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

## **WORKING COURSE SYLLABUS**

### **Laboratory diagnostics of infectious and invasive diseases**

**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 "**Laboratory diagnostics of infectious and invasive diseases**" is the development by students of theoretical, methodological and practical knowledge that forms the modern chemical basis for the development of core academic disciplines and the implementation of the main professional tasks: prevention and treatment of animal diseases, increasing the production of high-quality products and raw materials of animal origin, environmental protection from pollution, etc.

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

The development of the discipline "**Laboratory diagnostics of infectious and invasive diseases**" 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)
UK -8	The ability to create and maintain safe living conditions in everyday life and in professional activities for the preservation of the natural environment, ensuring the sustainable development of society, including in the event of a threat and occurrence of emergencies and military conflicts.	UK-8.1 Analyzes the factors of harmful influence on the vital activity of elements of the habitat. (technical means, technological processes, materials, buildings and structures, natural and social phenomena);
		UK -8.2 Identifies dangerous and harmful factors within the scope of the task being performed;
		UK-8.3 Identifies and eliminates problems related to safety violations in the workplace;
		UK-8.4 Explains measures to prevent emergencies;
		UK -8.5 "Explains the rules of conduct in the event of emergencies of natural and man-made origin, as well as in the event of military conflicts;"
		UK-8.6 Provides first aid, participates in recovery activities.
UK -12	The ability to search for the necessary sources of information and data, to perceive, analyze, memorize and transmit information using digital means, as well as using algorithms when working with	UK -12.1 Searches for the necessary sources of information and data, perceives, analyzes, remembers and transmits information using digital means, as well as using algorithms when working with data obtained from various sources in order to effectively use the information

	data obtained from various sources in order to effectively use the information received to solve problems; to evaluate information, its reliability, build logical conclusions based on incoming information and data	received to solve problems
		UK-12.2 Evaluates information, its reliability, builds logical conclusions based on incoming information and data
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-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 Has the skills of updating legal information, including in the field of agro-industrial complex of professional orientation.
		GPC-3.3 Carries out activities in accordance with regulatory legal acts in the field of agriculture, as well as in the field of veterinary medicine and veterinary and sanitary expertise.
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	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.

	modern professional methodology for conducting experimental research and interpreting their results.	<p>GPC-4.2 He knows the methods of solving problems using modern equipment.</p> <p>GPC-4.3 He is ready to use modern methodology in the development and conduct of experimental research.</p> <p>GPC-4.4 Uses modern professional methodology in interpreting research results.</p>
GPC -5	The ability to draw up special documentation, analyze the results of professional activity and submit accounting documents using specialized databases.	<p>GPC-5.1 Has the skills to search for the necessary forms of documentation on official websites and in specialized databases.</p> <p>GPC-5.2 Possesses professional terminology and skills in filling out analytical and reporting documents of a professional orientation.</p> <p>GPC-5.3 He is able to use specialized software to analyze the results of professional activity and compile accounting documentation.</p>
GPC -6	The ability to analyze, identify and assess the risk of the risk of the occurrence and spread of diseases.	<p>GPC-6.1 Has knowledge in the field of etiology and pathogenesis of animal diseases of different species.</p> <p>GPC-6.2 Has the skills to diagnose non-infectious, infectious and invasive diseases, identify pathogens of infectious and invasive diseases in animals.</p> <p>GPC-6.3 He knows the patterns of the occurrence and spread of diseases in animal populations, factors predisposing to diseases and the causes of possible complications.</p>
GPC -7	He is able to understand the principles of modern information technologies and use them to solve the tasks of professional activity.	<p>GPC-7.1 Understands the principles of modern computer technology and telecommunications and is able to use them to solve professional problems;</p> <p>GPC-7.2 Uses modern special software and specialized databases to solve professional tasks and perform official duties;</p> <p>GPC-7.3 Has the skills to work on modern medical diagnostic and therapeutic equipment with software;</p>

		GPC-7.4 Uses specialized databases to solve professional problems in the field of diagnostics and treatment of animals of various species;
		GPC-7.5 Uses geoinformation systems and software complexes when collecting and analyzing information related to the assessment of the spread of infectious diseases, epizootic situations, planning and evaluating the effectiveness of anti-epizootic measures.
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 -19	The ability to perform post-mortem diagnostic examination of animals in order to establish pathological processes, diseases, causes of death.	PC-19.1 Able to conduct a general examination of animal corpses before autopsy.
		PC-19.2 He is capable of performing autopsy of animal corpses using special tools and compliance with safety requirements.
		PC -19.3 He is able to establish the cause of death and a pathoanatomic diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases.
		PC-19.4 He is able to formalize the results of a postmortem diagnostic examination of an animal in the autopsy protocol.

PC -22	Ability to organize measures to protect the organization from the introduction of infectious and invasive diseases in accordance with the plan of antiepzootic 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 "**Laboratory diagnostics of infectious and invasive diseases**" belongs to the part formed by the participants of educational relations of the 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 "**Laboratory diagnostics of infectious and invasive diseases**".

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

Competence code	Competence	Previous Disciplines (Modules)	Subsequent Disciplines (Modules)
UK -8	The ability to create and maintain safe living conditions in everyday life and in professional activities for the preservation of the natural environment, ensuring the sustainable development of society, including in the event of a threat and occurrence of emergencies and military conflicts.	History Inorganic and analytical chemistry Organic Chemistry Biological physics Physical and colloidal chemistry Life safety Biological chemistry Veterinary microbiology and mycology Virology and biotechnology Veterinary Radiobiology Parasitology and invasive diseases Epizootology and	Organization of state veterinary supervision

		<p>infectious diseases  Organization of veterinary business  General and veterinary ecology  Veterinary sanitation  Veterinary deontology</p>	
UK -12	<p>The ability to search for the necessary sources of information and data, to perceive, analyze, memorize and transmit information using digital means, as well as using algorithms when working with data obtained from various sources in order to effectively use the information received to solve problems; to evaluate information, its reliability, build logical conclusions based on incoming information and data</p>	<p>Jurisprudence  Computer science  Philosophy  Life safety  Instrumental diagnostic methods  Organization of veterinary business  Forensic veterinary examination and autopsy of animals  Mathematics  Veterinary deontology  Medicinal and poisonous plants  Fundamentals of intellectual work  Personality psychology and professional self-determination  Clinical laboratory diagnostics</p>	<p>Organization of state veterinary supervision  Veterinary and industrial laboratories with the basics of design  Biometrics in veterinary medicine  Fundamentals of social and legal knowledge  Space technologies in the service of the agro-industrial complex</p>
GPC -1	<p>The ability to determine the biological status and normative clinical indicators of organs and systems of the animal body.</p>	<p>Animal anatomy  Cytology, histology and embryology  Physiology and ethology of animals  Pathological physiology  Clinical diagnosis  Pathological anatomy  Instrumental diagnostic methods  Obstetrics, gynecology and andrology  Immunology  Clinical laboratory diagnostics</p>	<p>Veterinary and industrial laboratories with the basics of design  Bee diseases and entomophages  Fish pathology and aquaculture  Anesthesiology, intensive care and intensive care</p>
GPC-3	<p>The ability to carry out and improve professional activities in accordance with regulatory legal acts</p>	<p>Jurisprudence  Life safety  Breeding with the basics of private animal</p>	<p>Organization of state veterinary supervision  Veterinary and</p>

	in the field of agro-industrial complex.	<p>husbandry</p> <p>Veterinary</p> <p>Pharmacology</p> <p>Toxicology</p> <p>Parasitology and invasive diseases</p> <p>Epizootology and infectious diseases</p> <p>Organization of veterinary business</p> <p>General and veterinary ecology</p> <p>Veterinary sanitation</p> <p>Technology of processing livestock products</p> <p>Veterinary deontology</p> <p>Economics and organization of agricultural production</p>	<p>industrial laboratories with the basics of design</p> <p>Career</p> <p>Management</p> <p>Fundamentals of social and legal knowledge</p>
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.	<p>Inorganic and analytical chemistry</p> <p>Organic Chemistry</p> <p>Biological physics</p> <p>Computer science</p> <p>Physical and colloidal chemistry</p> <p>Cytology, histology and embryology</p> <p>Biological chemistry</p> <p>Veterinary microbiology and mycology</p> <p>Virology and biotechnology</p> <p>Physiology and ethology of animals</p> <p>Breeding with the basics of private animal husbandry</p> <p>Pathological physiology</p> <p>Veterinary Radiobiology</p> <p>Clinical diagnosis</p> <p>Pathological anatomy</p> <p>Operative surgery with topographic anatomy</p> <p>Instrumental diagnostic methods</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 Ophthalmology</p> <p>Animal Dentistry</p>



		<p>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</p>	
GPC -5	<p>The ability to draw up special documentation, analyze the results of professional activity and submit accounting documents using specialized databases.</p>	<p>Veterinary genetics  Computer science  Breeding with the basics of private animal husbandry  Clinical diagnosis  Pathological anatomy  Operative surgery with topographic anatomy  Instrumental diagnostic methods  Obstetrics, gynecology and andrology  Internal non-infectious diseases  Parasitology and invasive diseases  Epizootology and infectious diseases  Veterinary and sanitary</p>	<p>Organization of state veterinary supervision  Veterinary and industrial laboratories with the basics of design  Anesthesiology, intensive care and intensive care  Dermatology  Cardiology  Endocrinology  Nephrology</p>

		<p>examination  Organization of veterinary business  Forensic veterinary examination and autopsy of animals  Veterinary deontology  Economics and organization of agricultural production  Clinical laboratory diagnostics</p>	
GPC -6	<p>The ability to analyze, identify and assess the risk of the risk of the occurrence and spread of diseases.</p>	<p>Biology with the basics of ecology  Life safety  Veterinary microbiology and mycology  Virology and biotechnology  Animal health and welfare  Feeding animals with the basics of feed production  Veterinary Radiobiology  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  Veterinary and sanitary examination  Organization of veterinary business  Forensic veterinary examination and</p>	<p>Organization of state veterinary supervision  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  Veterinary Ophthalmology  Animal Dentistry</p>

		autopsy of animals Introduction to the specialty General and veterinary ecology Veterinary sanitation Technology of processing livestock products Medicinal and poisonous plants Forage plants Animal Health Clinical laboratory diagnostics	
GPC -7	He is able to understand the principles of modern information technologies and use them to solve the tasks of professional activity.	Computer science Instrumental diagnostic methods Organization of veterinary business Mathematics Fundamentals of intellectual work Clinical laboratory diagnostics	Veterinary and industrial laboratories with the basics of design Anesthesiology, intensive care and intensive care Dermatology Cardiology Endocrinology Nephrology Reconstructive and reconstructive surgery
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 Physiology and ethology of animals Pathological physiology Clinical diagnosis Pathological anatomy Instrumental diagnostic methods Toxicology Obstetrics, gynecology	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

		<p>and andrology  Internal non-infectious diseases  General surgery  Private Veterinary surgery  Parasitology and invasive diseases  Epizootology and infectious diseases  Immunology  Veterinary deontology  Clinical laboratory diagnostics</p>	<p>intensive care  Dermatology  Cardiology  Endocrinology  Nephrology  Reconstructive and reconstructive surgery  Veterinary  Ophthalmology  Animal Dentistry</p>
PC -4	<p>The ability to conduct clinical studies of animals using special (instrumental) and laboratory methods to clarify the diagnosis.</p>	<p>Animal anatomy  Biological physics  Cytology, histology and embryology  Biological chemistry  Veterinary microbiology and mycology  Virology and biotechnology  Physiology and ethology of animals  Pathological physiology  Clinical diagnosis  Pathological anatomy  Instrumental diagnostic methods  Obstetrics, gynecology and andrology  Internal non-infectious diseases  General surgery  Private Veterinary surgery  Parasitology and invasive diseases  Epizootology and infectious diseases  Clinical laboratory diagnostics</p>	<p>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 -19	<p>The ability to perform post-mortem diagnostic examination of animals in order to establish pathological processes,</p>	<p>Animal anatomy  Cytology, histology and embryology  Life safety  Pathological anatomy</p>	<p>Diseases of horses  Diseases of productive animals  Diseases of small pets</p>

	diseases, causes of death.	Toxicology Obstetrics, gynecology and andrology Internal non-infectious diseases General surgery Private Veterinary surgery Parasitology and invasive diseases Epizootology and infectious diseases Veterinary and sanitary examination Forensic veterinary examination and autopsy of animals Clinical laboratory diagnostics	Bee diseases and entomophages Fish pathology and aquaculture Diseases of exotic animals Dermatology Cardiology Endocrinology Nephrology Veterinary Ophthalmology Animal 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 antiepzootic measures.	Life safety Veterinary microbiology and mycology Virology and biotechnology Animal health and welfare Veterinary Pharmacology Private Veterinary surgery Parasitology and invasive diseases Epizootology and infectious diseases Organization of veterinary business General and veterinary ecology Veterinary sanitation Technology of processing livestock products Animal Health	Organization of state veterinary supervision Bee diseases and entomophages Fish pathology and aquaculture

#### 4. COURSE WORKLOAD AND TRAINING ACTIVITIES

Course workload of the discipline "**Laboratory diagnostics of infectious and invasive diseases**" is 2 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			
			7	-	-	-
Contact academic hours		36	36	-	-	-
including						
Lectures		-	-	-	-	-
Lab work		36	36	-	-	-
Seminars (workshops/tutorials)		-	-	-	-	-
Self-study		28	28	-	-	-
Evaluation and assessment (exam/pass/fail grading)		8	8	-	-	-
<b>Course workload</b>	Academic hour	<b>72</b>	<b>72</b>	-	-	-
	Credit unit	<b>2</b>	<b>2</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			
			7	-	-	-
Contact academic hours		18	18	-	-	-
including						
Lectures		-	-	-	-	-
Lab work		-	-	-	-	-
Seminars (workshops/tutorials)		18	18	-	-	-
Self-study		80	80	-	-	-
Evaluation and assessment (exam/pass/fail grading)		10	10	-	-	-
<b>Course workload</b>	Academic hour	<b>108</b>	<b>108</b>	-	-	-
	Credit unit	<b>3</b>	<b>3</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. Introduction	Topic 1.1. Objects and methods of laboratory research.	Lab work.
Section 2. Blood testing	Topic 2.1. Rules for collecting material from different types of animals.	Lab work.

	Topic 2.2. Principles of construction of the scheme and algorithm of research. General clinical blood test.	Lab work.
	Topic 2.3. General principles of calculus of shaped blood elements. Counting red blood cells.	Lab work.
	Topic 2.4. White blood cell count. Elimination of the leukocyte formula.	Lab work.
	Topic 2.5. Methods for determining hemoglobin.	Lab work.
	Topic 2.6. Obtaining defibrinated blood plasma, serum.	Lab work.
	Topic 2.7. Determination of erythrocyte sedimentation rate (ESR).	Lab work.
	Topic 2.8. Biochemical blood analysis.	Lab work.
Section 3. Laboratory diagnostics of the isolation system. Urine analysis.	Topic 3.1. Rules for collecting material from different types of animals.	Lab work.
	Topic 3.2. Principles of construction of the scheme and algorithm of research.	Lab work.
	Topic 3.3. Research of kidney functions, physico-chemical properties of urine.	Lab work.
	Topic 3.4. General clinical analysis of urine.	Lab work.
	Topic 3.5. Biochemical analysis of urine.	Lab work.
	Topic 3.6. Preparation of a smear.	Lab work.
	Topic 3.7. Microscopy of urinary sediment. Uroliths.	Lab work.
Section 4. Laboratory diagnostics of the endocrine system.	Topic 4.1. Diagnosis of pathology of the endocrine glands (biochemical blood analysis).	Lab work.
Section 5. Laboratory diagnostics of the respiratory system.	Topic 5.1. Principles of sampling of punctate and biopsy.	Lab work.
	Topic 5.2. Laboratory examination of the material.	Lab work.
Section 6. Laboratory diagnostics of the digestive system.	Topic 6.1. Determination of the enzymatic activity of saliva.	Lab work.
	Topic 6.2. Study of gastric secretion.	Lab work.
	Topic 6.3. Determination of acidity and enzymatic activity of gastric juice.	Lab work.
	Topic 6.4. Coprology. Rules of sampling and laboratory examination of feces.	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>
Laboratory	An auditorium for laboratory work, individual consultations, routine monitoring and interim certification, equipped with a set of specialized furniture and equipment.	- <i>Biochemical analyzer of blood, urine and hematological analyzer of blood (ILAB 650, PCE 90VET, etc.).</i>
Seminary	An auditorium for conducting seminar-type classes, group and individual consultations, ongoing monitoring and interim certification, equipped with a set of specialized furniture and multimedia presentation equipment.	- <i>Biochemical analyzer of blood, urine and hematological analyzer of blood (ILAB 650, PCE 90VET, etc.).</i>
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. Usha Boris Veniaminovich. Clinical diagnostics of internal non-infectious animal diseases / B.V. Usha, I.M. Belyakov, R.P. Pushkarev. - Electronic text data. - St. Petersburg : Quadro, 2020. - 487 p.
2. Fundamentals of infectious diagnostics: textbook / V.V. Makarov, D.A. Lozovoy, V.I. Belousov, A.K. Petrov. - Vladimir : FGBI "VNIIZH", 2019. - 137 p.

*Additional Reading:*



1. Handbook of veterinary therapist [Electronic resource] / G.G. Shcherbakov [et al.]; Under the general ed. of G.G. Shcherbakov. - 5th ed., ispr. and add. - St. Petersburg : Publishing House "Lan", 2009. - 656 p. [http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn\\_FindDoc&id=465300&idb=0](http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=465300&idb=0)
2. Korobov Alexander Vasilyevich. New instruments, devices and scientific and technological developments in the field of clinical veterinary therapy by Professor Korobov. Internal non-infectious diseases of animals [Text] : Textbook (monograph) / A.V. Korobov. - M. : Greenlight, 2008. - 48 p.
3. Methods of veterinary clinical laboratory diagnostics [Text] : Handbook / I.P. Kondrakhin [et al.]; Edited by I.P.Kondrakhin. - M. : KolosS, 2004. - 520 p.

*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 "**Laboratory diagnostics of infectious and invasive diseases**".
2. Laboratory workshop on the discipline "**Laboratory diagnostics of infectious and invasive diseases**".

\* - 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 "**Laboratory diagnostics of infectious and invasive diseases**" 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:

Professor of the Department of Veterinary Medicine

Position, Basic curriculum

Vatnikov Yu.A.

Signature

Full name.

### HEAD OF THE DEPARTMENT:

Department of Veterinary Medicine

Name Basic Curriculum

Signature

Vatnikov Yu.A.

Full name.

**HEAD OF THE HIGHER EDUCATION PROGRAM:**

Director of the Department of Veterinary Medicine

Position, Basic curriculum

Signature

Vatnikov Yu.A.

Full name