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

WORKING COURSE SYLLABUS

Veterinary and industrial laboratories with design basics

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 "**Veterinary and industrial laboratories with design basics**" is to acquire theoretical knowledge and practical skills in organizing the work of veterinary and industrial laboratories.

2. REQUIREMENTS FOR THE RESULTS OF MASTERING THE DISCIPLINE

The development of the discipline "**Veterinary and industrial laboratories with design basics**" 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 -2	The ability to manage a project at all stages of its life cycle.	UK-2.1 Formulates a problem, the solution of which is directly related to the achievement of the project goal;
		UK -2.2 Defines the links between the tasks set and the expected results of their solution;
		UK -2.3 Within the framework of the tasks set, determines the available resources and restrictions, the current legal norms;
		UK -2.4 Analyzes the schedule for the implementation of the project as a whole and chooses the best way to solve the tasks, based on the current legal norms and available resources and limitations;
		UK -2.5 Monitors the progress of the project, adjusts the schedule in accordance with the results of the control.
UK-10	The ability to make informed economic decisions in various areas of life.	UK -10.1 Understands the basic principles of the functioning of the economy and economic development, the goals of the form of state participation in the economy;
		UK -10.2 Applies methods of personal economic and financial planning to achieve current and long-term financial goals;
		UK -10.3 Uses financial instruments to manage personal finances (personal budget), controls its own economic and financial risks.
UK -12	The ability to search for the necessary sources of information and data, to	UK -12.1 Searches for the necessary sources of information and data, perceives, analyzes, remembers and transmits

	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.	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; 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 -5	The ability to draw up special documentation, analyze the results of professional activity and submit accounting documents using specialized databases.	GPC-5.1 Has the skills to search for the necessary forms of documentation on official websites and in specialized databases; GPC-5.2 Possesses professional terminology and skills in filling out

		analytical and reporting documents of a professional orientation;
		GPC-5.3 He is able to use specialized software to analyze the results of professional activity and compile accounting documentation.
GPC -7	He is able to understand the principles of modern information technologies and use them to solve the tasks of professional activity.	GPC-7.1 Understands the principles of modern computer technology and telecommunications and is able to use them to solve professional problems;
		GPC-7.2 Uses modern special software and specialized databases to solve professional tasks and perform official duties;
		GPC-7.3 Has the skills to work on modern medical diagnostic and therapeutic equipment with software;
		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.

3. COURSE IN HIGHER EDUCATION

The discipline "**Veterinary and industrial laboratories with design basics**" 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 "**Veterinary and industrial laboratories with design basics**".

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 -2	The ability to manage a project at all stages of its life cycle.	Philosophy Organization of veterinary affairs Maths Introduction to the specialty Fundamentals of Economics and Management Veterinary deontology Economics and organization of agricultural production The basics of intellectual work Personality psychology and professional self-determination	Career management Space technologies at the service of the agro-industrial complex
UK-10	The ability to make informed economic decisions in various areas of life.	Veterinary and sanitary examination Organization of veterinary affairs Maths Fundamentals of Economics and Management Economics and organization of agricultural production	-
UK -12	The ability to search for the necessary sources of information and data, to perceive, analyze,	Law science Computer science Philosophy Life safety	Biometrics in veterinary medicine Basics of social and legal knowledge

	<p>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>Instrumental diagnostic methods Organization of veterinary affairs Forensic veterinary examination and dissection of animals Maths Veterinary deontology Medicinal and poisonous plants The basics of intellectual work Personality psychology and professional self-determination Clinical laboratory diagnostics Laboratory diagnostics of infectious and invasive diseases Organization of state veterinary supervision</p>	<p>Space technologies at 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 diagnostics Pathological anatomy Instrumental diagnostic methods Obstetrics, gynecology and andrology Immunology Clinical laboratory diagnostics Laboratory diagnostics of</p>	<p>Diseases of bees and entomophages Fish pathology and aquaculture Anesthesiology, resuscitation and intensive care</p>

		infectious and invasive diseases	
GPC-3	The ability to carry out and improve professional activities in accordance with regulatory legal acts in the field of agro-industrial complex.	<p>Law science Life safety Breeding with the basics of private animal husbandry Veterinary pharmacology Toxicology Parasitology and invasive diseases Epizootology and infectious diseases Organization of veterinary affairs General and Veterinary Ecology Veterinary sanitation Processing technology for livestock products Veterinary deontology Economics and organization of agricultural production Laboratory diagnostics of infectious and invasive diseases Organization of state veterinary supervision</p>	<p>Career management Basics of social and legal knowledge</p>
GPC -5	The ability to draw up special documentation, analyze the results of professional activity and submit accounting documents using specialized databases.	<p>Veterinary genetics Computer science Breeding with the basics of private animal husbandry Clinical diagnostics Pathological anatomy Operative surgery with topographic anatomy</p>	<p>Anesthesiology, resuscitation and intensive care Dermatology Cardiology Endocrinology Nephrology</p>

		<p>Instrumental diagnostic methods Obstetrics, gynecology and andrology Internal diseases Parasitology and invasive diseases Epizootology and infectious diseases Veterinary and sanitary examination Organization of veterinary affairs Forensic veterinary examination and dissection of animals Veterinary deontology Economics and organization of agricultural production Clinical laboratory diagnostics Laboratory diagnostics of infectious and invasive diseases Organization of state veterinary supervision</p>	
GPC -7	<p>He is able to understand the principles of modern information technologies and use them to solve the tasks of professional activity.</p>	<p>Computer science Instrumental diagnostic methods Organization of veterinary affairs Maths The basics of intellectual work Clinical laboratory diagnostics Laboratory diagnostics of infectious and invasive diseases</p>	<p>Anesthesiology, resuscitation and intensive care Dermatology Cardiology Endocrinology Nephrology Reconstructive surgery</p>

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 diagnostics Pathological anatomy Instrumental diagnostic methods Toxicology Obstetrics, gynecology and andrology Internal diseases General surgery Private Veterinary Surgery Parasitology and invasive diseases Epizootology and infectious diseases Immunology Veterinary deontology Clinical laboratory diagnostics Laboratory diagnostics of infectious and invasive diseases	Horse diseases Diseases of Productive Animals Diseases of small pets Болезни мелких домашних животных Diseases of bees and entomophages Fish pathology and aquaculture Diseases of exotic animals Anesthesiology, resuscitation and intensive care Dermatology Cardiology Endocrinology Nephrology Reconstructive surgery Veterinary ophthalmology Animal Dentistry
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4. COURSE WORKLOAD AND TRAINING ACTIVITIES

Course workload of the discipline "**Veterinary and industrial laboratories with design basics**" 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				
			9	-	-	-	
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	-	-	-	
Course workload		Academic hour	72	72	-	-	-
		Credit unit	2	2	-	-	-

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				
			9	-	-	-	
Contact academic hours		18	18	-	-	-	
including							
Lectures		-	-	-	-	-	
Lab work		18	18	-	-	-	
Seminars (workshops/tutorials)		-	-	-	-	-	
Self-study		48	48	-	-	-	
Evaluation and assessment (exam/pass/fail grading)		6	6	-	-	-	
Course workload		Academic hour	72	72	-	-	-
		Credit unit	2	2	-	-	-

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. Planning and placement of veterinary laboratories. Equipment sheet.	Topic 1.1. Standards GOST, TU, SanPiN, NTP APK and others for laboratories of veterinary and sanitary examination. The norms of the RD APK.	Lab work

	Recommendations for the design and operation of veterinary laboratories. SanPiN 2.2.1 2.1.1.1200-03 Sanitary protection zones and sanitary classification of enterprises, structures and other facilities.	
Section 2. Working with laboratory animals.	Topic 2.1. Sanitary and epidemiological requirements for the device, equipment and maintenance of EBC (vivariums). Veterinary and sanitary rules for keeping and using laboratory animals.	Lab work
Section 3. Safety precautions when working in laboratories. Sample selection.	Topic 3.1. SP 1.3.3118-13 Safety of work with microorganisms of I - II groups of pathogenicity (danger). SP 1.3.2322-08 Safety of work with microorganisms of III-IV pathogenicity groups SP 2.6.1.2612-10 Basic sanitary rules for ensuring radiation safety PND F 12.13.1-03 Methodical recommendations. Safety precautions when working in analytical laboratories general provisions. Safety precautions for disinfection in laboratories of veterinary and sanitary examination. Rules for working with samples.	Lab work
Section 4. Accreditation of testing laboratories.	Topic 4.1. Federal Law of 28.12.2013 N 412-FZ rev. from 03/02/2016 About accreditation in the national accreditation system. GOST R 51000.4-2011. National standard of the Russian Federation. General requirements for the accreditation of testing laboratories. GOST ISO IEC 17025-2009. Interstate standard. General requirements for the competence of testing and calibration laboratories. GOST 33044-2014 OECD GLP Good Laboratory Practice Principles.	Lab work
Section 5. Production laboratory of veterinary and sanitary examination at the enterprise.	Topic 5.1. Placement of laboratories. Laboratory structure. Veterinary and sanitary requirements for the premises and equipment of the production laboratory for veterinary and sanitary examination. Tasks and functions of the production laboratory for veterinary and	Lab work

	sanitary examination. Responsibilities of the specialists of the production laboratory of veterinary and sanitary examination.	
Section 6. State Laboratory of Veterinary and Sanitary Expertise (SLVSE) in the food market.	Topic 6.1. Regulations on the state laboratory of veterinary and sanitary examination in food markets. Tasks and functions of SLVSE. SLVSE structure. Job responsibilities of employees of SLVSE. Basic regulations for SLVSE workers in food markets. Mobile laboratory for veterinary and sanitary examination for fairs and agricultural exhibitions.	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>	Specialized educational/laboratory equipment, software and materials for the development of the discipline (if necessary)
Laboratory	An auditorium for laboratory work, individual consultations, routine monitoring and interim certification, equipped with a set of specialized furniture and equipment.	-
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. Production activity of veterinary sanitary examination laboratories at meat-processing enterprises and food markets: textbook / I.G. Seregin, T.V. Kurmakaeva, V.E. Nikitchenko [and others]. - Electronic text data. - St. Petersburg: Quadro, 2018 .-- 408 p. - (Textbooks and teaching aids for higher educational institutions).

Additional Reading:

1. Usha B.V. Laboratory methods in veterinary and sanitary examination of food raw materials and finished products [Text / electronic resource]: Textbook: In 2 hours. Part 1 / BV. Usha, D.V. Nikitchenko. - Electronic text data. - M.: Publishing house of RUDN, 2013 .-- 252 p. - ISBN 978-5-209-04291-4 http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=402978&idb=0
2. Nikitin I.N. Organization and economics of veterinary affairs [Electronic resource]: Textbook / IN. Nikitin. - 6th ed., Rev. and add. - SPb. : Publishing house "Lan", 2014. - (Textbooks for universities. Special literature). - ISBN 978-5-8114-1609-7.
3. Nikitin IN Organization of veterinary business [Electronic resource]: Textbook / IN. Nikitin. - 4th ed., Rev. and add. - SPb. : Publishing house "Lan", 2013. - 288 p. - (Textbooks for universities. Special literature). - ISBN 978-5-8114-1228-0. http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=465224&idb=0
4. Veterinary and sanitary examination of food raw materials and finished products. Laboratory methods [Text]: Tutorial. - M.: Publishing house of RUDN, 2016 .-- 225 p. - ISBN 978-5-209-07445-8

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
- 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 "**Veterinary and industrial laboratories with design basics**".
2. Laboratory workshop on the discipline "**Veterinary and industrial laboratories with design basics**".

* - 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 "**Veterinary and industrial laboratories with design basics**" 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 Department of Veterinary
Medicine

Position, Basic curriculum

Signature

Drukovsky S.G.

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

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