Federal State Autonomous Educational Institution for Higher Education
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA

Agrarian and Technological Institute

WORKING COURSE SYLLABUS

Veterinary pharmacology

Recommended by the Methodological Council for the Education Field:

36.05.01 Veterinary medicine

2022

1. GOALS AND OBJECTIVES OF THE DISCIPLINE

The aim of the mastering the discipline "**Veterinary pharmacology**" is to provide students with the necessary knowledge about the properties, action and use of medicinal substances for therapeutic and prophylactic purposes, as well as for the stimulation and pharmacological regulation of physiological processes in the body of animals.

2. REQUIREMENTS FOR THE RESULTS OF MASTERING THE DISCIPLINE

The development of the discipline "**Veterinary pharmacology**" is aimed at creating the following competencies (parts of competencies) for students:

Table 2.1. List of competencies formed by students during the development of the discipline (results of the development of the discipline)

Code	Competence	Indicators of competence accomplishment (within the discipline)
GPC-3	The ability to carry out and improve professional activities in accordance with regulatory legal acts in the field of agro-industrial complex.	GPC-3.1 He knows modern legal norms, both state and international, regulating activities in the field of veterinary medicine, veterinary and sanitary expertise and agro-industrial complex.
		GPC-3.2 He has the skills to update legal information, including in the field of agro-industrial complex.
		GPC-3.3 Carries out activities in accordance with regulatory legal acts in the field of agro-industrial complex, as well as in the field of veterinary medicine and veterinary and sanitary expertise.
PC -6	The ability to develop a treatment plan for animals based on the established diagnosis and individual characteristics of animals.	PC-6.1 He is able to develop a treatment plan for animals based on the established diagnosis and individual characteristics of the animals.
		PC-6.2 He is able to develop recommendations on therapeutic and preventive manipulations to prevent diseases, the high probability of which was revealed during the study of the patient.
		PC-6.3 He is able to develop recommendations for carrying out preventive and curative measures based on the results of the examination of animals carried out as part of the medical examination.

PC -7	The ability to choose the necessary medicaments of chemical and biological nature for the treatment of animals, taking into account their combined pharmacological effect on the organism.	PC-7.1 He is able to choose medicines of chemical and biological nature necessary for the treatment of animals, guided by the principles of evidence-based medicine, taking into account their combined pharmacological effect on the body
		PC-7.2 He is able to justify the prescription of a drug in a certain clinical case or the impossibility of using this drug in the situation under consideration
		PC-7.3 He is able to calculate the dose, frequency and duration of the course of application of the drug to the patient, taking into account the form of release and the characteristics of the administration of the drug to the patient
		PC-7.4 He is able to take into account drug interactions when prescribing a course of treatment to an animal already receiving medications and biologically active additives due to the presence of diseases identified earlier
		PC-7.5 He is able to take into account economic, species and age characteristics, as well as the results of laboratory studies of the patient when choosing drugs for the treatment of the patient
PC-11	Ability to develop a plan for a surgical operation, including the choice of a method of pain relief	PC-11.1 Capable of developing a surgical plan
		PC-11.2 Is able to select and justify the best option for anesthesia of the patient during surgery and in the postoperative period
PC-14	The ability to conduct repeated examinations and studies of animals to assess the effectiveness and safety of the prescribed treatment and adjust the treatment plan for animals (if necessary) based on the results of evaluating the effectiveness of treatment	PC-14.1 Able to develop a repeat study plan necessary and sufficient to assess the predicted changes in the patient's health status
		PC-14.2 Able to perform a repeat clinical examination, taking into account the specifics of diseases previously diagnosed in the patient
		PC-14.3 Able to perform necessary repeated instrumental and laboratory tests
		PC-14.4 Is able to analyze the identified changes, evaluate the effectiveness of the ongoing treatment and, if necessary, make adjustments to the prescribed course of

		treatment.
PC-17	The ability to organize disinfection and disinsection of livestock buildings to ensure veterinary and sanitary welfare in accordance with the plan of veterinary and sanitary measures	PC-17.1 Able to collect and analyze information necessary to organize and plan veterinary and sanitary measures
		PC-17.2 Able to select optimal equipment, supplies, and drugs and disinfectants necessary and safe enough to conduct veterinary and sanitary activities
		PC-17.3 Capable of determining the order of disinfection, disinsection, deratization and other veterinary and sanitary measures, taking into account the characteristics of animal housing, technical characteristics of facilities and epizootic situation
		PC-17.4 Able to control the results of veterinary and sanitary measures
PC-18	The ability to draw up a plan for clinical examination of animals, taking into account their types and purpose, conduct medical examination, develop recommendations for conducting therapeutic and prophylactic and therapeutic measures based on the results of examination of animals carried out as part of medical examination	PC-18.1 Able to make a plan for the dispensary of animals, general or specialized, taking into account their species and purpose
		PC-18.2 Capable of organizing and conducting medical examinations according to the plan
		PC-18.3 Is able, on the basis of the results of the dispensary, to make recommendations for therapeutic and prophylactic measures aimed at improving the health of the group of animals
PC -22	Ability to organize measures to protect the organization from the introduction of infectious and invasive diseases in accordance with the plan of antiepizootic measures.	PC -22.1 He is able to assess the epizootic state of an organization (territory), identify risks and possible causes of epizootic foci, as well as factors affecting their spread in specific organizations, territories.
		PC-22.2 Able to choose and apply the most effective measures to protect the organization from the introduction of infectious and invasive diseases.
		PC-22.3 He is able to carry out operational control of the effectiveness of the activities carried out.

3. COURSE IN HIGHER EDUCATION

The discipline " **Veterinary pharmacology** " refers to the mandatory part of block B1 of the Educational Program of Higher Education.

As part of the Educational Program of Higher Education, students also master other disciplines and /or practices that contribute to achieving the planned results of mastering the discipline "**Veterinary pharmacology**".

Table 3.1. List of Higher Education Program componentsdisciplines that contribute to expected learning outcomes

Competence code	Competence	Previous Disciplines (Modules)	Subsequent Disciplines (Modules)
GPC-3	The ability to carry out and improve professional activities in accordance with regulatory legal acts in the field of agro-industrial complex.	Science of law Life safety Economics and organization of agricultural production Breeding with the basics of private animal husbandry	Toxicology Parasitology and invasive diseases Epizootology and infectious diseases Organization of veterinary affairs General and Veterinary Ecology Veterinary sanitation Processing technology for livestock products Veterinary deontology Laboratory diagnostics of infectious and invasive diseases Organization of state veterinary supervision Veterinary and industrial laboratories with design basics Career management Basics of social and legal knowledge
PC -6	The ability to develop a treatment plan for animals based on the established diagnosis and individual characteristics of animals.	Veterinary genetics Veterinary Microbiology and Mycology Virology and biotechnology Pathological physiology	Toxicology Obstetrics, gynecology and andrology Internal non-communicable diseases General and private surgery

			Parasitology and invasive diseases Epizootology and infectious diseases Mathematics Immunology Diseases of bees and fish Zoopsychology Horse diseases Diseases of Productive Animals Diseases of small pets Diseases of small pets Ophthalmology Dentistry Animal disease therapy Anesthesiology, resuscitation and intensive care Reconstructive surgery
PC -7	The ability to choose the necessary medicaments of chemical and biological nature for the treatment of animals, taking into account their combined pharmacological effect on the organism.	Inorganic and analytical chemistry Organic chemistry Physical and Colloidal Chemistry Biological chemistry Veterinary Microbiology and Mycology Virology and biotechnology Pathological physiology	Toxicology Obstetrics, gynecology and andrology Internal non-communicable diseases General and private surgery Parasitology and invasive diseases Epizootology and infectious diseases Diseases of bees and fish Medicinal and poisonous plants Horse diseases Diseases of Productive Animals Diseases of small pets Diseases of small pets Ophthalmology Dentistry Animal disease

			therapy Anesthesiology, resuscitation and intensive care
PC-11	Ability to develop a plan for a surgical operation, including the choice of a method of pain relief	Anatomy Veterinary Microbiology and Mycology Physiology and ethology of animals Pathological physiology Pathological anatomy and forensic veterinary examination	Operative surgery with topographic anatomy Obstetrics, gynecology and andrology General and private surgery Coursework “Animal Anatomy” Anesthesiology, resuscitation and intensive care Reconstructive surgery
PC-14	The ability to conduct repeated examinations and studies of animals to assess the effectiveness and safety of the prescribed treatment and adjust the treatment plan for animals (if necessary) based on the results of evaluating the effectiveness of treatment	Cytology, Histology and Embryology Physiology and ethology of animals Pathological physiology Pathological anatomy and forensic veterinary examination	Clinical diagnostics Instrumental diagnostic methods Toxicology Obstetrics, gynecology and andrology Internal non-communicable diseases General and private surgery Parasitology and invasive diseases Epizootology and infectious diseases Clinical laboratory diagnostics Horse diseases Diseases of Productive Animals Diseases of small pets Diseases of small pets Ophthalmology Dentistry Anesthesiology, resuscitation and intensive care Reconstructive

			surgery
PC-17	The ability to organize disinfection and disinsection of livestock buildings to ensure veterinary and sanitary welfare in accordance with the plan of veterinary and sanitary measures	Inorganic and analytical chemistry Organic chemistry Physical and Colloidal Chemistry Life safety Veterinary Microbiology and Mycology Virology and biotechnology Hygiene of animals	Veterinary sanitation;
PC-18	The ability to draw up a plan for clinical examination of animals, taking into account their types and purpose, conduct medical examination, develop recommendations for conducting therapeutic and prophylactic and therapeutic measures based on the results of examination of animals carried out as part of medical examination	Veterinary genetics Physiology and ethology of animals Breeding with the basics of private animal husbandry Hygiene of animals Feeding animals with the basics of forage production Pathological physiology Pathological anatomy and forensic veterinary examination	Clinical diagnostics Instrumental diagnostic methods Toxicology Obstetrics, gynecology and andrology Internal non-communicable diseases General and private surgery Clinical laboratory diagnostics Horse diseases Diseases of Productive Animals Diseases of small pets Diseases of small pets Ophthalmology Dentistry
PC -22	Ability to organize measures to protect the organization from the introduction of infectious and invasive diseases in accordance with the plan of antiepizootic measures.	Life safety Veterinary Microbiology and Mycology Virology and biotechnology Hygiene of animals	Parasitology and invasive diseases Epizootology and infectious diseases Organization of veterinary affairs General and Veterinary Ecology Veterinary sanitation Processing technology for livestock products Diseases of bees and fish Laboratory

			diagnostics of infectious and invasive diseases Organization of state veterinary supervision

4. COURSE WORKLOAD AND TRAINING ACTIVITIES

Course workload of the discipline "**Veterinary pharmacology**" is 8 credits.

*Table 4.1. Types of academic activities during the period of the HE program mastering for **full-time** study*

Types of academic activities		**HOURS**	**Semesters**			
			5	**6**	**-**	**-**
Contact academic hours		144	72	72	-	-
including						
Lectures		36	18	18	-	-
Lab work		108	54	54	-	-
Seminars (workshops/tutorials)		-	-	-	-	-
Self-study		110	56	54	-	-
Evaluation and assessment (exam/pass/fail grading)		34	16	18	-	-
Course workload	Academic hour	**288**	**144**	**144**	-	-
	Credit unit	**8**	**4**	**4**	-	-

*Table 4.2. Types of academic activities during the period of the HE program mastering for **part-time** study*

Types of academic activities		**HOURS**	**Semesters**			
			5	**6**	**-**	**-**
Contact academic hours		144	54	90	-	-
including						
Lectures		54	18	36	-	-
Lab work		90	36	54	-	-
Seminars (workshops/tutorials)		-	-	-	-	-
Self-study		108	38	70	-	-
Evaluation and assessment (exam/pass/fail grading)		36	16	20	-	-
Course workload	Academic hour	**288**	**108**	**180**	-	-
	Credit unit	**8**	**3**	**5**	-	-

5. CONTENT OF THE DISCIPLINE

Table 5.1 Content of the discipline (module) by type of academic work

Name of the discipline section	Content of the section (topics)	Types of academic activities
Section 1. General pharmacology. General recipe.	Topic 1.1. General pharmacology.	Lectures, Lab work
	Topic 1.2. General recipe.	Lectures, Lab work
Section 2. Funds acting on the nervous system.	Topic 2.1. Remedies acting on afferent and efferent innervation.	Lectures, Lab work
	Topic 2.2. Substances acting on the central nervous system.	Lectures, Lab work
Section 3. Substances that regulate the functions of individual organs and systems.	Topic 3.1. Substances affecting respiratory and digestive function.	Lectures, Lab work
	Topic 3.2. Substances affecting the excretory function of the kidneys, cardiovascular system, hemostasis, hematopoiesis.	Lectures, Lab work
Section 4. Substances that primarily affect metabolic processes.	Topic 4.1. Hormones and their analogues.	Lectures, Lab work
	Topic 4.2. Vitamins and enzymes.	Lectures, Lab work
	Topic 4.3. Mineral substances.	Lectures, Lab work
Section 5. Means, correcting the immune status and productivity of animals.	Topic 5.1. Remedies affecting immune processes.	Lectures, Lab work
	Topic 5.2. Means correcting the immune status and productivity of animals.	Lectures, Lab work
Section 6. Antimicrobial, antiparasitic, antitumor agents.	Topic 6.1. Disinfectants and antiseptics.	Lectures, Lab work
	Topic 6.2. Chemotherapeutic agents.	Lectures, Lab work
	Topic 6.3. Rodenticides.	Lectures, Lab work

6. CLASSROOM INFRASTRUCTURE AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 6.1. Material and technical support of the discipline

Classroom for Academic Activity Type	*Equipping the classroom*	**Specialized educational/laboratory equipment, software and materials for the development of the discipline** (if necessary)
Lecture	An auditorium for conducting lecture-type classes, equipped with a set of specialized furniture; a board (screen) and technical means of multimedia presentations.	-
Laboratory	An auditorium for laboratory work, individual consultations, routine monitoring and interim certification, equipped with a set of specialized furniture and equipment.	-
Self-studies	An auditorium for independent work of students (can be used for seminars and consultations), equipped with a set of specialized furniture and computers with access to an electronic information and educational environment.	-

7. RECOMMENDED SOURCES FOR COURSE STUDIES

Main reading:

1. Circulation and quality control of medicines for veterinary use in the Russian Federation: tutorial / A. Vatnikov, MI Shopinskaya, SG Drukovsky, EV Kulikov. - Electronic text data. - Moscow: PFUR, 2021. - 37 c.: http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=494768&idb=0
2. V., Kuznetsov S. V., Sakhno NV, Kapustin R. F. Veterinary pharmacology. Dictionary-Reference Book: a textbook for universities 2020.-136s https://e.lanbook.com/book/152613.
3. Lavrinenkova A.N. Course of lectures on veterinary pharmacology 2018.-104s https://e.lanbook.com/book/133070

Additional Reading:

1. Sokolov V.D. Pharmacology - St. Petersburg: Lan' Publisher, 2013. - 576c. https://e.lanbook.com/book/10255
2. Samorodova I. M. Veterinary pharmacology and formulation. Workshop: textbook for universities / IM Samorodova, MI Rabinovich. - 7th ed. amended and supplemented - M.: Publishing house Yurite, 2018. - 278 c.
3. Nabiev FG, Akhmadeev RN Modern veterinary medicines - St. Petersburg: Lan' Publisher, 2011. - 816c. https://e.lanbook.com/book/1547

4. Pharmacology / Kharkevich DA, - 10th ed. revised, revised and additional ed. - M.: GEOTAR-MED, 2010. - 752 c.
5. Donald K. Plumb Pharmacological preparations in veterinary medicine. - Moscow: Aquarium-Print, 2016. - 1060 c.
6. Fundamentals of pharmacology with prescription. Textbook / Astafiev V.A., Edited by Astafiev V.A. - Moscow: Knorus, 2015. - 595 c.

Resources of the Internet information and telecommunication network:

1. Electronic library system of RUDN and third-party Electronic library systems to which university students have access on the basis of concluded contracts:
- Electronic library system of RUDN - ELS RUDN http://lib.rudn.ru/MegaPro/Web
- ELS "University Library online"http://www.biblioclub.ru
- ELS Yurayt http://www.biblio-online.ru
- ELS "Student Consultant"www.studentlibrary.ru
- ELS "Lan"http://e.lanbook.com/
- ELS "Trinity Bridge"http://www.trmost.com/

2. Databases and search engines:
- electronic fund of legal and regulatory and technical documentation http://docs.cntd.ru/
- search engine Yandex https://www.yandex.ru/
- search engine Google https://www.google.ru/
- abstract database SCOPUS http://www.elsevierscience.ru/products/scopus/

Educational and methodological materials for independent work of students during the development of the discipline/ module*:
1. A course of lectures on the discipline "**Veterinary pharmacology**".
2. Laboratory workshop on the discipline "**Veterinary pharmacology**".

* - All educational and methodological materials for independent work of students are placed in accordance with the current procedure on the discipline page in the **Telecommunication educational and Information System!**

8. MID-TERM ASSESSMENT

Evaluation materials and a point-rating system* for assessing the level of competence formation (part of competencies) based on the results of mastering the discipline " **Veterinary pharmacology** " are presented in the Appendix to this Work Program of the discipline.

* - Assessment Materials and a Point Rating System are formed based on the requirements of the relevant local regulatory act of the RUDN.

DEVELOPER:

Associate Professor, Department of Veterinary Medicine		Harlitskaya E.V.
Должность, БУП	Подпись	Фамилия И.О.

HEAD OF THE DEPARTMENT:

Department of Veterinary Medicine	Vatnikov Yu.A.

Name Basic Curriculum	Signature	Full name.

HEAD OF THE HIGHER EDUCATION PROGRAM:

Director of the Department of Veterinary Medicine		Vatnikov Yu.A.
Position, Basic curriculum	Signature	Full name