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

Agrarian and Technological Institute

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

COURSE SYLLABUS

Clinical laboratory diagnostics

course title

Recommended by the Didactic Council for the Education Field of:

36.05.01 Veterinary

field of studies / speciality code and title

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

36.05.01 Veterinary

higher education programme profile/specialisation title

1. COURSE GOAL(s)

The goal of the course "**Clinical laboratory diagnostics**" is to develop 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 LEARNING OUTCOMES

Mastering the course "**Clinical laboratory diagnostics**" 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 discipline)

Competence code	**Competence descriptor**	**Indicators of competence accomplishment** (within the discipline)
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.
PC-4	Ability to perform necessary laboratory diagnostics as part of preventive or diagnostic activities.	PC-4.1 Knows modern methods of laboratory diagnosis, their purpose, peculiarities of pre-analytics and interpretation of results.
		PC-4.2 Selects the appropriate type of laboratory diagnosis for the task at hand, taking into account knowledge of basic biological disciplines.
		PC-4.3 Can conduct laboratory tests using modern diagnostic equipment.
		PC-4.4 Interprets the results of diagnostics and uses them to solve the assigned task.

3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course refers to the core/variable/*elective** component of (B1) block of the higher educational programme curriculum.

* - Underline whatever applicable.

Within the higher education programme students also master other (modules) and / or internships that contribute to the achievement of the expected learning outcomes as results of the course study.

Table 3.1. The list of the higher education programme components/disciplines that contribute to the achievement of the expected learning outcomes as the course study results

Competence code	**Competence descriptor**	**Previous courses/modules, internships***	**Subsequent courses/modules, internships***
GPC-1	Able to determine the biological status and normative clinical indicators of animal organs and systems	Clinical diagnostics	Laboratory diagnostics of infectious and invasive diseases Study practice Clinical internship Industrial practice Academic research practice with the preparation of a scientific qualification project Preparation for and passing the state exam
PC-4	Ability to perform necessary laboratory diagnostics as part of preventive or diagnostic activities.	Biology with the basics of ecology Cytology, Histology and Embryology	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 ACADEMIC ACTIVITIES

The total workload of the course «**Clinical laboratory diagnostics**" is 2 credits.

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

Type of academic activities	**Total academic hours**	**Semesters/training modules**			
		7	**-**	**-**	**-**
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	-	-	-
Course workload	academic hours_	**72**	**72**	-	-	-
	credits	**2**	**2**	-	-	-

5. COURSE CONTENTS

Table 5.1. Course contents and academic activities types

Course module title	Course module contents (topics)	Academic activities types
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.	Lab work.
	Topic 2.3 General clinical blood test.	Lab work.
	Topic 2.4. General principles of calculus of shaped blood elements. Counting red blood cells.	Lab work.
	Topic 2.5. White blood cell count. Elimination of the leukocyte formula.	Lab work.
	Topic 2.6. Methods for determining hemoglobin.	Lab work.
	Topic 2.7. Obtaining defibrinated blood plasma, serum.	Lab work.
	Topic 2.8. Determination of erythrocyte sedimentation rate (ESR).	Lab work.
Module 3. Laboratory diagnostics of the isolation system. Urine analysis.	Topic 3.1. Biochemical blood analysis.	Lab work.
	Topic 3.2. Rules for collecting material from different types of animals.	Lab work.
	Topic 3.3. Principles of construction of the scheme and algorithm of research.	Lab work.
	Topic 3.4. Investigation of kidney functions, physico-chemical properties of urine.	Lab work.
	Topic 3.5. General clinical analysis of urine.	Lab work.
	Topic 3.6. Biochemical analysis of urine.	Lab work.

	Topic 3.7. Preparation of a smear.	Lab work.
Module 4. Laboratory diagnostics of the endocrine system.	Topic 4.1. Microscopy of urinary sediment. Uroliths.	Lab work.
Module 5. Laboratory diagnostics of the respiratory system.	Topic 5.1 Diagnosis of pathology of the endocrine glands (biochemical blood analysis).	Lab work.
	Topic 5.2. Principles of sampling of punctate and biopsy.	Lab work.
Module 6. Laboratory diagnostics of the digestive system.	Topic 6.1. Laboratory examination of the material.	Lab work.
	Topic 6.2 Determination of the enzymatic activity of saliva.	Lab work.
	Topic 6.3 Study of gastric secretion.	Lab work.
	Topic 6.4 Determination of acidity and enzymatic activity of gastric juice.	Lab work.

6. CLASSROOM EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 6.1. Classroom equipment and technology support requirements

Type of academic activities	**Classroom equipment**	**Specialised educational / laboratory equipment, software, and materials for course study** (if necessary)
Lab work	An auditorium for laboratory work, individual consultations, routine monitoring and interim certification, equipped with a set of specialized furniture and equipment.	- *Biochemical analyzer of blood, urine and hematological analyzer of blood (ILAB 650, PCE 90VET, etc.)*
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. RESOURCES RECOMMENDED FOR COURSE STUDIES

Main readings:

1. 1. Laboratory diagnostics of viral diseases of animals [Electronic resource] : Textbook / Comp. P.I. Baryshnikov, V.V. Razumovskaya. - 2nd ed., ispr. ; Electronic text data. - St.

Petersburg : Lan, 2015. - 672 p. http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=452257&idb=0
2. Ivanov A.A. Clinical laboratory diagnostics [Electronic resource] : Textbook / A.A. Ivanov. - St. Petersburg : Publishing House "Lan", 2017. - 432 p. http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=465014&idb=0
3. 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. : http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=487452&idb=0

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
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
- 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/

*Training toolkit for self- studies to master the course *:*

1. The set of lectures on the course "**Clinical laboratory diagnostics**".
2. Laboratory workshop on the course "**Clinical laboratory diagnostics**".

* The training toolkit for self- studies to master the course is placed on the course 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 UPON COURSE COMPLETION

The assessment toolkit and the grading system* to evaluate the competences formation level (competences in part) upon the course study completion 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:

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Position, Basic curriculum	Signature	Full name.

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