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**Federal State Autonomous Educational Institution for Higher Education
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA
Agrarian and Technological Institute**

WORKING COURSE SYLLABUS

Physiology and ethology of animals

Recommended by the Methodological Council for the Education Field:

36.05.01 Veterinary Medicine

2022 г.

1. GOALS AND OBJECTIVES OF THE DISCIPLINE

The aim of studying the discipline «**Physiology and ethology of animals**» is the formation of fundamental and professional knowledge about the physiological processes and functions in the body of mammals and birds, about their qualitative originality in the body of productive farm animals, domestic, laboratory and exotic animals, which are necessary for a veterinarian to scientifically substantiate activities related to the creation of optimal conditions for keeping, feeding and exploiting animals, preventing diseases, assessing health, the nature and degree of disorders in the activity of organs and the body, determining the ways and means of influencing the body in order to correct the activity of organs.

2. REQUIREMENTS FOR THE RESULTS OF MASTERING THE DISCIPLINE

The process of studying the discipline «**Physiology and ethology of animals**» is aimed at the formation of the following competencies (part of competencies):

Table 2.1. The list of competencies formed in the course of mastering the discipline (results of mastering the discipline)

Code	Competence	Indicators of competence accomplishment (within the discipline)
GPC-1	The ability to determine the biological status and normative clinical indicators of organs and systems of the animal body.	GPC-1.1 Knows the structure and functions of the main systems of the animal body, taking into account species characteristics
		GPC-1.2 Able to predict expected disturbances in biological status when diseases are suspected
		GPC-1.3 Is able to determine the main performance indicators of individual body systems and draw conclusions about the presence of deviations from the normative values
		GPC-1.4 Knows how to take samples of biological fluids and tissues for research, perform laboratory research, interpret research results.
GPC-2	The ability to interpret and evaluate in professional activity the influence of natural, socio-economic, genetic and	GPC-2.1 Knows the influence of natural, socio-economic, genetic and economic factors on the animal body

	economic factors on the physiological state of the animal organism.	GPC-2.2 Can establish the presence and validity of cause-effect relationships between the impact of certain etiological factors on the animal body and the development of diseases
		GPC-2.3 Knows the methods of preventive and therapeutic correction of the impact of unfavorable environmental factors that can cause deterioration of animal health
GPC-4	Ability to use in professional activity methods of solving problems using modern equipment in the development of new technologies and to use modern professional methodology for conducting experimental research and interpreting their results.	GPC-4.1 Knows the conceptual and methodological apparatus of the basic natural sciences at a level sufficient for full professional activity at the modern level
		GPC-4.2 Knows how to solve problems using modern equipment
		GPC-4.3 Willing to use modern methodology in designing and conducting experimental research
		GPC-4.4 Uses modern professional methodology in interpreting research results
PC-1	The ability to collect anamnesis of life and disease of animals to identify the causes of diseases and their nature	PC-1.1 Able to compile an animal's life history and record it in appropriate service records
		PC-1.2 Able to collect an animal's medical history and reflect it in the patient's medical history
		PC-1.3 Is able to identify possible causes of disease in an animal, factors predisposing to the disease and concomitant conditions affecting the course of the disease and use this information in making a diagnosis
PC-2	The ability to conduct a general clinical study of animals in order to establish a preliminary diagnosis and determine a further research program, as	PC-2.1 Able to conduct a general clinical examination of animals of different species to establish a preliminary diagnosis and determine a further research program

	well as in accordance with the plan of antiepizootic measures, the plan for the prevention of non-communicable animal diseases	PC-2.2 Able to conduct mass clinical examinations of animals in accordance with the plan of anti-epizootic activities, the plan of prevention of non-communicable diseases of animals
PC-3	Ability to develop animal research programs using special (instrumental) and laboratory methods	PC-3.1 Can develop individual programs of animal research, including the use of special (instrumental) and laboratory methods to detect deviations from the physiological norm of the state of the living organism, differential diagnosis of detected pathology or control of the course of the disease and the effectiveness of the prescribed treatment
		PC-3.2 Capable of developing mass comprehensive animal research programs (dispensary programs) for animals, taking into account their type and purpose, both general and special
PC-4	The ability to conduct clinical studies of animals using special (instrumental) and laboratory methods to clarify the diagnosis	PC-4.1 Able to perform additional examinations of animals using laboratory methods to clarify the diagnosis
		PC-4.2 Able to perform additional examinations of animals using special (instrumental) methods to clarify the diagnosis
PC-5	The ability to make a diagnosis based on the analysis of anamnesis data, general, special (instrumental) and laboratory research methods	PC-5.1 Is able to diagnose different types of patients based on analysis of anamnesis, general, special (instrumental) and laboratory examination data
		PC-5.2 Is able to predict the risks of disease on the basis of anamnestic data, the results of general, special (instrumental) and laboratory tests
PC-8	Ability to choose methods of non-drug therapy, including physiotherapeutic methods for treating animals	PC-8.1 Is able to choose and justify his/her choice of non-medicinal therapy methods, including physical therapy methods, for treating animals

		PC-8.2 Is able to evaluate the effectiveness of the chosen method in treating a patient and, if necessary, adjust the method of treatment or change the chosen method to another
PC-9	Ability to carry out medical, including physiotherapy, procedures using special equipment in compliance with safety rules	PC-9.1 Able to perform therapeutic procedures, including physical therapy, using special equipment in compliance with safety rules
		PC-9.2 Able to take into account the species, age and individual characteristics of the animals being treated with special equipment, choose acceptable methods of fixation of the patient during the procedure, conditions of the procedures and their duration
PC-10	The ability to determine the need for the use of surgical and surgical methods in the treatment of animals	PC-10.1 Can determine the necessity of using operative-surgical methods in the treatment of animals
		PC-10.2 Able to choose the optimal surgical method for the patient, taking into account external conditions and the patient's body status, and if several manipulations are necessary - their order and distribution in time
		PC-10.3 Able to consider risks and possible complications accompanying surgical interventions and take measures for their prevention
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-13	Ability to develop recommendations for special feeding of sick animals for therapeutic purposes	PC-13.1 Able to justify the assignment of special feeding to an animal for therapeutic purposes for various diseases
		PC-13.2 Can recommend approximate composition of therapeutic diets, desirable ratio of nutrients, availability of special additives and components that enhance the therapeutic effect of the diet
		PC-13.3 Able to use special programs and databases to select industrial therapeutic diets and dietary supplements, as well as to compose individual therapeutic diets for animals of different species.
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-16	The ability to organize organizational, technical, zotechnical and veterinary activities aimed at the prevention of non-communicable diseases in	PC-16.1 Capable of assessing the impact of animal housing and feeding conditions on animal health as part of the implementation of animal disease prevention plans

	<p>accordance with the plan for the prevention of non-communicable animal diseases</p>	<p>PC-16.2 Is able to carry out veterinary control of the quality and procurement of animal feed to ensure their veterinary and sanitary safety as part of the implementation of plans for the prevention of animal diseases</p>
		<p>PC-16.3 Able to identify deviations from the plan of timing, types, quality of measures to prevent the occurrence of non-communicable animals</p>
		<p>PC-16.4 Take corrective measures to implement measures to prevent the occurrence of non-communicable diseases of animals based on the results of control</p>
		<p>PC-16.5 Conduct talks, lectures, seminars for employees of the organization to explain the principles of work on the prevention of animal diseases</p>
<p>PC-18</p>	<p>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</p>	<p>PC-18.1 Able to make a plan for the dispensary of animals, general or specialized, taking into account their species and purpose</p>
		<p>PC-18.2 Capable of organizing and conducting medical examinations according to the plan</p>
		<p>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</p>
<p>PC-24</p>	<p>Ability and readiness to promote veterinary knowledge, including in the field of animal disease prevention</p>	<p>PC-24.1 Able to set goals to promote veterinary knowledge, plan strategy and tactics for upcoming events</p>
		<p>PC-24.2 Able to use computer and telecommunication tools to prepare and display materials used in the process of promoting veterinary knowledge</p>

		PC-24.3 Able to hold talks, lectures, seminars for employees to explain the principles of animal disease prevention
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3. COURSE IN HIGHER EDUCATION

The discipline "**Physiology and ethology of animals**" 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 "**Physiology and ethology of animals**".

Table 3.1. shows the previous and subsequent disciplines aimed at the formation of discipline competencies in accordance with the competence matrix of Higher Education Program.

Competence code	Competence	Previous Disciplines (Modules)	Subsequent Disciplines (Modules)
GPC-1	The ability to determine the biological status and normative clinical indicators of organs and systems of the animal body.	Animal anatomy Cytology, Histology and Embryology	Pathological physiology Clinical diagnostics Pathological anatomy Instrumental diagnostic methods Obstetrics, gynecology and andrology Immunology Clinical laboratory diagnostics Laboratory diagnostics of infectious and invasive diseases Veterinary and industrial laboratories with design basics Diseases of bees and entomophages Fish pathology and aquaculture Anesthesiology, resuscitation and intensive care

GPC-2	The ability to interpret and evaluate in professional activity the influence of natural, socio-economic, genetic and economic factors on the physiological state of the animal organism.	Biology with the basics of ecology Veterinary genetics Veterinary Microbiology and Mycology Virology and biotechnology	Breeding with the basics of private animal husbandry Hygiene of animals Feeding with the basics of forage production Pathological physiology Pathological anatomy and forensic veterinary examination Veterinary radiobiology Instrumental diagnostic methods Toxicology Obstetrics, gynecology and andrology Internal non-communicable diseases General and private surgery Parasitology and invasive diseases Epizootology and infectious diseases Forensic veterinary medicine and animal necropsy Immunology General and Veterinary Ecology Veterinary sanitation Diseases of bees and fish Fodder plants Zoopsychology Horse diseases Diseases of Productive Animals Diseases of small pets Diseases of small pets Ophthalmology Dentistry
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GPC-4	Ability to use in professional activity methods of solving problems using modern equipment in the development of new technologies and to use modern professional methodology for conducting experimental research and interpreting their results.	Inorganic and analytical chemistry Organic chemistry Physical and Colloidal Chemistry Biological chemistry Biological physics Computer science Cytology, Histology and Embryology Veterinary Microbiology and Mycology Virology and biotechnology	Breeding with the basics of private animal husbandry Pathological physiology Pathological anatomy and forensic veterinary examination Veterinary radiobiology Clinical diagnostics Operative surgery with topographic anatomy Instrumental diagnostic methods Toxicology Obstetrics, gynecology and andrology Internal non-communicable diseases General and private surgery Parasitology and invasive diseases Epizootology and infectious diseases Mathematics Immunology Veterinary sanitation Processing technology for livestock products Diseases of bees and fish Space technologies at the service of the agro-industrial complex Visual storytelling: from simple ideas to multimedia projects Medicinal and poisonous plants Fodder plants The basics of intellectual work Personality psychology and
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			professional self-determination Clinical laboratory diagnostics Laboratory diagnostics of infectious and invasive diseases Biometrics Horse diseases Diseases of Productive Animals Diseases of small pets Diseases of small pets Ophthalmology Dentistry
PC-1	The ability to collect anamnesis of life and disease of animals to identify the causes of diseases and their nature	Veterinary genetics	Breeding with the basics of private animal husbandry Hygiene of animals Feeding animals with the basics of forage production Clinical diagnostics Toxicology Obstetrics, gynecology and andrology Internal non-communicable diseases General and private surgery Parasitology and invasive diseases Epizootology and infectious diseases Fundamentals of Rhetoric and Communication Veterinary deontology Zoopsychology Personality psychology and professional self-determination Horse diseases Diseases of Productive Animals Diseases of small pets

			Diseases of small pets Ophthalmology Dentistry
PC-2	The ability to conduct a general clinical study of animals in order to establish a preliminary diagnosis and determine a further research program, as well as in accordance with the plan of antiepidemiologic measures, the plan for the prevention of non-communicable animal diseases	Anatomy	Pathological physiology Pathological anatomy and forensic veterinary examination Clinical diagnostics Obstetrics, gynecology and andrology Diseases of bees and fish Anesthesiology, resuscitation and intensive care
PC-3	Ability to develop animal research programs using special (instrumental) and laboratory methods	Anatomy Organic chemistry Physical and Colloidal Chemistry Biological chemistry Biological physics Veterinary Microbiology and Mycology Virology and biotechnology	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 Epidemiology and infectious diseases Immunology Veterinary deontology Diseases of bees and fish Clinical laboratory diagnostics Laboratory diagnostics of infectious and invasive diseases Veterinary and industrial laboratories with design basics

			Horse diseases Diseases of Productive Animals Diseases of small pets Diseases of small pets Ophthalmology Dentistry
PC-4	The ability to conduct clinical studies of animals using special (instrumental) and laboratory methods to clarify the diagnosis	Anatomy Biological chemistry Biological physics Cytology, Histology and Embryology Veterinary Microbiology and Mycology Virology and biotechnology	Pathological physiology Pathological anatomy and forensic veterinary examination Clinical diagnostics Instrumental diagnostic methods Obstetrics, gynecology and andrology Internal non-communicable diseases General and private surgery Parasitology and invasive diseases Epizootology and infectious diseases Coursework "Animal Anatomy" Clinical laboratory diagnostics Laboratory diagnostics of infectious and invasive diseases Horse diseases Diseases of Productive Animals Diseases of small pets Diseases of small pets Ophthalmology Dentistry
PC-5	The ability to make a diagnosis based on the analysis of anamnesis data, general, special (instrumental) and laboratory research methods	Veterinary genetics Cytology, Histology and Embryology	Breeding with the basics of private animal husbandry Feeding animals with the basics of forage production Pathological physiology

			Pathological anatomy and forensic veterinary examination Clinical diagnostics Toxicology Obstetrics, gynecology and andrology Internal non-communicable diseases General and private surgery Parasitology and invasive diseases Epizootology and infectious diseases Forensic veterinary medicine and animal necropsy Diseases of bees and fish Zoopsychology Horse diseases Diseases of Productive Animals Diseases of small pets Diseases of small pets Ophthalmology Dentistry
PC-8	Ability to choose methods of non-drug therapy, including physiotherapeutic methods for treating animals	Veterinary Microbiology and Mycology and Virology and biotechnology	Feeding animals with the basics of forage production Pathological physiology Veterinary radiobiology Internal non-communicable diseases General and private surgery Horse diseases Diseases of Productive Animals Diseases of small pets Diseases of small pets Ophthalmology Dentistry

PC-9	Ability to carry out medical, including physiotherapy, procedures using special equipment in compliance with safety rules	Anatomy Biological physics Life safety Veterinary Microbiology and Mycology and Virology and biotechnology	Pathological physiology Veterinary radiobiology General and private surgery Horse diseases Diseases of Productive Animals Diseases of small pets Diseases of Exotic Animals Anesthesiology, Critical Care and Intensive Care Dermatology Cardiology Endocrinology Nephrology Reconstructive and reconstructive surgery Ophthalmology Dentistry
PC-10	The ability to determine the need for the use of surgical and surgical methods in the treatment of animals	Veterinary genetics Cytology, Histology and Embryology Veterinary Microbiology and Mycology	Pathological physiology Pathological anatomy and forensic veterinary examination Clinical diagnostics Obstetrics, gynecology and andrology General and private surgery Horse diseases Diseases of Productive Animals Diseases of small pets Diseases of small pets Ophthalmology Dentistry
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	Pathological physiology Pathological anatomy and forensic veterinary examination Veterinary pharmacology

			<p>Operative surgery with topographic anatomy Obstetrics, gynecology and andrology General and private surgery Coursework "Animal Anatomy" Anesthesiology, resuscitation and intensive care Reconstructive surgery</p>
PC-13	<p>Ability to develop recommendations for special feeding of sick animals for therapeutic purposes</p>	-	<p>Feeding animals with the basics of forage production Pathological physiology Internal non-communicable diseases General and private surgery Medicinal and poisonous plants Fodder plants Anesthesiology Dermatology Cardiology Endocrinology Nephrology</p>
PC-14	<p>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</p>	<p>Cytology, Histology and Embryology</p>	<p>Pathological physiology Pathological anatomy and forensic veterinary examination Veterinary pharmacology Clinical diagnostics Instrumental diagnostic methods Toxicology Obstetrics, gynecology and andrology Internal non-communicable diseases</p>

			<p>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 Anesthesiology, resuscitation and intensive care Dermatology Cardiology Endocrinology Nephrology Reconstructive surgery Ophthalmology Dentistry</p>
PC-16	The ability to organize organizational, technical, zootechnical and veterinary activities aimed at the prevention of non-communicable diseases in accordance with the plan for the prevention of non-communicable animal diseases	Veterinary genetics Life safety	<p>Breeding with the basics of private animal husbandry Hygiene of animals Feeding animals with the basics of forage production Obstetrics, gynecology and andrology Internal non-communicable diseases General and private surgery Organization of veterinary affairs Diseases of bees and fish Medicinal and poisonous plants Fodder plants Zoopsychology Horse diseases Diseases of Productive Animals</p>

			Diseases of small pets Diseases of small pets Ophthalmology Dentistry
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	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 Veterinary pharmacology 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-24	Ability and readiness to promote veterinary knowledge, including in the field of animal disease prevention	-	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 Toxicology Obstetrics, gynecology and andrology Internal non- communicable diseases General and private surgery Parasitology and invasive diseases Epizootology and infectious diseases Fundamentals of Rhetoric and Communication Introduction to the specialty General and Veterinary Ecology Veterinary sanitation Veterinary deontology Diseases of bees and fish Medicinal and poisonous plants Fodder plants Zoopsychology Horse diseases Diseases of Productive Animals Diseases of small pets Diseases of small pets Ophthalmology Dentistry Foreign language for special purposes Russian language for special purposes Communicative workshop
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4. COURSE WORKLOAD AND TRAINING ACTIVITIES

Course workload of the discipline «**Physiology and ethology of animals**» is 9 credit units.

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				
			3	4	-	-	
Contact academic hours		180	90	90			
Including:							
Lectures		72	36	36	-	-	
Lab work		108	54	54	-	-	
Seminars		-	-	-	-	-	
Self-studies		106	72	34	-	-	
Evaluation and assessment		38	18	20	-	-	
Course workload		ac.h.	324	180	144	-	-
		credit units	9	5	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				
			3	4	-	-	
Contact academic hours		72	36	36	-	-	
Including:							
Lectures		36	18	18	-	-	
Lab work		36	18	18	-	-	
Seminars		-	-	-	-	-	
Self-studies		222	98	124	-	-	
Evaluation and assessment		30	10	20	-	-	
Course workload		ac.h.	324	144	180	-	-
		credit units	9	4	5	-	-

5. CONTENT OF THE DISCIPLINE

Table 5.1 Content of the discipline (module) by type of study

Name of the discipline section	Content of the section (topics)	Types of academic activities
Section 1. Excitable tissues.	Topic 1.1 Introduction to Physiology.	Lectures, Lab work
	Topic 1.2 Physiology of excitable tissues.	Lectures, Lab work
	Topic 1.3 Physiology of nerve fibers and muscles.	Lectures, Lab work

Section 2. Nervous System.	Topic 2.1 Physiology of the Central Nervous System.	Lectures, Lab work
	Topic 2.2 Physiology of the spinal cord.	Lectures, Lab work
	Topic 2.3 Brain Physiology.	Lectures, Lab work
	Topic 2.4 Physiology of Higher Nervous Activity.	Lectures, Lab work
	Topic 2.5 Autonomic nervous system.	Lectures, Lab work
Section 3. The blood system.	Topic 3.1 Physiology of blood: functions, properties.	Lectures, Lab work
	Topic 3.2 Corpuscular elements of blood.	Lectures, Lab work
	Topic 3.3 Leukocyte formula.	Lectures, Lab work
	Topic 3.4 Blood physiology: hemoglobin, plasma, lymph.	Lectures, Lab work
	Topic 3.5 Blood physiology: hemostasis.	Lectures, Lab work
	Topic 3.6 Blood groups, blood transfusion.	Lectures, Lab work
	Topic 3.7 Physiology of the immune system.	Lectures, Lab work
Section 4. Endocrine glands.	Topic 4.1 Physiology of the endocrine glands.	Lectures, Lab work
Section 5. Physiological adaptation of animals.	Topic 5.1 Physiology of animal adaptation.	Lectures, Lab work
Section 6. Physiology of lactation.	Topic 6.1 Physiology of lactation of animals.	Lectures, Lab work
Section 7. The cardiovascular system.	Topic 7.1 Physiology of the heart: functions and properties of the heart muscle.	Lectures, Lab work
	Topic 7.2 Physiology of the heart: conduction system, biphasic rhythm, cardiac impulse, tones.	Lectures, Lab work
	Topic 7.3 Physiology of blood circulation: fundamentals of hemodynamics.	Lectures, Lab work
	Topic 7.4 Physiology of blood circulation: pulse, blood pressure, electrocardiography.	Lectures, Lab work
Section 8. Digestive system.	Topic 8.1 Physiology of digestion in the oral cavity.	Lectures, Lab work

	Topic 8.2 Physiology of digestion in the stomach.	Lectures, Lab work
	Topic 8.3 Physiology of digestion in the intestine.	Lectures, Lab work
	Topic 8.4 Peculiarities of digestion in ruminants.	Lectures, Lab work
Section 9. Respiratory system.	Topic 9.1 Respiratory physiology: inhalation-exhalation mechanism, vital capacity of the lungs.	Lectures, Lab work
	Topic 9.2 Respiratory physiology: gas exchange, regulation.	Lectures, Lab work
Section 10. Metabolism and energy.	Topic 10.1 Metabolism, protein, fat, carbohydrate, water and mineral metabolism.	Lectures, Lab work
	Topic 10.2 Energy exchange.	Lectures, Lab work
Section 11. The reproductive system.	Topic 11.1 Physiology of reproduction.	Lectures, Lab work
Section 12. Excretory system.	Topic 12.1 Physiology of excretion.	Lectures, Lab work
Section 13. Analyzer systems.	Topic 13.1 Physiology of visual, auditory, skin, gustatory and olfactory analyzers.	Lectures, Lab work
Section 14. Ethology.	Topic 14.1 Studying the characteristics of animal behavior.	Lectures, Lab work

6. CLASSROOM EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 6.1. Classroom equipment and technology support requirements

Classroom for Academic Activity Type	<i>Classroom equipment</i>	Specialized training/laboratory equipment, software and materials for mastering the discipline (if necessary)
Lecture	Auditorium for lecture-type classes, equipped with a set of specialized furniture; blackboard (screen) and technical means of multimedia presentations.	<ul style="list-style-type: none"> - <i>Virtual Physiology.</i> - <i>HS hemometers (Sali).</i> - <i>Goryaev counting chamber.</i> - <i>Electrochemograph.</i> - <i>Biological microscopes.</i> - <i>Erythrocyte sedimentation rate measuring devices: Panchenkov capillaries.</i> - <i>Registration capsule (set).</i> - <i>Blood-forme element counter.</i> - <i>Korotkoff tonometer for measuring blood pressure.</i>

		<ul style="list-style-type: none"> - <i>Phonendoscope.</i> - <i>Mixers (melangers) for counting leukocytes, erythrocytes.</i> - <i>Device for determining Rh factor, blood groups</i>
Laboratory	Auditorium for laboratory works, individual consultations, current control and intermediate attestation, equipped with a set of specialized furniture and equipment.	<ul style="list-style-type: none"> - <i>Virtual Physiology.</i> - <i>HS hemometers (Sali).</i> - <i>Goryaev counting chamber.</i> - <i>Electrochemograph.</i> - <i>Biological microscopes.</i> - <i>Erythrocyte sedimentation rate measuring devices: Panchenkov capillaries.</i> - <i>Registration capsule (set).</i> - <i>Blood-forme element counter.</i> - <i>Korotkoff tonometer for measuring blood pressure.</i> - <i>Phonendoscope.</i> - <i>Mixers (melangers) for counting leukocytes, erythrocytes.</i> - <i>Device for determining Rh factor, blood groups</i>
Self-studies	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 the EIOS.	

7. RECOMMENDED SOURCES FOR COURSE STUDIES

Main reading sources :

1. Sotnikova E.D. Physiology and ethology of animals: physiology of digestion: teaching aid / E.D. Sotnikova, E.V. Kulikov. - Electronic text data. - Moscow : RUDN, 2021. - 44 p.
<https://lib.rudn.ru/MegaPro/Download/MObject/9208>
2. Physiology of digestion and metabolism [Electronic resource] : Textbook / I.N. Medvedev; Ed. by I.N. Medvedev. - SPb. : Lan' Publisher, 2016. - 144 p.
http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=465094&idb=0
3. Sotnikova E.D. Physiology and ethology of animals: physiology of blood and immune system. Theoretical and practical course = Physiology of Blood and Immune System. Theoretical and practical Course / E.D. Sotnikova, E.V. Kulikov, V.M. Byakhova. - Book in English; electronic text data. - Moscow : RUDN, 2020. - 66 p <https://lib.rudn.ru/MegaPro/Download/MObject/9111>

4. Fomina L.L. Physiology and ethology of animals: Workshop for students of specialty 36.05.01 Veterinary Medicine 2017.-102p.
<https://e.lanbook.com/book/130900>

Optional reading sources:

1. Medvedev I.N. Physiological regulation of an organism [Electronic resource] : textbook / I.N. Medvedev, S.Y. Zavalishina, N.V. Kutafina. - SPb. : Lan Publishing House, 2016. - 392 p.
http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=465061&idb=0
2. Physiology of muscular and nervous systems [Electronic resource] : Textbook / I.N. Medvedev [et al]; Ed. by I.N. Medvedev. - SPb. : Lan' Publisher, 2015. - 176 p.
http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=465099&idb=0
3. Ivanov A.A., Ksenofontova A.A., Voinova O.A. Practicum on ethology with the bases of zoopsychology. - 1st ed. - SPb.: Lan', 2013. - 368 p.
4. Bolotiuk V.A., Bolotiuk L.A. Comparative physiology of animals. - SPb: Lan', 2010. - 416 p.
5. Golikov A.N., et al; Physiology of farm animals.- 3rd edition, - M.: Agropromizdat, 2009. - 432 c.

Internet-based sources:

1. Electronic libraries with access for RUDN students:

- Electronic library system RUDN - ELS RUDN <http://lib.rudn.ru/MegaPro/Web>
- ELS "University Library Online" <http://www.biblioclub.ru>
- ELS Urait <http://www.biblio-online.ru>
- ELS "Student Advisor" www.studentlibrary.ru
- ELS «Lan» <http://e.lanbook.com/>
- ELS «Troitsky most» <http://www.trmost.com/>

2. Databases and search engines:

- electronic collection of legal, regulatory and technical documentation <http://docs.cntd.ru/>
- Yandex search engine <https://www.yandex.ru/>
- Google search engine <https://www.google.ru/>
- SCOPUS abstract database <http://www.elsevierscience.ru/products/scopus/>

Educational and methodological materials for independent work of students during the development of the discipline/ module*:

1. Course of lectures on the discipline «**Physiology and ethology of animals**».
2. Laboratory workshop on the discipline «**Physiology and ethology of animals**».

* - 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 "**Pathological physiology**" 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

Department position

Signed

Sotnikova E.D.

Name and surname.

HEAD OF THE DEPARTMENT:

Department of Veterinary Medicine

Department position

Signed

Vatnikov Yu.A.

Name and surname.

HEAD OF THE HIGHER EDUCATION PROGRAM:

Director of the Department of Veterinary Medicine

Department position

Signed

Vatnikov Yu.A.

Name and surname.