EDUCATIONAL PROGRAM

As a result of mastering the discipline, the student prepares for the following types of activities, in accordance with the educational standard of the FSE on 36.05.01 "Veterinary Medicine".

The field of professional activity:

13 Agriculture

2.1. The student's competencies formed (acquired) as a result of mastering the discipline

The education of the discipline should form the following competencies:

a) General professional competencies (GPC):

GPC-3. Is able to carry out and improve professional activities in accordance with regulatory legal acts in the field of agro-industrial complex

GPC -3 ID-3 - To possess skills of: the legal framework and ethical standards in the implementation of professional activities.

b) Professional competencies (PC):

PC-5. To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body.

PC-5 ID-1 - To be able to use specialized information databases at a choice of animal treatment methods.

PC-5 ID-2 - To be able to calculate the amount of remedies for the treatment of animals and the prevention of diseases with the receipts signature for a certain period.

PC-5 ID-3 - To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well.

PC-5 ID-4 - To be able to administer drugs to the animals body in various techniques.

PC-5 ID-5 - To know the methods of pharmacological treatment of sick animals and indications for its administration, in accordance with the guidelines, instructions, manuals, rules of diagnosis, prevention and treatment.

PC-5 ID-6 - To know the state register of medicines for veterinary use.

PC-5 ID-7 - To know the pharmacological and toxicological characteristics of medicinal raw materials, remedies of chemical and biological nature, biologically active additives for the prevention and treatment of animal diseases of various etiology.

PC-5 ID-8 - To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods.

3. THE PLACE OF DISCIPLINE IN THE STRUCTURE OF THE MPEP

Discipline B1.O.25.02 "Toxicology" is a discipline of Block 1 of the mandatory part of module B1.O.25 "Veterinary pharmacology and Toxicology" of the federal state educational standard of higher education in the specialty 36.05.01 "Veterinary Medicine" (specialty level). It is mastered in the A semesters in the 5rd year.

When teaching the discipline "Toxicology", the knowledge and skills acquired by students during the development of the disciplines of Animal Anatomy, Animal Physiology, Pathological Physiology, Biological Chemistry, Veterinary Pharmacology, Fundamentals of veterinary Pharmacy, Inorganic Chemistry, Organic Chemistry, Analytical Chemistry are used.

4. THE SCOPE OF DISCIPLINE AND TYPES OF ACADEMIC WORK

4.1. The scope of the discipline for full-time education

Type of educational work	Hours	Semesters
		A
Classroom classes (total)	**32**	**32**
Including:	-	-
Lectures, including interactive forms	8	8
Practical (PP), including interactive forms, among which are:	24	24
practical training (PT)	4	4
Self-study	**40**	**40**
Type of intermediate and final certification (credit, exam)	Credit	Credit
Total labor intensity hours/credits	**72/2**	**72/2**

5. THE CONTENT OF THE DISCIPLINE AND TYPES OF CLASSES
5.1. The content of the discipline (full-time education)

№	The title	Achieved competences	Semester	Types of academic work, including students' self-study and labor intensity (in hours)			
				Lectures	Practical lessons	Practical training	Self-study
1	The subject and objectives of veterinary toxicology. The concept of poisons and poisonings. Chemical and toxicological analysis. Regulatory and legal documentation.	***GPC-3. Is able to carry out and improve professional activities in accordance with regulatory legal acts in the field of agro-industrial complex:*** GPC -3 ID-3 - **To possess skills of:** the legal framework and ethical standards in the implementation of professional activities.	A	2	3	-	4
2	Poisoning with table salt and fluoride.	***PC-5. To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body.*** PC-5 ID-1 - To be able to use specialized information databases at a choice of animal treatment methods. PC-5 ID-2 - To be able to calculate the amount of remedies for the treatment of animals and the prevention of diseases with the receipts signature for a certain period. PC-5 ID-3 - To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well. PC-5 ID-4 - To be able to administer drugs to the animals body in various techniques. PC-5 ID-5 - To know the methods of pharmacological treatment of sick animals and indications for its administration, in accordance with the guidelines, instructions, manuals, rules of diagnosis, prevention and treatment. PC-5 ID-6 - To know the state register of medicines for veterinary use. PC-5 ID-7 - To know the pharmacological and toxicological characteristics of medicinal raw materials, remedies of chemical and biological nature, biologically active additives for the prevention and treatment of animal diseases of various etiology. PC-5 ID-8 - To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods.	A	-	2	1	4
3	Poisoning by nitrites and nitrates in animals.			2	2	1	4
4	Toxicology of heavy metals.		A	-	2	1	4
5	Toxicology of mycotoxicoses.		A	2	-	-	4
6	Toxicology of organophosphorus compounds, organochlorine compounds and dioxins.		A	-	3	-	4
7	Toxicology of rodenticides and pyrethroids.		A	-	3	-	4
8	Toxicology of poisons of animal origin.		A	-	2	1	4
9	Phytotoxicoses are poisonous plants.		A	-	2	1	4
10	Environmental toxicology.		A	2	-	-	4
		TOTAL FOR THE A SEMESTER		**8**	**20**	**4**	**40**

6. THE LIST OF EDUCATIONAL AND METHODOLOGICAL SUPPORT FOR STUDENTS' SELF WORK

6.1. Guidelines for self -work

1. Antimicrobial and antiparasitic agents : an educational and methodological manual on veterinary pharmacology / Andreeva Nadezhda Lukoyanovna, Lunegov Alexander Mikhailovich, Popova Olga Sergeevna, Baryshev Viktor Anatolyevich ; Ministry of Agriculture of the Russian Federation, SPbSAVM. - St. Petersburg : SPbSAVM, 2019. - 58 p. – Text: electronic. – URL: https://clck.ru/VeWpz (accessed 04/27/2024). – Access mode: for authorization. users of the SPbSUVM EB.

2. Medicines regulating the functions of organs and systems: method. the vet manual. pharmacology / comp. N. L. Andreeva [et al.]; SPbSAVM. - 2nd edition, additional and revised. - St. Petersburg : SPbSAVM, 2013. - 58 p. – Text: electronic. – URL: https://clck.ru/UJnv8 (accessed 04/27/2024). – Access mode: for authorization. users of the SPbSUVM EB.

3. Medicines with a predominant effect on the central nervous system : an educational and methodological manual on veterinary pharmacology for students of the Faculty of Veterinary Medicine / author-comp.: A.M. Lunegov, N. L. Andreeva, V. A. Baryshev, O. S. Popova [et al.]; Ministry of Agriculture of the Russian Federation, St. Petersburg State Medical University. - St. Petersburg : FGBOU VO SPbSUVM, 2020. - 55 p. – Text: electronic. – URL: https://clck.ru/UKry4 (accessed 04/27/2024). – Access mode: for authorization. users of the SPbSUVM EB.

4. Toxicology : a textbook / compiled by T. A. Troshina [et al.]. — 2nd edition, ispr. and add. — Izhevsk : Izhevsk State Agricultural Academy, 2020. — 95 p. — Text : electronic // Lan : electronic library system. — URL: https://e.lanbook.com/book/158593 (accessed 04/27/2024). — Access mode: for authorization. users.

5. Toxicological analysis in case of poisoning of animals with poisons of mineral origin. Myco - and phytotoxicoses : methodological guidelines / compiled by V. V. Kolodenskaya, T. V. Alekseeva. — Persianovsky : Donskoy GAU, 2020. — 40 p. — Text : electronic // Lan : electronic library system. — URL: https://e.lanbook.com/book/148576 (accessed 04/27/2024). — Access mode: for authorization. users.

6.2. Literature for self-work

1. Ryadnova, T. A. Toxicology : an educational and methodological guide / T. A. Ryadnova. — 2nd ed., add. — Volgograd : Volgogradsky GAU, 2015. — 84 p. — Text : electronic // Lan : electronic library system. — URL: https://e.lanbook.com/book/76625 (accessed 04/27/2024). — Access mode: for authorization. users.

2. Svyatkovsky, A.V. Correction of side effects of pharmacotherapy in clinical veterinary practice: a textbook / A.V. Svyatkovsky. — St. Petersburg : Lan, 2008. — 256 p. — ISBN 978-5-8114-0774-3. — Text : electronic // Lan : electronic library system. — URL: https://e.lanbook.com/book/469 (accessed 04/27/2024). — Access mode: for authorization. users.

3. Sokolov, V. D. Pharmacology : textbook / V. D. Sokolov. — 4th ed., ispr. and add. — St. Petersburg : Lan, 2013. — 576 p. — ISBN 978-5-8114-0901-3. — Text : electronic // Lan : electronic library system. — URL: https://e.lanbook.com/book/10255 (accessed 04/27/2024). — Access mode: for authorization. users.

7. THE LIST OF BASIC AND ADDITIONAL LITERATURE NECESSARY FOR THE EDUCATION OF THE DISCIPLINE

7.1. Basic literature

1. Veterinary toxicology : 2019-08-27 / compiled by E. G. Yakovleva. Belgorod : BelGAU named after V.Ya.Gorin, 2017. — 73 p. — Text : electronic // Lan : electronic library system. — URL: https://e.lanbook.com/book/123357 (accessed 04/27/2024). — Access mode: for authorization. users.

2. Zhulenko, V.N. Veterinary toxicology : Teaching for students. universities in the specialty "Veterinary medicine" / Zhulenko Vasily Nikolaevich, Rabinovich Moses Isaakovich, Talanov German Alexandrovich ; Edited by V.N. Zhulenko. — M. : KolosS, 2004. - 384 p. : ill. — (Textbooks and studies. help. for students. higher. studies. institution.). - ISBN 5-9532-0016-1

3. Educational and methodological guide to practical classes in veterinary toxicology for students of the veterinary faculty of full-time, part-time, part-time education / comp.: N. L. Andreeva [et al.]; SPbGAVM. - St. Petersburg : SPbGAVM, 2017. — 59 p. — Text : electronic. — URL: UMP on veterinary toxicology (accessed 04/27/2024). — Access mode: for authorization.users of the SPbGUVM EB.

4. Korolev, B. A. Phytotoxicoses of domestic animals : textbook / B. A. Korolev, K. A. Sidorova. — 2nd ed., reprint. and add. — St. Petersburg : Lan, 2014. — 352 p. — ISBN 978-5-8114-1589-2. — Text : electronic // Lan : electronic library system. — URL: https://e.lanbook.com/book/41016 (accessed 04/27/2024). — Access mode: for authorization. users.

7.2. Additional literature

1. Vashchekin, E. P. Veterinary formulation : a textbook / E. P. Vashchekin, K. S. Malovastyj. — 2nd ed., erased. — St. Petersburg : Lan, 2017. — 240 p. — ISBN 978-5-8114-1040-8. — Text : electronic // Lan : electronic library system. — URL: https://e.lanbook.com/book/91907 (accessed 04/27/2024). — Access mode: for authorization. users.

2. Velikanov, V. I. Medicines used in veterinary medicine : an educational and methodological guide / V. I. Velikanov, E. A. Elizarova. — 4th ed., additional and revised. — Nizhny Novgorod : NGSHA, 2016. — 132 p. — Text : electronic // Lan : electronic library system. — URL: https://e.lanbook.com/book/138568 (accessed 04/27/2024).

3. Local anesthesia and methods of novocaine therapy of animals : an educational and methodological guide / A. F. Sapozhnikov, I. G. Konopeltsev, S. D. Andreeva, T. A. Bakina. — St. Petersburg : Lan, 2011. — 176 p. — ISBN 978-5-8114-1162-7. — Text : electronic // Lan : electronic library system. — URL: https://e.lanbook.com/book/1545 (accessed 04/27/2024). — Access mode: for authorization. users.

8.THE LIST OF RESOURCES OF THE INFORMATION AND TELECOMMUNICATION NETWORK "INTERNET" NECESSARY FOR EDUCATION OF THE DISCIPLINE

To prepare for laboratory classes and perform self-work, students can use the following online resources:

1. rlsnet.ru Encyclopedia of medicines and pharmacy products
2. Vidal.ru The Vidal Veterinarian Handbook
3. www.vetlek.ru
4. fsvps.gov.ru Rosselkhoznadzor
5. meduniver.com Medical Information Site

Electronic library systems

1. ELS "SPBGUVM"
2. ELS "Lan Publishing House"
3. Legal reference system "ConsultantPlus"
4. University information system "RUSSIA"
5. Full-text database POLPRED.COM
6. Scientific electronic Library ELIBRARY.RU
7. Russian Scientific Network
8. Database of international scientific citation indexes Web of Science
9. Scopus database of International Science Citation Indexes
10. Full-text interdisciplinary database on agricultural and environmental sciences ProQuest AGRICULTURAL AND ENVIRONMENTAL SCIENCE DATABASE
11. Electronic books of the publishing house "Prospekt Nauki" http://prospektnauki.ru/ebooks/
12. Collection "Agriculture. Veterinary medicine" publishing house "Quadro" ELS "Elibris" publishing house "Quadro" https://elibrica.com/

9. METHODOLOGICAL GUIDELINES FOR STUDENTS ON EDUCATION OF THE DISCIPLINE

Methodological recommendations for students are a set of recommendations and explanations that allow them organize the process of studying this discipline optimally.

The content of methodological recommendations, as a rule, may include:

• Tips on planning and organizing the time needed to study the discipline. Description of the sequence of actions of the student, or the "scenario of studying the discipline".

Morning time is the most effective for academic work (from 8-14 hours), followed by afternoon time (from 16-19 hours) and evening time (from 20-24 hours). The most difficult material is recommended to be studied at the beginning of each time interval after rest. After 1.5 hours of work, a break is required (10-15 minutes), after 4 hours of work, the break should be 1 hour. Part of the scientific organization of labor is the master of the technique of mental labor. Normally, a student should devote about 10 hours a day to studying (6 hours at university, 4 hours at home).

The methodology of work when taking notes of oral presentations differs significantly from the methodology of work when taking notes of written sources.

By taking notes of written sources, the student has the opportunity to read again the desired passage of the text, reflect on it, highlight the main thoughts of the author, briefly formulate them, and then write them down. If necessary, he can also note his attitude to this point of view. Listening to the lecture, the student should transist most of the complexity of the above–mentioned works for another time, trying to use every minute to record the lecture, and not to comprehend it - there is no time left for this. Therefore, when taking notes of a lecture, it is recommended, to leave separate fields on each page for subsequent entries in addition to the summary.

After recording a lecture or making a summary of it, you should not leave work on the lecture material before preparing for the test. It is necessary to do as early as possible the work that accompanies takimg notes of written sources, the last could not be done during the recording of the lecture - read your notes, deciphering individual abbreviations, analyze the text, establish logical connections between its elements, in some cases show them graphically, highlight the main thoughts, mark issues, requiring additional processing, in particular, the teacher's consultations.

When working on the text of the lecture, the student should pay special attention to the problematic issues, raised by the teacher, during the lecture, as well as to his assignments and recommendations.

For each lecture, practical lesson and laboratory work, classification cod, topic, list of issues under consideration, volume in hours and links to recommended literature are provided. For classes conducted in interactive forms, its organizational form should be indicated: computer simulation, business or role-playing game, analysis of a specific situation, etc.

• Recommendations for preparing for practical classes

Practical (seminar) classes are an important part of the professional training of students. The main purpose of conducting practical (seminar) classes is to form students' analytical, creative thinking through the acquisition of practical skills. Practical classes are also conducted in order to deepen and consolidate the knowledge gained in lectures and in the process of independent work on normative documents, educational and scientific literature. For student, it is necessary, to study or repeat theoretical material on a given topic when preparing for a practical lesson for students.

When preparing for a practical lesson, the student is recommended to follow the following algorithm;

1) get acquainted with the plan of the upcoming lesson;

2) study the literature sources that have been recommended and familiarize yourself with the introductory notes to the relevant sections.

Methodological guidelines for practical (seminar) classes in the discipline, along with the work program and schedule of the educational process, refer to methodological documents that determine the level of organization and quality of the educational process.

The content of practical (seminar) classes is recorded in the working curricula of the disciplines in the sections "List of topics of practical (seminar) classes".

The most important component of any form of practical training are tasks. The basis of the task is an example that is understood from the standpoint of the theory developed in the lecture. As a rule, the main attention is paid to the formation of specific skills, which determines the content of students' activities - problem solving, laboratory work, clarification of categories and concepts of science, which are a prerequisite for correct thinking and speech.

• Practical (seminar) classes perform the following tasks:

- stimulate regular study of recommended literature, as well as attentive attitude to the lecture course;
- consolidate the knowledge gained in the process of lecture training and independent work on literature;
- expand the scope of professionally significant knowledge, skills, and abilities;
- allow you to verify the correctness of previously acquired knowledge;
- initiate skills of independent self-thinking, oral presentation;
- contribute to the free use of terminology;
-provide the teacher with the opportunity to systematically monitor the level of independent work of students.

Methodological guidelines for practical (seminar) classes on the discipline should be focused on modern business conditions, current regulatory documents, advanced technologies, the latest achievements of science, technology and practice, modern ideas about certain phenomena, the studied reality.

• Recommendations for working with literature.

Working with literature is an important stage of the student's self-work on mastering the subject, contributing not only to the consolidation of knowledge, but also to the expansion of horizons, mental abilities, memory, the ability to think, express and confirm personal hypotheses and ideas. In addition, the skills of research work necessary for further professional activityare developed.

When starting to study the literature on the topic, it is necessary to make notes, extracts, notes. It is mandatory to take notes of the works of theorists, which allow us to comprehend the theoretical basis of the study. For the rest, you can limit yourself to summary from the studied sources. All summaries and quotations must have the exact "return address" (author, title of the work, year of publication, page, etc.). It is advisable to write an abbreviated title of the question to

which the extract or quotation refers. In addition, it is necessary to learn how to immediately compile a file of special literature and publications of sources, both proposed by the teacher and identified independently, as well as refer to bibliographic reference books, chronicles of journal articles, book chronicles, abstract journals. At the same time, publications of sources (articles, book titles, etc.) should be written on separate cards, which must be filled in according to the rules of bibliographic description (surname, initials of the author, title of the work. Place of publication, publisher, year of publication, number of pages, and for journal articles – the name of the journal, year of publication, page numbers). On each card, it is advisable to record the thought of the author of the book or a fact from this book on only one specific issue. If the work, even in the same paragraph or phrase, contains more judgments or facts on another issue, then they should be written out on a separate card. The presentation should be concise, accurate, without subjective assessments. On the back of the card, you can make your own notes about this book or article, its content, structure, on which sources it is written, etc.

• Explanations about working with control and test materials for the course, recommendations for completing homework.

Testing allows you to determine whether the actual behavior of the program corresponds to the expected one by performing a specially selected set of tests. A test is the fulfillment of certain conditions and actions necessary to verify the operation of the function under test or part of it. Each question in the discipline must be answered correctly by choosing one option.

10. EDUCATIONAL SOCIAL WORK

As part of the implementation of the discipline, educational work is carried out to form a modern scientific worldview and a system of basic values, the formation and development of spiritual and moral, civil and patriotic values, a system of aesthetic and ethical knowledge and values, attitudes of tolerant consciousness in society, the formation of students' need for work as the first vital necessity, the highest value and the main way to achieve success in life, to realize the social significance of your future profession.

11. THE LIST OF INFORMATION TECHNOLOGIES USED IN THE IMPLEMENTATION OF THE EDUCATIONAL PROCESS

11.1 Information technologies

For the educational process of the discipline is previewed the use of information technologies:

- practical classes using multimedia;
- interactive technologies (dialogues, collective discussion on various topics for realization a particular educational and professional task);
- interaction with students via e - mail;
- community work in the electronic information and educational environment of St. Petersburg State University: https://spbguvm.ru/academy/eios/

11.2. Software

The list of licensed and free- distributed software, including national programs

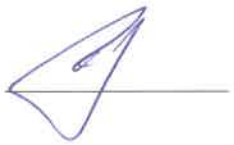
№	Technical and computer programs recommended by sections and topics of the program	License
1	MS PowerPoint	67580828
2	LibreOffice	free software.
3	OS Alt Education	AAO.0022.00
4	ABIS " MARK-SQL"	02102014155
5	MS Windows 10	67580828
6	System Consult Plus	503/KJI
7	Android OS	free software

12. THE MATERIAL AND TECHNICAL BASE NECESSARY FOR THE IMPLEMENTATION OF THE DISCIPLINE EDUCATIONAL PROCESS

The title of the discipline (module), practice in accordance with the curriculum	The title of special rooms and rooms for self-work	Equipment of special rooms and rooms for self-work
Veterinary Pharmacology	115 (196084, St. Petersburg, Chernihiv str., 5) Classroom for conducting seminar-type classes, group and individual consultations, ongoing monitoring and intermediate certification	Specialized furniture: desks, chairs, blackboard. Technical training facilities: multimedia projector, screen, computer. Visual aids and educational materials: pharmacological collection by groups of medicinal substances, herbarium of medicinal and poisonous plants, presentations on pharmacology
	211 (196084, St. Petersburg, Chernihiv str., 5) Classroom for conducting seminar-type classes, group and individual consultations, ongoing monitoring and intermediate certification	Specialized furniture: desks, chairs, blackboard. Technical training facilities: multimedia projector, screen, computer. Visual aids and educational materials: pharmacological collection by groups of medicinal substances, herbarium of medicinal and poisonous plants, presentations on pharmacology
	211A (196084, St. Petersburg, Chernihiv str., 5) Classroom for conducting seminar-type classes, group and individual consultations, ongoing monitoring and intermediate certification	Specialized furniture: desks, chairs, blackboard. Technical training facilities: multimedia projector, screen, computer. Visual aids and educational materials: pharmacological collection by groups of medicinal substances, herbarium of medicinal and poisonous plants, presentations on pharmacology
	313 (196084, St. Petersburg, Chernihiv str., 5) Classroom for conducting seminar-type classes, group and individual consultations, ongoing monitoring and intermediate certification	Specialized furniture: desks, chairs, blackboard. Technical means of training: multimedia projector, screen, computer, scales: laboratory, manual, calibration; torsion; dispenser; homogenizer; magnetic stirrer; thermostat; laboratory refractometer microscope; refrigerator, laboratory utensils, exhaust cabinet; Visual aids and educational materials: pharmacological collection by groups of medicinal substances, herbarium of medicinal and poisonous plants, presentations on pharmacology
	314 (196084, St. Petersburg, Chernihiv str., 5) Classroom for conducting seminar-type classes, group and individual consultations, ongoing monitoring and intermediate certification	Specialized furniture: desks, chairs, blackboard. Technical means of training: multimedia projector, screen, computer, scales: laboratory, manual, calibration; torsion; dispenser; homogenizer; magnetic stirrer; thermostat; laboratory refractometer microscope; refrigerator, laboratory utensils, exhaust cabinet; Visual aids and educational materials: pharmacological collection by groups of medicinal substances, herbarium of medicinal and poisonous plants, presentations on pharmacology
	114 (196084, St. Petersburg, Chernihiv str., house 5) Educational laboratory of the department.	Specialized furniture: chairs, laboratory cabinets, laboratory tables Technical training tools: Sapop FC -128 copier), HP LJ 1022 printer; multimedia projector, portable screen, computer, scales: laboratory, manual, torsion; torsion; dispenser; homogenizer; distiller. magnetic stirrer; laboratory heater; thermostat; microscope; laboratory refractometer; refrigerator, laboratory utensils, educational dummy dog "Jerry".
	206 Large reading room (196084, St. Petersburg, Chernigovskaya str., 5) Room for self-work	Specialized furniture: tables, chairs Technical means of education: computers connected to the Internet and access to an electronic information and educational environment
	214 Small reading room (196084, St. Petersburg, Chernigovskaya str., 5) Room for self-work	Specialized furniture: tables, chairs

		Technical means of education: computers connected to the Internet and access to an electronic information and educational environment
	324 Information Technology Department (196084, St. Petersburg, Chernigovskaya str., 5) Room for storage and preventive maintenance of educational equipment	Specialized furniture: tables, chairs, special equipment, materials and spare parts for preventive maintenance of technical training facilities
	Box No. 3 Carpentry workshop (196084, St. Petersburg, Chernigovsaya str., 5) Room for storage and preventive maintenance of educational equipment	Specialized furniture: tables, chairs, special equipment, materials and spare parts for preventive maintenance of technical training facilities

Developer:

Head of the Department of Pharmacology and Toxicology,
Candidate of Veterinary Sciences, Associate Professor  Lunegov A.M.

Annex 1

Ministry of Agriculture of the Russian Federation
Federal State Budgetary Educational Institution
of higher education
"Saint Petersburg State University of Veterinary Medicine"

Department of Department of Pharmacology and Toxicology

FUND OF ASSESMENT TOOLS
for the discipline
"TOXICOLOGY"

Level of higher education
SPECIALIST COURSE

Specialty 36.05.01 Veterinary medicine
Full-time education.

Education starts in 2024

Saint Petersburg
2024

1. PASSPORT OF THE FUND OF ASSESMENT TOOLS

№	Acquired competence	Assessed modules of a discipline	Assesment tool
1.	***GPC-3. Is able to carry out and improve professional activities in accordance with regulatory legal acts in the field of agro-industrial complex:*** GPC -3 ID-3 - **To possess skills of:** the legal framework and ethical standards in the implementation of professional activities.	The subject and objectives of veterinary toxicology. The concept of poisons and poisonings. Chemical and toxicological analysis. Regulatory and legal documentation.	Knowledge survey, tests
2.	***PC-5. To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body.*** PC-5 ID-1 - To be able to use specialized information databases at a choice of animal treatment methods. PC-5 ID-2 - To be able to calculate the amount of remedies for the treatment of animals and the prevention of diseases with the receipts signature for a certain period. PC-5 ID-3 - To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well. PC-5 ID-4 - To be able to administer drugs to the animals body in various techniques. PC-5 ID-5 - To know the methods of pharmacological treatment of sick animals and indications for its administration, in accordance with the guidelines, instructions, manuals, rules of diagnosis, prevention and treatment. PC-5 ID-6 - To know the state register of medicines for veterinary use. PC-5 ID-7 - To know the pharmacological and toxicological characteristics of medicinal raw materials, remedies of chemical and biological nature, biologically active additives for the prevention and treatment of animal diseases of various etiology. **PC-5 ID-8 - To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods.**	Poisoning with table salt and fluoride. Poisoning by nitrites and nitrates in animals. Toxicology of heavy metals. Toxicology of mycotoxicoses. Toxicology of organophosphorus compounds, organochlorine compounds and dioxins. Toxicology of rodenticides and pyrethroids. Toxicology of poisons of animal origin. Phytotoxicoses . are poisonous plants. Environmental toxicology.	Knowledge survey, tests

List of assessment tools

№	Наименование оценочного средства	Краткая характеристика оценочного средства	Представление оценочного средства в фонде
1.	Seminar	A means of controlling the assimilation of educational material of a topic, section or sections of a discipline, organized as an educational activity in the form of an interview between a teacher and students	Questions on topics/sections of the discipline
2.	Test	A system of standardized tasks that allows you to automate the procedure for measuring the level of knowledge and skills of a student	The fund of test tasks

2. INDICATORS AND CRITERIA FOR ASSESSING COMPETENCIES AT VARIOUS STAGES OF ITS FORMATION, DESCRIPTION OF ASSESSMENT SCALES

Planned results of competency acquaired	The level of development				Assesment tool
	Unsatisfactory	Satisfactory	Good	Exellent	
GPC-3. Is able to carry out and improve professional activities in accordance with regulatory legal acts in the field of agro-industrial complex:					
GPC -3 ID-3 - To possess skills of: the legal framework and ethical standards in the implementation of professional activities.	Basic skills were not demonstrated when solving standard tasks, and gross errors occurred	There is a minimal set of skills for solving standard tasks with some shortcomings	Basic skills are demonstrated in solving standard tasks with some shortcomings	Demonstrated skills in solving Non-standard tasks without errors and shortcomings	Seminar, Test, Report, Control work
PC-5. To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body.					
PC-5 ID-1 - To be able to use specialized information databases at a choice of animal treatment methods.	Basic skills were not demonstrated when solving standard tasks, and gross errors occurred	Basic skills have been demonstrated, typical tasks with minor errors have been solved, all tasks have been completed, but not in full	All the basic skills have been demonstrated, all the main tasks with minor errors have been solved, all the tasks have been completed in full, but some with flaws	All basic skills have been demonstrated, all basic tasks have been solved with some minor flaws, and all tasks have been completed in full	Seminar, Test, Report, Control work
PC-5 ID-2 - To be able to calculate the amount of remedies for the treatment of animals and the prevention of diseases with the receipts signature for a certain period.	Basic skills were not demonstrated when solving standard tasks, and gross errors occurred	Basic skills have been demonstrated, typical tasks with minor errors have been solved, all tasks have been completed, but not in full	All the basic skills have been demonstrated, all the main tasks with minor errors have been solved, all the tasks have been completed in full, but some with flaws	All basic skills have been demonstrated, all basic tasks have been solved with some minor flaws, and all tasks have been completed in full	Seminar, Test, Report, Control work
PC-5 ID-3 - To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well.	Basic skills were not demonstrated when solving standard tasks, and gross errors occurred	Basic skills have been demonstrated, typical tasks with minor errors have been solved, all tasks have been completed, but not in full	All the basic skills have been demonstrated, all the main tasks with minor errors have been solved, all the tasks have been completed in full, but some with flaws	All basic skills have been demonstrated, all basic tasks have been solved with some minor flaws, and all tasks have been completed in full	Seminar, Test, Report, Control work
PC-5 ID-4 - To be able to administer drugs to the animals body in various techniques	Basic skills were not demonstrated when solving standard tasks, and gross errors occurred	Basic skills have been demonstrated, typical tasks with minor errors have been solved, all tasks have been completed, but not in full	All the basic skills have been demonstrated, all the main tasks with minor errors have been solved, all the tasks have been completed in full, but some with flaws	All basic skills have been demonstrated, all basic tasks have been solved with some minor flaws, and all tasks have been completed in full	Seminar, Test
PC-5 ID-5 - To know the methods of pharmacological treatment of sick animals and indications for its administration, in accordance with the guidelines,	The level of knowledge is below the minimum	The minimum acceptable level of knowledge, many gross mistakes were made	The level of knowledge in the volume corresponding	The level of knowledge in the volume corresponding to the	Seminar, Test, Report, Control work

instructions, manuals, rules of diagnosis, prevention and treatment.	requirements, gross errors have occurred		to the training program, several blunders were made	training program, without errors.	
PC-5 ID-6 - To know the state register of medicines for veterinary use.	The level of knowledge is below the minimum requirements, gross errors have occurred	The minimum acceptable level of knowledge, many gross mistakes were made	The level of knowledge in the volume corresponding to the training program, several blunders were made	The level of knowledge in the volume corresponding to the training program, without errors.	Seminar, Test, Report, Control work
PC-5 ID-7 - To know the pharmacological and toxicological characteristics of medicinal raw materials, remedies of chemical and biological nature, biologically active additives for the prevention and treatment of animal diseases of various etiology.	The level of knowledge is below the minimum requirements, gross errors have occurred	The minimum acceptable level of knowledge, many gross mistakes were made	The level of knowledge in the volume corresponding to the training program, several blunders were made	The level of knowledge in the volume corresponding to the training program, without errors.	Seminar, Test, Report, Control work
PC-5 ID-8 - To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods	The level of knowledge is below the minimum requirements, gross errors have occurred	The minimum acceptable level of knowledge, many gross mistakes were made	The level of knowledge in the volume corresponding to the training program, several blunders were made	The level of knowledge in the volume corresponding to the training program, without errors.	Seminar, Test, Report, Control work

3. A LIST OF CONTROL TASKS AND OTHER MATERIALS, NECESSARY FOR THE ASSESSMENT OF KNOWLEDGE, SKILLS AND WORK EXPERIENCE

3.1. Typical tasks for the current control of academic progress
3.1.1 Questions for seminar

Assessed modules of a discipline	Acquired competence (identification)	Questions on topics/modules of the discipline
The subject and objectives of veterinary toxicology. The concept of poisons and poisonings. Chemical and toxicological analysis. Regulatory and legal documentation.	***GPC-3. Is able to carry out and improve professional activities in accordance with regulatory legal acts in the field of agro-industrial complex:*** GPC -3 ID-3 - **To possess skills of:** the legal framework and ethical standards in the implementation of professional activities.	1. The subject and objectives of veterinary toxicology. 2. The concept of poisons and poisonings. 3. Classification of poisons. 4. The fate of poisons in the body. 5. The concept of toxicodynamics and toxicokinetics of poisons. 6. The main distinguishing features of intoxication. 7. Classification of poisoning. 8. Ways of ingestion of poisons into the animal's body and their importance for the development of intoxication. 9. Ways of excreting poisons from the animal's body. 10. Lifetime and postmortem diagnosis of poisoning. 11. Scheme of assistance in case of poisoning. 12. Antidote and symptomatic therapy for poisoning. 13. The regulatory framework for the diagnosis and treatment of animals. Rules for collecting and sending the material to the laboratory for chemical and toxicological analysis. 14. Requirements for the material under study. 15. The concept of cumulation and types of cumulation. 16. Conditions conducive to the manifestation of poison toxicity and their effect on the development and course of poisoning. 17. General preventive measures in case of poisoning.
Poisoning with table salt and fluoride. Poisoning by nitrites and nitrates in animals. Toxicology of heavy metals. Toxicology of mycotoxicoses. Toxicology of organophosphorus compounds, organochlorine compounds and dioxins. Toxicology of rodenticides and pyrethroids. Toxicology of poisons of animal origin. Phytotoxicoses are poisonous plants.	***PC-5. To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body.*** PC-5 ID-1 - To be able to use specialized information databases at a choice of animal treatment methods. PC-5 ID-2 - To be able to calculate the amount of remedies for the treatment of animals and the prevention of diseases with the receipts signature for a certain period. PC-5 ID-3 - To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well.	1. Toxicology of table salt. 2. Poisoning with fluorinated compounds. 3. Toxicology of nitrates and nitrites. 4. Toxicology of carbamates. 5. Toxicology of the most dangerous heavy metals (mercury, lead, cadmium, copper, zinc and arsenic). 6. General characteristics of heavy metals. 7. Antidote and symptomatic therapy for poisoning. 8. Rules for collecting and sending the material to the laboratory for chemical and toxicological analysis. 9. Requirements for the material under study. 10. Substances of man–made origin are non-traditional sources of animal poisoning.

Environmental toxicology.	PC-5 ID-4 - To be able to administer drugs to the animals body in various techniques. PC-5 ID-5 - To know the methods of pharmacological treatment of sick animals and indications for its administration, in accordance with the guidelines, instructions, manuals, rules of diagnosis, prevention and treatment. PC-5 ID-6 - To know the state register of medicines for veterinary use. PC-5 ID-7 - To know the pharmacological and toxicological characteristics of medicinal raw materials, remedies of chemical and biological nature, biologically active additives for the prevention and treatment of animal diseases of various etiology. PC-5 ID-8 - To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods.	11. Conditions conducive to the manifestation of poison toxicity and their effect on the development and course of poisoning. 12. Scheme of assistance in case of poisoning. 13. Routes of administration of drugs and their distribution in the body. 14. The concept of pesticides and their features. 15. Classification of pesticides (by purpose, origin and by the nature of penetration into the body of insects). 16. Sanitary and hygienic classification of pesticides. 17. The concept of cumulation and types of cumulation. 18. Toxicology of mineral fertilizers. 19. Substances of man–made origin are non-traditional sources of animal poisoning. 20. Conditions contributing to the manifestation of poison toxicity and their effect on the development and course of poisoning. 21. General preventive measures in case of poisoning. 22. The State Pharmacopoeia of the Russian Federation 23. The State information system in the field of veterinary medicine is approved by the Federal Service for Veterinary and Phytosanitary 24. Supervision 25. The toxicology of table salt. 26. Poisoning with fluorinated compounds. 27. Toxicology of nitrates and nitrites. 28. Toxicology of carbamates. 29. General characteristics of heavy metals. Toxicology of the most dangerous heavy metals (mercury, lead, cadmium, copper, zinc and arsenic). 30. Toxicology of carbamide and other feed additives. 31. Toxicology of organophosphorus compounds. 32. Toxicology of modern organochlorine compounds and dioxins. 33. Toxicological characteristics of pyrethroids and avermectins. 34. Toxicology of rodenticides (zoocides). 35. General characteristics of feed poisoning (cake, meal, pulp, potatoes and tops, etc.). 36. Measures of assistance in case of snake bites, insect stings and scorpions. 37. General characteristics of poisonous plants. 38. Poisonous plants containing alkaloids. 39. Poisonous plants containing glycosides. 40. Poisonous plants containing toxalbumin and saponins. 41. General characteristics of heavy metals. 42. Routes of administration of medicinal substances.

3.1.2 Test-questions

Tests to assess the competence of ***GPC-3. Is able to carry out and improve professional activities in accordance with regulatory legal acts in the field of agro-industrial complex:***

GPC -3 ID-3 - To possess skills of: the legal framework and ethical standards in the implementation of professional activities.

1. Veterinary toxicology is....
a) the science of the effect of drugs on the body
b) the science that studies the method of drugs, their physical, chemical properties, storage conditions, methods of research of qualitative and quantitative composition
c) the science that studies the properties of toxic substances, their effect on the body, routes of entry, its metabolism; accumulation in organs and tissues, isolation

2. Poisoning is commonly understood as:
a) the process of resorption, penetration of poison into the body
b) the process of interaction between poison and the body
c) endogenous intoxication with metabolites
d) the process of distribution and metabolism of poison in the body

3. According to the place of application of toxic action, highly toxic substances are divided into the following groups, excluding
a) predominantly local action
b) predominantly resorptive action
c) having a mixed effect
d) not possessing any of these types of action

4. Of the above, the most common ways of ingestion of poison in the body in everyday conditions are
: a) oral
b) sublingual
c) rectal and vaginal
d) intravenous and intraarterial
e) intramuscular and subcutaneous

5. Persistent toxic substances are characterized by:
a) high volatility at a boiling point of at least 180 ° C
b) with a boiling point of more than 150 ° C, the lesion formed by them retains its properties on the ground for more than 1 hour
c) with a boiling point of more than 200 ° C, the lesion formed by them retains its properties on the ground for more than 1 day
d) the boiling point is usually less than 200 ° C, the lesion formed by them retains its properties on the ground for less than 1 hour

6. What measures should be taken if the poison has been absorbed into the blood (more than 4 hours have passed)?
a) in / in sodium chloride; 40% glucose solution, diuretics
b) in / in sodium chloride; 5% glucose solution, diuretics
c) in / in sodium chloride; 2% calcium chloride solution, diuretics

7. What can be attributed to contact antidotes?

a) calcium
tetacin
b) dipiroxime
c) bemegrid
d) burnt magnesia

8. What is the dose?
a) This is the amount of a medicinal substance per 1 dose to provide a therapeutic effect
b) this is the concentration of a medicinal substance in 1 ml of the drug
c) this is an empirical concept used to determine the properties of a medicinal product

9. What are glycosides:
a) organic substances of the aromatic series, in the molecules of which hydroxyl groups and an aromatic ring
are present
b) these are complex ether-like organic substances of plant origin, which consist of carbohydrate and non-carbohydrate parts
c) volatile ether-like compounds consisting of two carbon atoms and organic acids
d) the product of the vital activity of a fungal cell

10. What is deratization?
a) destruction of parasitic ticks
b) removal of radioactive substances from the surface
c) a set of measures aimed at the destruction of rodents11. Cumulation is:
a) accumulation of toxic substances in tissues;
b) increased effect upon repeated administration;
c) accumulation of their concentration in milk;
d) excretion of substances from the animal's body.

12. Toxicokinetics considers issues related to:
a) the development of clinical signs;
b) the receipt, distribution, and excretion of toxic substances;
c) biotransformation;
d) cumulation.

13. What antidotes are used to neutralize the poison in the blood?
a) burnt magnesia, activated carbon
b) atropine sulfate, enterosgel
c) sodium thiopental, vitamin K
d) sodium thiosulfate, vitamin K

14. What can be attributed to contact antidotes?
a) calcium tetacin
b) dipiroxime
c) bemegrid
d) burnt magnesia

15. What regulatory document regulates the turnover of medicines for veterinary use?
a) 61-FZ "On the Circulation of Medicines"
b) The State Pharmacopoeia of the Russian Federation

c) Decree of the Government of the Russian Federation No. 1314 "On determining the compliance of manufacturers of medicines with the requirements of the Rules of Good Manufacturing practice"
d) GMP Rules

16. When was the first official pharmacopoeia published in Russian in Russia?
a) In 1866
b) In 1880
c) In 1902
d) In 1910.

17. Which regulatory document establishes requirements for premises for the storage of medicines for veterinary use?
a) The fourteenth edition of the State Pharmacopoeia 2018
b) Order of the Ministry of Agriculture of the Russian Federation No.145 dated 15.04.2015 "On approval of the rules for the storage of medicines for veterinary use".
c) 61-FZ "On the circulation of medicines".
d) Decree of the Government of the Russian Federation No. 1314 "On determining the compliance of manufacturers of medicines with the requirements of the Rules of Good Manufacturing practice"

18. What is the nature of the state pharmacopoeia of the Russian Federation:
a) Recommendation
b) Legislative
c) Educational
d) Advisory and legislative

19. What is used to determine absolute bioavailability as a standard dosage form?
a) injectable solutions for intravenous administration
b) powders
c) oral solutions
d) tablets

20. How is the concept of "storage" defined in the state pharmacopoeia XIV?
a) the process of storing medicines (drugs) until they are used within the prescribed shelf life, which is an integral part of the circulation of medicines
b) a licensed type of activity that is an integral part of the circulation of medicines
c) the process of placing goods in warehouses, maintaining and caring for them in order to ensure their quality and quantity
(d) The combination of climatic and sanitary requirements

21. Which source has officially regulated information about the drug:
a) The State Register of Medicines
b) The handbook "Medicines", ed. Mashkovsky M.D.
c) handbook "Vidal-veterinarian"
d) register of medicines "Encyclopedia of medicines"

22. What is a series of medicinal products:
a) the amount of a medicinal product produced as a result of one technological cycle by its manufacturer
b) the amount of imported medicinal product imported into the territory of the Russian Federation

c) the quantity of the medicinal product registered in the Galen system
d) the number of the registration entry in the manufacturer's documentation

23. What is the correct sequence of the prescription structure?
a) The doctor's address, the list of drugs, date, signature.
b) Title, doctor's address, signature, date
c) Title, doctor's address, list of medicines, indication of manufacture and release, signature
d) Title, list of medicines, indication of manufacture, date, doctor's remark

24. What applies to solid dosage forms:
a) liniment
b) dragees
c) solution
d) emulsion

25. Which organization carries out control and supervision in the field of circulation of medicines for veterinary use?
a) Rosobrnadzor
b) Roszdravnadzor
c) Rosselkhoznadzor
d) Rospotrebnadzor

26. What document entitles individual entrepreneurs or legal entities to carry out activities related to the turnover of medicines for veterinary use?
a) A certificate for the implementation of pharmaceutical activities in the field of circulation of medicines for veterinary use.
b) A certificate for the implementation of pharmaceutical activities in the field of circulation of medicines for veterinary use.
c) A license to carry out pharmaceutical activities in the field of circulation of medicines for veterinary use.
d) Permission to carry out pharmaceutical activities in the field of circulation of medicines for veterinary use.

27. Which organization is authorized to issue a license for pharmaceutical activities in the field of circulation of medicines for veterinary use?
a) Rosobrnadzor
b) Roszdravnadzor
c) Rosselkhoznadzor
d) Rospotrebnadzor

28. Which organization is authorized to issue a license for pharmaceutical activities related to the trafficking of narcotic drugs and psychotropic substances?
a) Rosobrnadzor
b) Roszdravnadzor
c) Rosselkhoznadzor
d) Rospotrebnadzor

29. For what purpose are LD50 drugs being studied in laboratory animals?
a) To determine the harmlessness
b) To determine toxicity
c) To determine the hazard class
d) To determine effectiveness

30. What does toxicokinetics study?
a) the mechanism of action of xenobiotics
b) absorption, distribution, biotransformation, elimination of xenobiotics
c) doses of toxic substances
d) specific and non-specific receptors

31. What determines the relationship of drugs with plasma proteins:
a) absorbability of medicinal substances;
b) the mechanism of action of medicinal substances;
c) side effects in patients with kidney disease;
d) the possibility of side effects when combining several medications?

32. What characterizes the half-life of the drug:
a) the time required to reduce by half the amount of medicine in the body as a result of elimination;
b) the time it takes for half of the administered drug to be excreted;
c) the time required to halve the maximum concentration of the drug in the blood serum;
d) the time it takes for half of the administered dose to be destroyed?

33. What causes the teratogenic effect of drugs during pregnancy:
a) to the death of the embryo;
b) to the development of deformities;
c) functional and structural disorders in the form of fetotoxicity;
d) to the development of oncological diseases in the long term?

34. Which of the above applies to pharmaceutical activities in accordance with Federal Law No. 61 "On the circulation of Medicines"?
a) Wholesale and retail trade in medicines and medicinal products
b) Manufacture and distribution of medicines
c) Transportation and storage of medicines and medicines
d) All of the above

35. What regulatory document regulates the conditions for the manufacture of medicines?
a) Federal Law No. 61 "On the circulation of medicines"
b) GMP Rules
c) Order No. 553n "On approval of types of pharmacy organizations
d) It is not regulated by anything

36. Which organization issues a sanitary and epidemiological conclusion to a veterinary organization for the implementation of pharmaceutical activities related to the trafficking of narcotic drugs and psychotropic substances?
a) Rosobrnadzor
b) Roszdravnadzor
c) Rosselkhoznadzor
d) Rospotrebnadzor

37. Which organization carries out state control over the activities of pharmacy enterprises?
a) licensing authorities
b) audit organizations
c) statistical agencies
d) The Ministry of Finance of the Russian Federation

38. What is pharmacodynamics?
a) This is a section of pharmacology on the ways of introducing drugs into the animal's body
b) This is a section of pharmacology on the ways to remove a drug from an animal's body
c) This is a section of pharmacology that studies the effect of a drug on the body
d) It is a science that studies medicinal plants

39. Which organ is involved in the biotransformation of drugs in the body?
a) the brain
b) heart
c) liver
d) lungs

40. What is accumulation with repeated administration of drugs?
a) is it drug addiction
b) it is the excretion of a medicinal product from the body
c) it is the accumulation of a medicinal substance or pharmacological effect in the body
d) it is a section of pharmacology on the ways of introducing drugs into the animal's body

Tests to assess the competence of ***PC-5. To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body.***

PC-5 ID-1 - To be able to use specialized information databases at a choice of animal treatment methods:

1. In case of poisoning with heavy metal salts, the following antidotes are indicated:
a) unithiol
b) ethanol
c) chromosome
d) dipyroxime

2. Which cholinolytic drug is used in the case of cholinomimetic syndrome due to FOS poisoning?
a) cyclodol
b) parkopan
c) atropine
d) belloid

3. Specific therapy for bronchorrhea in case of FOS poisoning includes the administration of
a) proserpine
b) strophanthin
c) atropine
d) relanium

4. Specify the antidotes for the treatment of affected FOV
a) atropine, unithiol, sodium thiosulfate
b) atropine, amyl nitrite, chromosome
c) atropine, dipiroxime, isonitrosine
d) atropine, urotropine, acizole
e) atropine, dicobalt salt EDTA, folic acid

5. Which group of medicines can be used to prevent FOV damage?
a) cholinolytics
b) ganglioblockers
c) reversible cholinesterase inhibitors
d) cholinesterase
reactivators
e) muscle relaxants

PC-5 ID-2 - To be able to calculate the amount of remedies for the treatment of animals and the prevention:

1. What is the therapeutic dose of a drug?
a) Dose for therapeutic effect
b) A dose that causes poisoning
c) An addictive
dose d) A dose that leads to the death of an animal

2. What is the side effect of the drug?
a) This is an undesirable reaction of the body to the use of the drug in a toxic dose
b) It is an undesirable reaction of the body to the use of the drug in a lethal dose
c) It is a desirable reaction of the body to the drug
d) This is an undesirable reaction of the body to the use of the drug in a therapeutic dose

3. What is the dose of the drug?
a) it is a weight unit of measurement
b) this is its amount per injection
c) this is the amount of the drug per course of treatment
d) this is the amount of the drug intended for administration during the day

4. What is drug synergism?
a) it is a weakening of the pharmacological effect
b) it is an undesirable reaction of the body to the drug
c) it is addictive to the drug
d) it is a summation of the pharmacological effect of the administered drugs

5. What is accumulation during repeated administration of drugs?
a. it is addiction to a drug
b. it is the excretion of a drug from the body
c. it is the accumulation of a drug substance or pharmacological effect in the body
d. this is a section of pharmacology on the ways of introducing drugs into the body of an animal

PC-5 ID-3 - To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well.

1. In what weight units is the therapeutic dose of a medicinal product measured per kilogram of animal weight?
a) milligrams
b) kilograms
c) grams
d) pounds

2. What is the course dose?
a) this is the dose per whole animal without taking into account its weight
b) this is the dose calculated for the course of treatment
c) this is the amount of the drug that must enter the animal's body at a time
d) this is an indication of the toxicity of the drug

3. "Lethal synthesis" is noted in case of poisoning with all the listed substances, with the exception of
a) prussic acid
b) methyl alcohol
c) carbophos
d) ethylene glycol

4. Which species of animals have an increased sensitivity to table salt:
a) cattle;
b) horses;
c) sheep;
d) pigs.

5. What are retardants used for?
a. for pre-sowing seed treatment
b. for the destruction of slugs on vegetable crops
c. for the regulation of plant growth

6. Sources of nitrates for animals:
a. Water
b. Mineral feed additives
c. Plants containing cyanglycosides
d. Cereals

7. What are the pesticides used to kill ticks called?
a. zoocides
b. nematocides
c. acaricides
d. fungicides

8. Which species of animals and birds are not sensitive to bee venom?
a. bears, dogs, chickens
b. bears, hedgehogs, cats
c. bears, hedgehogs, herons
d. bears, cats, guinea fowl

9. Which gaseous substances are classified as chemical warfare agents?
a. Chlorine
b. Ether
c. Hydrogen sulfide

10. From which plant can a cardiac glycoside be obtained:
a. ampelny petunia
b. ordinary hops
c. lily of the valley
d. meadow clover

PC-5 ID-4 - To be able to administer drugs to the animals body in various techniques.

1. What is rectal administration of drugs?
a) Is it administered through the mouth of an animal
b) It is an injection under the skin of an animal
c) It is an intramuscular injection
of the drug d) It is an injection of the drug into the rectum

2. What is intravenous administration of the drug?
a) This is an injection of the drug into the muscle
b) This is the injection of the drug into the joint
c) This is the injection of the drug under the tongue
d) This is the injection of the drug into the vein

3. Which solutions are suitable for parenteral administration of drugs?
a) non-sterile
b) sterile
c) colorless
d) odorless

PC-5 ID-5 - To know the methods of pharmacological treatment of sick animals and indications for its administration, in accordance with the guidelines, instructions, manuals, rules of diagnosis, prevention and treatment.

1. Nerve agent poisons include all of the listed compounds, except
a) carbophosa
b) sarin
c) atropine
d) chlorophos

2. Sarin has a specific smell:
a) mustard
b) fruit
c) geraniums
d) lovely hay

3. FOS are
a) phosphorus salts
b) organic compounds of the aromatic series
c) inorganic compounds of phosphoric acid
d) organic esters of phosphoric acid

4. Contraindications for non-probe gastric lavage in case of oral poisoning are all of the above, except
a) loss of consciousness
b) respiratory arrest
c) poisoning with cauterizing fluid
d) vomiting
e) convulsions

5. The antidote effect of atropine in case of FOS poisoning is due to

a) temporary binding of FOS due to the formation of phosphorylated oxymes
b) persistent neutralization of acetylcholine
c) blockade of M-cholinergic receptors
d) restoration of cholinesterase activity
e) suppression of cholinesterase synthesis

6. Carbon monoxide is released
a) by the kidneys
b) by the liver
c) by the lungs
d) by the sweat glands
e) through the intestines

7. Specify the antidotes for the treatment of cyanide-affected
a) acizole, glucose, oxygen therapy
b) amyl nitrite, sodium thiosulfate, methylene blue, glucose
c) atropine, dipiroxime, isonitrosine
d) budaxime, glucose, amyl nitrite, sodium thiosulfate
e) dietixime, chromosome, sodium thiosulfate, glucose

PC-5 ID-6 - To know the state register of medicines for veterinary use.

1. What is the state register of medicines for veterinary use?
a) this is a list of medicines from a textbook on Pharmacology
b) this is a list of medicines from the pharmacopoeia
c) these are medicines for veterinary use that have a valid state registration in the territory of the Russian Federation
d) this is a list of biologically active substances and additives used by animals

2. An antidote for adrenaline poisoning with hydrochloride?
a. unithiol
b. methylene blue
c. phentolimine metasulfonate
d. 1% r-r adenosine triphosphate

3. Antidote for poisoning with copper preparations:
a. 2% solution of calcium chloride
b. 0.1% solution of potassium permanganate
c. 0.1% solution of yellow blood salt

4. Which plants contain cyanglycosides?
a. tauric wormwood, common tansy, datura
b. buckwheat, white clover, belladonna, nightshade
c. bobovnik, spring vetch, flax, mannik, clover, sorghum
d. wild radish, oleander, vetrennitsa, gulyavnik, lily of the valley

5. Which plants contain thioglycosides?
a. field mustard, gulyavnik, rapeseed, wild radish
b. foxglove purple, ryegrass, spring vetch
c. leafless hedgehog, harmala, gray trichodesma
d. aconite, hellebore, lupine, intoxicating chaff

PC-5 ID-7 - To know the pharmacological and toxicological characteristics of medicinal raw materials, remedies of chemical and biological nature, biologically active additives for the prevention and treatment of animal diseases of various etiology.

1. What toxic substances are contained in lupine?
a. linamarin, durrin
b. gossypol, solanine
c. vicin, gluconapine
d. lupinidine, spartein

2. What antidotes are used for poisoning with plants containing alkaloids of the atropine group?
a. proserin or galantamine hydrobromide unithiol or succimer
b. ditizon or trilon
b. sodium bicarbonate or sodium carbonate

38. What biochemical changes occur in the blood during salt poisoning:
a) an increase in the amount of sodium ions in red blood cells;
b) increase in lactic acid content;
c) increase in phosphorus content;
d) reduction of phosphorus content.

PC-5 ID-8 - To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods.

1. What is etiotropic therapy?
a) It is a treatment aimed at eliminating the cause of the disease
b) It is a treatment aimed at preventing the disease
c) It is a treatment aimed at the pathogenesis of the disease
d) It is a treatment aimed at eliminating the symptoms of the disease

2. What is symptomatic therapy?
a) It is a treatment aimed at the pathogenesis of the disease
b) It is the collection of a medical history for prescribing a drug
c) It is a treatment aimed at eliminating the symptoms of the disease
d) It is a treatment aimed at preventing the disease

3. What is pathogenetic therapy?
a) This is a treatment aimed at eliminating the symptoms of the disease
b) It is a treatment aimed at eliminating the pathogenesis of the disease
c) It is a treatment aimed at preventing the disease
d) It is a method of collecting medical history

3.1.3. Exam questions

The competence achieved:

GPC-3 Is able to carry out and improve professional activities in accordance with regulatory legal acts in the field of agro-industrial complex:

GPC -3 ID-3 To possess skills of: the legal framework and ethical standards in the implementation of professional activities.

1. The subject and objectives of veterinary toxicology.
2. The concept of poisons and poisonings.
3. Classification of poisons.
4. The fate of poisons in the body.
5. The concept of toxicodynamics and toxicokinetics of poisons.
6. The main distinguishing features of intoxication.
7. Classification of poisoning.

PC-5 To carry out plan of animal treatment, based on the stated diagnosis and animals individual character ristics, signature of necessary remedies of chemical and biological nature for the treatment, taking into account combination of its pharmacological effect on the animal body.

PC-5 ID-1 - To be able to use specialized information databases at a choice of animal treatment methods.

1. Information databases of medicines for animals.
2. Dosage forms of medicines
3. Types of action of medicinal substances.
4. Sources and ways of obtaining medicinal substances.
5. The ways in which poisons enter the animal's body and their importance for the development of intoxication.
6. Ways of excreting poisons from the animal's body.
7. Lifetime and postmortem diagnosis of poisoning.

PC-5 ID-2 - To be able to calculate the amount of remedies for the treatment of animals and the prevention of diseases with the receipts signature for a certain period.

1. Antidote and symptomatic therapy for poisoning.
2. Rules for collecting and sending the material to the laboratory for chemical and toxicological analysis.
3. Requirements for the material under study.
4. Substances of man–made origin are non-traditional sources of animal poisoning.
5. Conditions conducive to the manifestation of poison toxicity and their effect on the development and course of poisoning.

PC-5 ID-3 - To be able to calculate the amount of remedies for the treatment of animals and for the prevention of diseases with the receipts signature for a certain period, using digital technologies as well.

1. The scheme of assistance in case of poisoning.

PC-5 ID-4 - To be able to administer drugs to the animals body in various techniques.

1. Routes of administration of drugs and their distribution in the body.

PC-5 ID-5 - To know the methods of pharmacological treatment of sick animals and indications for its administration, in accordance with the guidelines, instructions, manuals, rules of diagnosis, prevention and treatment.

1. The concept of pesticides and their features.
2. Classification of pesticides (by purpose, origin and by the nature of penetration into the body of insects).
3. Sanitary and hygienic classification of pesticides.
4. The concept of cumulation and types of cumulation.
5. Toxicology of mineral fertilizers.
6. Substances of man–made origin are non-traditional sources of animal poisoning.
7. Conditions conducive to the manifestation of poison toxicity and their effect on the development and course of poisoning.
8. General preventive measures in case of poisoning.

PC-5 ID-6 - To know the state register of medicines for veterinary use.

1. The State Pharmacopoeia of the Russian Federation
2. The State information system in the field of veterinary medicine is approved by the Federal Service for Veterinary and Phytosanitary Supervision

PC-5 ID-7 - To know the pharmacological and toxicological characteristics of medicinal raw materials, remedies of chemical and biological nature, biologically active additives for the prevention and treatment of animal diseases of various etiology.

1. Toxicology of table salt.
2. Poisoning with fluorinated compounds.
3. Toxicology of nitrates and nitrites.
4. Toxicology of carbamates.
5. General characteristics of heavy metals. Toxicology of the most dangerous heavy metals (mercury, lead, cadmium, copper, zinc and arsenic).
6. Toxicology of carbamide and other feed additives.
7. Toxicology of organophosphorus compounds.
8. Toxicology of modern organochlorine compounds and dioxins.
9. Toxicological characteristics of pyrethroids and avermectins.
10. Toxicology of rodenticides (zoocides).
11. General characteristics of feed poisoning (cake, meal, pulp, potatoes and tops, etc.).
12. Measures of assistance in case of snake bites, insect stings and scorpions.
13. General characteristics of poisonous plants.
14. Poisonous plants containing alkaloids.
15. Poisonous plants containing glycosides.
16. Poisonous plants containing toxalbumin and saponins.
17. General characteristics of heavy metals.

PC-5 ID-8 - To know the ways of drug injections, used both for animals enteral (oral, sublingual and rectal administration) and parenteral (injections, inhalations and skin applications) methods.

1. Routes of administration of medicinal substances.

Note: To present the material according to the following scheme:
- sources of poisoning;
- toxicodynamics of the poison;
- symptoms of poisoning;
- diagnosis (lifetime and postmortem);
- treatment and prevention.

4. METHODOLOGICAL MATERIALS DEFINING THE PROCEDURES FOR ASSESSING KNOWLEDGE, SKILLS AND ABILITIES AND WORK EXPERIENCE CHARACTERIZING THE STAGES OF COMPETENCE FORMATION

4.1. Criteria for evaluating students' knowledge during the knowledge survey

Mark "**excellent**" - the student clearly expresses his point of view on the issues under consideration, giving appropriate examples.

Mark "**good**" - the student admits some errors in the answer

The mark «**satisfactory**" - the student discovers gaps in knowledge of the basic educational and normative material.

The mark "**unsatisfactory**" - the student discovers significant gaps in knowledge of the basic provisions of the discipline, the inability to obtain the correct solution to a specific practical problem with the help of a teacher.

4.2. Criteria for evaluating students' knowledge during testing

The test result is evaluated on a percentage rating scale. Each student is offered a set of test tasks of 25 questions:

The mark "**excellent**" is 25-22 correct answers.

The mark "**good**" is 21-18 correct answers.

The mark "**satisfactory**" is 17-13 correct answers.

The mark "**unsatisfactory**" is less than 13 correct answers

4.3. Criteria of knowledge during the test

The mark "**accepted** " must correspond to the parameters of any of the positive ratings ("excellent", "good", "satisfactory").

The mark "**not accepted** " rating should correspond to the parameters of the "unsatisfactory" rating.

The mark "excellent" – all types of educational work provided for in the curriculum have been completed. The student demonstrates the compliance of knowledge, skills, and abilities with the indicators given in the tables, operates with acquired knowledge, skills, and applies them in situations of increased complexity. At the same time, inaccuracies, difficulties in analytical operations, transfer of knowledge and skills to new, non-standard situations may be allowed.

The mark "good" – all types of educational work provided for in the curriculum have been completed. The student demonstrates the compliance of knowledge, skills, and abilities with the indicators given in the tables, operates with acquired knowledge, skills, and applies them in standard situations. At the same time, minor errors, inaccuracies, difficulties in analytical operations, transfer of knowledge and skills to new, non-standard situations may be made.

Mark "satisfactory" – one or more types of educational work provided for in the curriculum have not been completed. The student demonstrates incomplete compliance of knowledge, skills, and abilities with the indicators given in the tables, significant errors are made, a partial lack of knowledge, skills, and skills is manifested in a number of indicators, the student experiences significant difficulties in operating with knowledge and skills when transferring them to new situations. –

The mark «unsatisfactory" – the types of educational work provided for in the curriculum have not been completed. demonstrates incomplete compliance of knowledge, skills, and abilities given in the tables of indicators, significant errors are made, a lack of knowledge, skills, and skills is manifested for a large number of indicators, the student experiences significant difficulties in operating knowledge and skills when transferring them to new situations

4.4. Criteria of knowledge during the examination

The mark "excellent" – all types of educational work provided for in the curriculum have been completed. The student demonstrates the compliance of knowledge, skills, and abilities with the indicators given in the tables, operates with acquired knowledge, skills, and applies them in various situations of increased complexity. At the same time, inaccuracies, difficulties in analytical operations, transfer of knowledge and skills to new, non-standard situations may be allowed. –

The mark "good" – all types of educational work provided for in the curriculum have been completed. The student demonstrates the compliance of knowledge, skills, and abilities with the indicators given in the tables, operates with acquired knowledge, skills, and applies them in standard situations. At the same time, minor errors, inaccuracies, difficulties in analytical operations, transfer of knowledge and skills to new, non-standard situations can be made.

Mark "satisfactory" – one or more types of educational work provided for in the curriculum have not been completed. The student demonstrates incomplete compliance of knowledge, skills, and abilities with the indicators given in the tables, significant errors are made, a partial lack of knowledge, skills, and skills are manifested in a number of indicators, the student experiences significant difficulties in operating with knowledge and skills when transferring them to new situations.

The mark "unsatisfactory" – the types of educational work provided for in the curriculum have not been completed. demonstrate incomplete compliance of knowledge, skills, and abilities given in the tables of indicators, significant errors are made, a lack of knowledge, skills, and skills are manifested for a large number of indicators, the student experiences significant difficulties in operating with knowledge and skills when transferring them to new situations.

5. ACCESSIBILITY AND QUALITY OF EDUCATION FOR DISABLED PEOPLE

If necessary, persons with disabilities and persons with disabilities are given additional, time to prepare an answer for the test.

When conducting the procedure for evaluating the learning outcomes of disabled people and persons with disabilities, their own technical means can be used.

The procedure for evaluating the learning outcomes of disabled people and persons with disabilities in the discipline provides for the provision of information in forms adapted to the limitations of their health and perception of information:

For people with visual impairments:	– in printed form in enlarged font; – in the form of an electronic document.
For people with hearing impairments:	– in printed form; – in the form of an electronic document.
For people with disorders of the musculoskeletal system:	– in printed form, the device; – in the form of an electronic document.

When conducting the procedure for evaluating the learning outcomes of disabled people and persons with disabilities in the discipline, it ensures that the following additional requirements are met, depending on the individual characteristics of the students:

a) instructions on the procedure for conducting the assessment procedure are provided in an accessible form (orally, in writing);

b) an accessible form of assignment of assessment tools (in printed form, in printed form in enlarged font, in the form of an electronic document, assignments are read out by the teacher);

c) an accessible form of providing answers to tasks (written on paper, a set of answers on a computer, orally).

If necessary, for students with disabilities and the disabled, the procedure for evaluating the results of training in the discipline can be carried out in several stages.

The procedure for evaluating the learning outcomes of disabled people and persons with disabilities is allowed using distant learning technologies.