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

## **WORKING COURSE SYLLABUS**

### **Pathological physiology**

**Recommended by the Methodological Council for the Education Field:**

**36.05.01 Veterinary medicine**

## 1. GOALS AND OBJECTIVES OF THE DISCIPLINE

The aim of mastering the discipline "**Pathological physiology**" is to master the basics of the laws of the development of pathological processes; concepts about the essence of life, health, disease; to study typical pathological processes: inflammation, tumors, fever, hypoxia, starvation, etc.; to reveal the issues of pathological physiology of organs and systems.

## 2. REQUIREMENTS FOR THE RESULTS OF MASTERING THE DISCIPLINE

The development of the discipline "**Pathological physiology**" 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)*

<b>Code</b>	<b>Competence</b>	<b>Indicators of competence accomplishment (within the discipline)</b>
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 the specific features
		GPC-1.2 He s able to predict the expected violations of the biological status in case of suspected development of diseases
		GPC-1.3 He is able to determine the main indicators of the activity of individual body systems and draw conclusions about the presence of deviations from the standard values
		GPC-1.4 Has the skills of sampling biological fluids and tissues for research, performing laboratory tests, interpreting research results.
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.	GPC-2.1 Has knowledge of the influence of natural, socio-economic, genetic and economic factors on the animal body.
		GPC-2.2 He is able to establish the presence and reliability of cause-and-effect relationships between the effects of certain etiological factors on the animal's body and the development of diseases.
		GPC-2.3 Possesses methods of preventive and curative correction of the effects of adverse environmental factors that can cause deterioration of animal health.

GPC -4	The ability to use methods of solving problems using modern equipment in the development of new technologies in professional activity and to use modern professional methodology for conducting experimental research and interpreting their results.	GPC-4.1 Possesses the conceptual and methodological apparatus of basic natural sciences at a level sufficient for full-fledged professional activity at the modern level.
		GPC-4.2 He knows the methods of solving problems using modern equipment.
		GPC-4.3 He is ready to use modern methodology in the development and conduct of experimental research.
		GPC-4.4 Uses modern professional methodology in interpreting research results.
PC -2	The ability to conduct a general clinical study of animals in order to establish a preliminary diagnosis and determine the further research program, as well as in accordance with the plan of antiepidemiological measures, the plan of prevention of non-infectious animal diseases.	PC-2.1 He is able to conduct a general clinical study of animals of different species in order to establish a preliminary diagnosis and determine the further research program
		PC-2.2 He is able to conduct mass clinical studies of animals in accordance with the plan of antiepidemiological measures, the plan of prevention of non-infectious animal diseases
PC -3	Ability to develop animal research programs using special (instrumental) and laboratory methods.	PC-3.1 He is able to develop individual animal research programs, including the use of special (instrumental) and laboratory methods to detect deviations from the physiological norm of the state of a living organism, conduct differential diagnosis of the detected pathology or control the course of the disease and the effectiveness of the prescribed treatment.
		PC-3.2 Capable of developing mass comprehensive animal research programs (medical examination programs) of 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 conduct additional animal studies using laboratory methods to clarify the diagnosis.
		PC-4.2 Able to conduct additional animal studies 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 He is able to diagnose patients of various types based on the analysis of anamnesis data, general, special (instrumental) and laboratory research methods.
		PC -5.2 He is able to predict the risks of diseases based on anamnestic data, the results of general, special (instrumental) and laboratory studies.
PC -6	The ability to develop a treatment plan for animals based on the established diagnosis and individual characteristics of animals.	PC-6.1 Able to develop a treatment plan for animals based on the established diagnosis and individual characteristics of 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 drugs of chemical and biological nature for the treatment of animals, taking into account their combined pharmacological effect on the body.	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 -8	Ability to choose methods of non-drug therapy, including physiotherapy methods for the treatment of animals.	PC-8.1 He is able to choose and justify his choice of methods of non-drug therapy, including physiotherapy methods, for the treatment of animals;
		PC-8.2 He is able to evaluate the effectiveness of the chosen method in the treatment of the patient and, if necessary, adjust the treatment method or change the chosen method to another one.
PC -9	The ability to carry out therapeutic, including physiotherapy procedures using special equipment in compliance with safety rules.	PC-9.1 Able to carry out therapeutic, including physiotherapy, procedures using special equipment in compliance with safety rules;
		PC -9.2 He is able to take into account the species, age and individual characteristics of animals undergoing treatment using special equipment, choose acceptable methods of fixing the patient during the procedure, the conditions of the procedures and their duration.
PC -10	The ability to determine the need for the use of surgical methods in the treatment of animals.	PC-10.1 Able to determine the need for the use of surgical methods in the treatment of animals;
		PC-10.2 Able to choose the optimal surgical method for the patient, taking into account the external conditions and the status of the patient's body, and if necessary, several manipulations - their order and time distribution;
		PC-10.3 He is able to take into account the risks and possible complications accompanying surgical interventions and take measures to prevent them.
PC -11	Ability to develop a surgical operation plan, including the choice of analgesia method	PC-11.1 Able to develop a surgical operation plan;
		PC-11.2 He is able to choose and justify the optimal variant of 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 He is able to justify the appointment of special feeding to an animal for therapeutic purposes in various diseases;
		PC-13.2 He is able to recommend the approximate composition of therapeutic diets, the desired ratio of nutrients, the presence of special additives and components that enhance the therapeutic effect of the diet;
		PC-13.3 He is able to use special programs and databases for the selection of industrial therapeutic diets and dietary supplements, as well as for the compilation of individual therapeutic diets for animals of various 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 of animals (if necessary) based on the results of the evaluation of the effectiveness of treatment.	PC-14.1 He is able to develop a plan of repeated studies necessary and sufficient to assess the predicted changes in the patient's health.
		PC-14.2 Able to conduct a repeated clinical examination, taking into account the specifics of diseases previously diagnosed in the patient.
		PC-14.3 Able to carry out the necessary repeated instrumental and laboratory tests.
		PC-14.4 He is able to analyze the identified changes, evaluate the effectiveness of the treatment and, if necessary, correct the prescribed course of treatment.
PC -18	The ability to draw up a plan for the medical examination of animals, taking into account their types and purpose, to conduct medical examinations, to develop recommendations for carrying out preventive and curative measures based on the results of the examination of animals conducted as part of the medical examination	PC-18.1 He is able to make a plan for the medical examination of animals, general or specialized, taking into account their types and purpose
		PC-18.2 He is able to organize and conduct medical examination according to the drawn up plan
		PC-18.3 He is able, based on the results of medical examination, to give recommendations on the implementation of therapeutic and preventive and curative measures aimed at improving the health of a group of animals
PC -24	Ability and willingness to promote veterinary knowledge, including in the	PC-24.1 He is able to set goals in the field of veterinary knowledge promotion, plan the strategy and tactics of upcoming events.

	field of prevention of animal diseases.	PC-24.2 He is able to use computer and telecommunication facilities for the preparation and demonstration of materials used in the process of promoting veterinary knowledge.
		PC-24.3 He is able to conduct conversations, lectures, seminars for employees of the organization in order to explain the principles of work on the prevention of animal diseases.

### 3. COURSE IN HIGHER EDUCATION

The discipline "**Pathological physiology**" 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 "**Pathological physiology**".

*Table 3.1. List of Higher Education Program components disciplines that contribute to expected learning outcomes*

<b>Competence code</b>	<b>Competence</b>	<b>Previous Disciplines (Modules)</b>	<b>Subsequent Disciplines (Modules)</b>
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 Physiology and ethology of animals	Clinical diagnosis 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 the basics of design Bee diseases and entomophages

			<p>Fish pathology and aquaculture Anesthesiology, intensive care and intensive care</p>
GPC -2	<p>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.</p>	<p>Biology with the basics of ecology Veterinary genetics Veterinary microbiology and mycology Virology and biotechnology Physiology and ethology of animals Breeding with the basics of private animal husbandry Animal health and welfare</p>	<p>Veterinary Radiobiology Pathological anatomy Instrumental diagnostic methods Toxicology Obstetrics, gynecology and andrology Internal non-infectious diseases General surgery Private Veterinary surgery Parasitology and invasive diseases Epizootology and infectious diseases Forensic veterinary examination and autopsy of animals Immunology General and veterinary ecology Veterinary sanitation Forage plants Zoopsychology Animal Health Diseases of horses Diseases of productive animals Diseases of small pets Diseases of small pets Bee diseases and entomophages Fish pathology and aquaculture Diseases of exotic animals Anesthesiology, intensive care and intensive care Dermatology</p>



			Cardiology Endocrinology Nephrology Veterinary Ophthalmology Animal Dentistry
GPC -4	The ability to use methods of solving problems using modern equipment in the development of new technologies in professional activity and to use modern professional methodology for conducting experimental research and interpreting their results.	Inorganic and analytical chemistry Organic Chemistry Biological physics Computer science Physical and colloidal chemistry Cytology, histology and embryology Biological chemistry Veterinary microbiology and mycology Virology and biotechnology Physiology and ethology of animals Breeding with the basics of private animal husbandry	Veterinary Radiobiology Clinical diagnosis Pathological anatomy Operative surgery with topographic anatomy Instrumental diagnostic methods Toxicology Obstetrics, gynecology and andrology Internal non-infectious diseases General surgery Private Veterinary surgery Parasitology and invasive diseases Epizootology and infectious diseases Mathematics Immunology Veterinary sanitation Technology of processing livestock products Medicinal and poisonous plants Forage plants Fundamentals of intellectual work Personality psychology and professional self-determination Clinical laboratory diagnostics Laboratory diagnostics of infectious and

			invasive diseases Diseases of horses Diseases of productive animals Diseases of small pets Diseases of small pets Bee diseases and entomophages Fish pathology and aquaculture Diseases of exotic animals Anesthesiology, intensive care and intensive care Dermatology Cardiology Endocrinology Nephrology Reconstructive and reconstructive surgery Veterinary Ophthalmology Animal Dentistry
PC -2	The ability to conduct a general clinical study of animals in order to establish a preliminary diagnosis and determine the further research program, as well as in accordance with the plan of antiepidemiological measures, the plan of prevention of non-infectious animal diseases	Animal anatomy Physiology and ethology of animals	Clinical diagnosis Pathological anatomy Obstetrics, gynecology and andrology Bee diseases and entomophages Fish pathology and aquaculture Anesthesiology, intensive care and intensive care
PC -3	Ability to develop animal research programs using special (instrumental) and laboratory methods	Animal Anatomy Organic Chemistry Biological physics Physical and colloidal chemistry Biological chemistry Veterinary microbiology and mycology Virology and biotechnology	Clinical diagnosis Pathological anatomy Instrumental diagnostic methods Toxicology Obstetrics, gynecology and andrology Internal non-infectious diseases General surgery

		Physiology and ethology of animals	Private Veterinary surgery Parasitology and invasive diseases Epizootology and infectious diseases Immunology Veterinary deontology Clinical laboratory diagnostics Laboratory diagnostics of infectious and invasive diseases Veterinary and industrial laboratories with the basics of design Diseases of horses Diseases of productive animals Diseases of small pets Diseases of small pets Bee diseases and entomophages Fish pathology and aquaculture Diseases of exotic animals Anesthesiology, intensive care and intensive care Dermatology Cardiology Endocrinology Nephrology Reconstructive and reconstructive surgery Veterinary Ophthalmology Animal Dentistry
PC -4	The ability to conduct clinical studies of animals using special (instrumental) and laboratory methods to clarify the diagnosis	Animal anatomy Biological physics Cytology, histology and embryology Biological chemistry Veterinary	Clinical diagnosis Pathological anatomy Instrumental diagnostic methods Obstetrics, gynecology and

		<p>microbiology and mycology  Virology and biotechnology  Physiology and ethology of animals</p>	<p>andrology  Internal non-infectious diseases  General surgery  Private Veterinary surgery  Parasitology and invasive diseases  Epizootology and infectious diseases  Clinical laboratory diagnostics  Laboratory diagnostics of infectious and invasive diseases  Diseases of horses  Diseases of productive animals  Diseases of small pets  Diseases of small pets  Diseases of exotic animals  Anesthesiology, intensive care and intensive care  Dermatology  Cardiology  Endocrinology  Nephrology  Veterinary  Ophthalmology  Animal Dentistry</p>
PC -5	<p>The ability to make a diagnosis based on the analysis of anamnesis data, general, special (instrumental) and laboratory research methods</p>	<p>Veterinary genetics  Cytology, histology and embryology  Physiology and ethology of animals  Breeding with the basics of private animal husbandry  Feeding animals with the basics of feed production</p>	<p>Clinical diagnosis  Pathological anatomy  Toxicology  Obstetrics, gynecology and andrology  Internal non-infectious diseases  General surgery  Private Veterinary surgery  Parasitology and invasive diseases  Epizootology and infectious diseases</p>

			<p>Forensic veterinary examination and autopsy of animals</p> <p>Zoopsychology</p> <p>Diseases of horses</p> <p>Diseases of productive animals</p> <p>Diseases of small pets</p> <p>Diseases of small pets</p> <p>Bee diseases and entomophages</p> <p>Fish pathology and aquaculture</p> <p>Diseases of exotic animals</p> <p>Anesthesiology, intensive care and intensive care</p> <p>Dermatology</p> <p>Cardiology</p> <p>Endocrinology</p> <p>Nephrology</p> <p>Reconstructive and reconstructive surgery</p> <p>Veterinary</p> <p>Ophthalmology</p> <p>Animal Dentistry</p>
PC -6	Ability to develop an animal treatment plan based on the established diagnosis and individual characteristics of animals	<p>Veterinary genetics</p> <p>Veterinary microbiology and mycology</p> <p>Virology and biotechnology</p>	<p>Veterinary</p> <p>Pharmacology</p> <p>Toxicology</p> <p>Obstetrics, gynecology and andrology</p> <p>Internal non-infectious diseases</p> <p>General surgery</p> <p>Private Veterinary surgery</p> <p>Parasitology and invasive diseases</p> <p>Epizootology and infectious diseases</p> <p>Mathematics</p> <p>Immunology</p> <p>Zoopsychology</p> <p>Diseases of horses</p> <p>Diseases of productive animals</p>

			Diseases of small pets Diseases of small pets Bee diseases and entomophages Fish pathology and aquaculture Diseases of exotic animals Anesthesiology, intensive care and intensive care Dermatology Cardiology Endocrinology Nephrology Reconstructive and reconstructive surgery Veterinary Ophthalmology Animal Dentistry
PC -7	The ability to choose the necessary drugs of chemical and biological nature for the treatment of animals, taking into account their combined pharmacological effect on the body	Inorganic and analytical chemistry Organic Chemistry Physical and colloidal chemistry Biological chemistry Veterinary microbiology and mycology Virology and biotechnology	Veterinary Pharmacology Toxicology Obstetrics, gynecology and andrology Internal non-infectious diseases General surgery Private Veterinary surgery Parasitology and invasive diseases Epizootology and infectious diseases Medicinal and poisonous plants Diseases of horses Diseases of productive animals Diseases of small pets Diseases of small pets Bee diseases and entomophages Fish pathology and aquaculture Diseases of exotic animals

			Anesthesiology, intensive care and intensive care Dermatology Cardiology Endocrinology Nephrology Veterinary Ophthalmology Animal Dentistry
PC -8	Ability to choose methods of non-drug therapy, including physiotherapeutic methods for the treatment of animals	Veterinary microbiology and mycology Virology and biotechnology Physiology and ethology of animals Feeding animals with the basics of feed production	Veterinary Radiobiology Internal non- infectious diseases General surgery Private Veterinary surgery Diseases of horses Diseases of productive animals Diseases of small pets Diseases of small pets Diseases of exotic animals Anesthesiology, intensive care and intensive care Dermatology Cardiology Endocrinology Nephrology Reconstructive and reconstructive surgery Veterinary Ophthalmology Animal Dentistry
PC -9	The ability to carry out therapeutic, including physiotherapy procedures using special equipment in compliance with safety rules	Animal anatomy Life safety Veterinary microbiology and mycology Virology and biotechnology Physiology and ethology of animals	Veterinary Radiobiology General surgery Private Veterinary surgery Diseases of horses Diseases of productive animals Diseases of small pets Diseases of small pets Diseases of exotic animals

			Anesthesiology, intensive care and intensive care Dermatology Cardiology Endocrinology Nephrology Reconstructive and reconstructive surgery Veterinary Ophthalmology Animal Dentistry
PC -10	The ability to determine the need for the use of surgical methods in the treatment of animals	Veterinary genetics Cytology, histology and embryology Veterinary microbiology and mycology Physiology and ethology of animals	Clinical diagnosis Pathological anatomy Obstetrics, gynecology and andrology General surgery Private Veterinary surgery Diseases of horses Diseases of productive animals Diseases of small pets Diseases of small pets Diseases of exotic animals Dermatology Cardiology Endocrinology Nephrology Reconstructive and reconstructive surgery Veterinary Ophthalmology Animal Dentistry
PC -11	Ability to develop a surgical operation plan, including the choice of analgesia method	Animal anatomy Veterinary microbiology and mycology Physiology and ethology of animals	Veterinary Pharmacology Pathological anatomy Operative surgery with topographic anatomy Obstetrics, gynecology and andrology General surgery Private Veterinary surgery



			<p>Anesthesiology, intensive care and intensive care Dermatology Cardiology Endocrinology Nephrology Reconstructive and reconstructive surgery</p>
PC -13	<p>Ability to develop recommendations for special feeding of sick animals for therapeutic purposes</p>	<p>Physiology and ethology of animals Feeding animals with the basics of feed production</p>	<p>Internal non- infectious diseases General surgery Private Veterinary surgery Medicinal and poisonous plants Forage plants Anesthesiology, intensive care and intensive care 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 of animals (if necessary) based on the results of the evaluation of the effectiveness of treatment</p>	<p>Cytology, histology and embryology Physiology and ethology of animals</p>	<p>Veterinary Pharmacology Clinical diagnosis Pathological anatomy Instrumental diagnostic methods Toxicology Obstetrics, gynecology and andrology Internal non- infectious diseases General surgery Private Veterinary surgery Parasitology and invasive diseases Epizootology and infectious diseases Clinical laboratory diagnostics Diseases of horses Diseases of productive animals</p>

			Diseases of small pets Diseases of small pets Diseases of exotic animals Anesthesiology, intensive care and intensive care Dermatology Cardiology Endocrinology Nephrology Reconstructive and reconstructive surgery Veterinary Ophthalmology Animal Dentistry
PC -18	The ability to draw up a plan for the medical examination of animals, taking into account their types and purpose, to conduct medical examinations, to develop recommendations for carrying out preventive and curative measures based on the results of the examination of animals conducted as part of the medical examination	Veterinary genetics Physiology and ethology of animals Breeding with the basics of private animal husbandry Animal health and welfare Feeding animals with the basics of feed production	Veterinary Pharmacology Clinical diagnosis Pathological anatomy Instrumental diagnostic methods Toxicology Obstetrics, gynecology and andrology Internal non-infectious diseases General surgery Private Veterinary surgery Animal Health Clinical laboratory diagnostics Diseases of horses Diseases of productive animals Diseases of small pets Diseases of small pets Diseases of exotic animals Dermatology Cardiology Endocrinology Nephrology Veterinary Ophthalmology Animal Dentistry

PC -24	Ability and willingness to promote veterinary knowledge, including in the field of prevention of animal diseases	Physiology and ethology of animals Breeding with the basics of private animal husbandry Animal health and welfare Feeding animals with the basics of feed production	Pathological anatomy Toxicology Obstetrics, gynecology and andrology Internal non-infectious diseases General surgery Private Veterinary 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 Economics and organization of agricultural production Medicinal and poisonous plants Forage plants Zoopsychology Animal Health Diseases of horses Diseases of productive animals Diseases of small pets Diseases of small pets Bee diseases and entomophages Fish pathology and aquaculture Diseases of exotic animals Dermatology Cardiology Endocrinology Nephrology
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			Reconstructive and reconstructive surgery Veterinary Ophthalmology Animal Dentistry Foreign language for special purposes Russian for special purposes Foreign language. Translation of special texts Russian language. Translation of special texts Foreign language. Professional communications Russian language. Professional communications
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#### 4. COURSE WORKLOAD AND TRAINING ACTIVITIES

Course workload of the discipline "**Pathological physiology**" is 9 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				
			4	5	-	-	
Contact academic hours		144	72	72	-	-	
including							
Lectures		36	18	18	-	-	
Lab work		108	54	54	-	-	
Seminars (workshops/tutorials)		-	-	-	-	-	
Self-study		156	62	94	-	-	
Evaluation and assessment (exam/pass/fail grading)		24	10	14	-	-	
<b>Course workload</b>		Academic hour	<b>324</b>	<b>144</b>	<b>180</b>	-	-
		Credit unit	<b>9</b>	<b>4</b>	<b>5</b>	-	-

*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				
			4	5	-	-	
Contact academic hours		72	36	36	-	-	
including							
Lectures		36	18	18	-	-	
Lab work		36	18	18	-	-	
Seminars (workshops/tutorials)		-	-	-	-	-	
Self-study		222	98	124	-	-	
Evaluation and assessment (exam/pass/fail grading)		30	10	20	-	-	
<b>Course workload</b>		Academic hour	<b>324</b>	<b>144</b>	<b>180</b>	-	-
		Credit unit	<b>9</b>	<b>4</b>	<b>5</b>	-	-

## 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 pathological physiology	Topic 1. Pathological physiology as a fundamental science and academic discipline.	Lectures, Lab work.
	Topic 1.1 General nosology.	Lectures, Lab work.
	Topic 1.2 General etiology.	Lectures, Lab work.
	Topic 1.3 General pathogenesis.	Lectures, Lab work.
	Topic 1.4 The effect of pathogenic environmental factors.	Lectures, Lab work.
	Topic 1.5 Urgent conditions.	Lectures, Lab work.
	Topic 1.6 Reactivity and resistance of the body.	Lectures, Lab work.
	Topic 1.7 Disorders of local blood and lymph circulation.	Lectures, Lab work.
	Topic 1.8 Inflammation.	Lectures, Lab work.
	Topic 1.9 Disorders of thermoregulation of the body. Fevers.	Lectures, Lab work.

	Topic 1.10 Pathological physiology of metabolic and energy disorders.	Lectures, Lab work.
	Topic 1.11 Tumor growth.	Lectures, Lab work.
Section 2. Private pathological physiology.	Topic 2. Blood pathophysiology.	Lectures, Lab work.
	Topic 2.1 Pathophysiology of the cardiovascular system.	Lectures, Lab work.
	Topic 2.2 Pathophysiology of the respiratory system.	Lectures, Lab work.
	Topic 2.3 Pathophysiology of the excretory system (kidneys).	Lectures, Lab work.
	Topic 2.4 Pathophysiology of digestion.	Lectures, Lab work.
	Topic 2.5 Pathophysiology of the liver, pancreas.	Lectures, Lab work.
	Topic 2.6 Pathophysiology of the endocrine system.	Lectures, Lab work.
	Topic 2.7 Pathophysiology of the immune system.	Lectures, Lab work.
	Topic 2.8 Pathophysiology of the nervous system.	Lectures, Lab work.

## 6. CLASSROOM INFRASTRUCTURE AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 6.1. Material and technical support of the discipline

<i>Classroom for Academic Activity Type</i>	<i>Equipping the classroom</i>	<b>Specialized educational/laboratory equipment, software and materials for the development of the discipline (if necessary)</b>
Lecture	An auditorium for conducting lecture-type classes, equipped with a set of specialized furniture; a board (screen) and technical means of multimedia presentations.	<ul style="list-style-type: none"> <li>- Information stands.</li> <li>- Wet anatomical preparations.</li> <li>- Micro-preparations.</li> <li>- Biological microscopes.</li> <li>- Digital camera for the microscope.</li> </ul>
Laboratory	An auditorium for laboratory work, individual consultations, routine monitoring and interim certification, equipped with a set of specialized furniture and equipment.	<ul style="list-style-type: none"> <li>- Information stands.</li> <li>- Wet anatomical preparations.</li> <li>- Micro-preparations.</li> <li>- Biological microscopes.</li> <li>- Digital camera for the microscope.</li> </ul>

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.	-
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## 7. RECOMMENDED SOURCES FOR COURSE STUDIES

### *Main reading:*

1. Pathological physiology and pathological anatomy of animals [Electronic resource] : Textbook / A.V. Zharov [et al.]; Edited by A.V. Zharov. - 4th ed., erased. - St. Petersburg : Publishing House "Lan", 2018. - 416 p. - (Textbooks for universities. Special literature). - ISBN 978-5-8114-1534-2. [http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn\\_FindDoc&id=464906&idb=0](http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=464906&idb=0)
2. Baymatov V.N. Workshop on pathological physiology + CD [Electronic resource] : Textbook / V.N. Baymatov. - 2nd ed., erased. - St. Petersburg : Publishing House "Lan", 2017. - 352 p. - (Textbooks for universities. Special literature).- ISBN 978-5-8114-1443-7. [http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn\\_FindDoc&id=464947&idb=0](http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=464947&idb=0)

### *Additional Reading:*

1. Savinkov, A.V. Pathological physiology: textbook / A.V. Savinkov, V.M. Meshkov. — Samara : SamGAU, 2018. — 188 p. — ISBN 978-5-88575-519-1. — Text : electronic // Electronic library system "Lan" : [website]. — URL: <https://e.lanbook.com/book/111866>
2. Bogdanov, A.V., Golubenko Yu.V., Pathological physiology and pathological anatomy of animals. - St. Petersburg: Lan, 2014. - 416 p.
3. Lyutinsky S.I. Pathological physiology of animals. - 2nd ed. - St. Petersburg: KolosS, 2013. - 496 p.
4. Vasiliev, Yu.G. Tests on pathological physiology: an educational and methodological manual / Yu.G. Vasiliev, E.I. Troshin, D.S. Berestov. — Saint Petersburg : Lan, 2015. — 400 p. — ISBN 978-5-8114-1810-7. — Text : electronic // Electronic library system "Lan" : [website]. — URL: <https://e.lanbook.com/book/58163>

### *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](http://www.studentlibrary.ru)
- ELS "Lan" <http://eZlanbook.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 "**Pathological physiology**".
2. Laboratory workshop on the discipline "**Pathological physiology**".

\* - 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 of the Department of Veterinary  
Medicine

Position, Basic curriculum

Подпись

Kulikov E.V.

Full name.

Associate Professor of the Department of Veterinary  
Medicine

Position, Basic curriculum

Signature

Petrov A.K.

Full name.

### HEAD OF THE DEPARTMENT:

Department of Veterinary Medicine

Name Basic Curriculum

Signature

Vatnikov Yu.A.

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### HEAD OF THE HIGHER EDUCATION PROGRAM:

Director of the Department of Veterinary Medicine

Position, Basic curriculum

Signature

Vatnikov Yu.A.

Full name