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**Federal State Autonomous Educational Institution of Higher Education  
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA  
RUDN University**

**Agrarian and Technological Institute**

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educational division (faculty/institute/academy) as higher education programme developer

**COURSE SYLLABUS**

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**Laboratory Diagnostics of Infectious and Invasive Diseases**

course title

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**Recommended by the Didactic Council for the Education Field of:**

**36.05.01 Veterinary**

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field of studies / speciality code and title

**The course instruction is implemented within the professional education programme of higher education:**

**Veterinary**

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higher education programme profile/specialisation title

## 1. GOALS AND OBJECTIVES OF THE COURSE

The aim of mastering the course "**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 courses 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 LEARNING OUTCOMES

The implementation of the course "**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 course (results of the development of the course)*

Competence code	Competence descriptor	Indicators of competence accomplishment (within the course)
GPC-1	Able to determine the biological status and normative clinical indicators of animal organs and systems	GPC-1.3 Can determine the main indicators of the activity 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, how to perform laboratory research, interpretation of research results.
GPC-4	Is able to use in professional activity methods to solve problems using modern equipment in the development of new technologies and use modern professional methodology to conduct experimental research and interpretation of the 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

## 3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course "**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 courses and /or practices that contribute to achieving the planned results of mastering the course "**Laboratory diagnostics of infectious and invasive diseases**".

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

<b>Competence code</b>	<b>Competence descriptor</b>	<b>Previous courses/modules, internships*</b>	<b>Subsequent courses/modules, internships*</b>
GPC-1	Able to determine the biological status and normative clinical indicators of animal organs and systems	Clinical diagnostics Clinical laboratory diagnostics	Study practice Clinical internship Industrial practice Academic research practice with the preparation of a scientific qualification project Preparation for and passing the state exam
GPC-4	Is able to use in professional activity methods to solve problems using modern equipment in the development of new technologies and use modern professional methodology to conduct experimental research and interpretation of the results	Inorganic and analytical chemistry Organic chemistry Biological physics Physical and Colloidal Chemistry Biological chemistry Maths Immunology	Veterinary and industrial laboratories with design basics Study practice Clinical internship Industrial practice Academic research practice with the preparation of a scientific qualification project Preparation for and passing the state exam

#### **4. COURSE WORKLOAD AND TRAINING ACTIVITIES**

Course workload of the course "**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*

<b>Types of academic activities</b>	<b>HOURS</b>	<b>Semesters</b>
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		<b>7</b>	-	-	-
Contact academic hours	34	34	-	-	-
including					
Lectures	-	-	-	-	-
Lab work	34	34	-	-	-
Seminars (workshops/tutorials)	-	-	-	-	-
Self-study	24	24	-	-	-
Evaluation and assessment (exam/pass/fail grading)	14	14	-	-	-
<b>Course workload</b>	Academic hour	<b>72</b>	<b>72</b>	-	-
	Credit unit	<b>2</b>	<b>2</b>	-	-

## 5. COURSE CONTENTS

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

<b>Modules</b>	<b>Content of the modules (topics)</b>	<b>Types of academic activities</b>
Module 1. Introduction	Topic 1.1. Objects and methods of laboratory research.	Lab work.
Module 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.
Module 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.
Module 4. Laboratory diagnostics of the endocrine system.	Topic 4.1. Diagnosis of pathology of the endocrine glands (biochemical blood analysis).	Lab work.
Module 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.
Module 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. COURSE EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 6.1. Material and technical support of the course

<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 course (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.	-
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## 7. RESOURCES RECOMMENDED FOR COURSE STUDIES

### *Main readings:*

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 Readings:*

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.

### *Internet sources*

1. Electronic libraries (EL) of RUDN University and other institutions, to which university students have access on the basis of concluded agreements:

- RUDN Electronic Library System (RUDN ELS) <http://lib.rudn.ru/MegaPro/Web>
- EL "University Library Online" <http://www.biblioclub.ru>
- EL "Yurayt" <http://www.biblio-online.ru>
- EL "Student Consultant" [www.studentlibrary.ru](http://www.studentlibrary.ru)
- EL "Lan" <http://e.lanbook.com/>
- EL "Trinity Bridge"

### *2. Databases and search engines:*

- electronic foundation of legal and normative-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 course/ module\*:

1. A course of lectures on the course "**Laboratory diagnostics of infectious and invasive diseases**".

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

\* - The training toolkit and guidelines for the internship are placed on the internship page in the university telecommunication training and information system under the set procedure.

**8. ASSESSMENT TOOLKIT AND GRADING SYSTEM\* FOR EVALUATION OF STUDENTS' COMPETENCES LEVEL AS COURSE RESULTS**

The assessment toolkit and the grading system\* to evaluate the level of competences (competences in part) formation as the course results are specified in the Appendix to the course syllabus.

\* The assessment toolkit and the grading system are formed on the basis of the requirements of the relevant local normative act of RUDN University (regulations / order).

**DEVELOPER:**

Associate Professor, Department of Veterinary  
Medicine

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Position, Basic curriculum

Signature

Karamyan A.S.

\_\_\_\_\_  
Full name.

**HEAD OF EDUCATIONAL DEPARTMENT:**

Department of Veterinary Medicine

\_\_\_\_\_  
Name Basic Curriculum

Signature

Vatnikov Yu.A.

\_\_\_\_\_  
Full name.

**HEAD OF  
HIGHER EDUCATION PROGRAMME:**

Director of the Department of Veterinary Medicine

\_\_\_\_\_  
Position, Basic curriculum

Signature

Vatnikov Yu.A.

\_\_\_\_\_  
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