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**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

General and Veterinary Ecology

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. GOALS AND OBJECTIVES OF THE COURSE

The aim of mastering the course "**General and Veterinary Ecology**" is to form students' environmental thinking, improve environmental literacy, familiarity with the real environmental situation in the country. The objectives of the course - to form an understanding of the essence of modern environmental problems, the causes of the negative impacts of industrial activities on natural complexes and components.

2. REQUIREMENTS FOR LEARNING OUTCOMES

The implementation of the course "**General and Veterinary Ecology**" 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)
GC-8	Is able to create and maintain safe living conditions in everyday life and professional activities to preserve the natural environment, ensure the sustainable development of society, including the threat and emergence of emergencies and military conflicts	GC-8.1 Analyzes factors of harmful influence on the life activity of elements of the environment (technical means, technological processes, materials, buildings and constructions, natural and social phenomena);
GPC-2	Is able 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 Have knowledge of the influence of natural, socio-economic, genetic and economic factors on the animal body.

3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course "**General and Veterinary Ecology**" 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 courses and /or practices that contribute to achieving the planned results of mastering the course "**General and Veterinary Ecology**".

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

Competence code	Competence descriptor	Previous courses/modules,	Subsequent courses/modules,
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		internships*	internships*
GC-8	Is able to create and maintain safe living conditions in everyday life and professional activities to preserve the natural environment, ensure the sustainable development of society, including the threat and emergence of emergencies and military conflicts	Basics of Professional Ethics Inorganic and analytical chemistry Organic chemistry Biological physics Life safety Veterinary Microbiology and Mycology Virology and biotechnology Veterinary radiobiology	Study practice Preparation for and passing the state exam
GPC-2	Is able 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	Biology with the basics of ecology Veterinary genetics Breeding with the basics of private animal husbandry Animal health and welfare Feeding animals with the basics of forage production	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 "**General and Veterinary Ecology**" 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			
		5	-	-	-
Contact academic hours	34	34	-	-	-
including					
Lectures	-	-	-	-	-
Lab work	-	-	-	-	-
Seminars (workshops/tutorials)	34	34	-	-	-
Self-study	22	22	-	-	-
Evaluation and assessment (exam/pass/fail grading)	16	16	-	-	-
Course workload	Academic hour	72	72	-	-
	Credit unit	2	2	-	-

5. COURSE CONTENTS

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

Modules	Content of the modules (topics)	Types of academic activities
Module 1. General Ecology	Topic 1.1. The subject, tasks and structure of modern ecology. The subject of ecology, its structure, the tasks of ecology. History of the development of ecology as a science. The importance of environmental education at the present time. The main environmental problems of our time.	Seminar classes
	Topic 1.2 Outecology. The organism as a living holistic system. Levels of biological organization and ecology. Development of the organism as a living holistic system. The system of organisms and the Earth's biota. Concept of environmental factors. Classification. Abiotic factors. Biotic factors. Anthropogenic factors. Man's extermination of wild species. Concept of limiting factors. Adaptation of organisms to environmental factors. Life forms of organisms. Classification of life forms. Basic habitats. Water environment. Problem of fresh water scarcity. Terrestrial-air environment. Soil environment. Living organisms as habitat. Ecological features of parasites.	Seminar classes
	Topic 1.3. Demecology. Population approach. The place of the population in the general structure of biological systems. Characteristics of populations. Dynamics of populations. Interactions between populations. Competition as a mechanism of emergence of ecological diversity. Predator-prey relationships.	Seminar classes
	Topic 1.4. Synecology (biocenology). The concept of biocenosis. Species structure of biocenosis. Spatial structure of biocenosis. Trophic structure of biocoenosis. Mechanisms of maintaining spatial structure. Random, uniform and aggregative distribution of individuals. Ecological	Seminar classes

	<p>niche. General characteristics of ecological relationships. Types of relationships.</p>	
	<p>Topic 1.5 Biogeocenology. The concept of ecosystem. Features of natural ecosystems. Dynamics of ecosystems. Ecological successions. Natural ecosystems of the Earth as chronological units of the biosphere. Classification of natural systems of the biosphere on a landscape basis. Terrestrial biomes. Freshwater ecosystems. Marine ecosystems. Integrity of the biosphere as a global ecosystem. Anthropogenic ecosystems. Man and ecosystems. Agricultural ecosystems and their features. Industrial and urban ecosystems.</p>	<p>Seminar classes</p>
	<p>Topic 1.6. Biospherology. The biosphere as one of the Earth's envelopes. Composition and boundaries of the biosphere. Structure of the biosphere. Living matter of the biosphere. Circulation of substances in nature. Biogeochemical cycles of the most vital biogenic substances. Main directions of the biosphere evolution. V.I. Vernadsky's teaching about biosphere. Biological diversity as the basis for the biosphere's stability. Biosphere evolution. Noosphere as a new stage of biosphere's development. Laws of biogenic migration of atoms and irreversibility of evolution, laws of ecology.</p>	<p>Seminar classes</p>
	<p>Topic 1.7. anthropogenic impact and environmental protection measures. Natural resources. Classification of natural resources. Natural resource potential. Natural resource management. Rational use of natural resources. Classification of anthropogenic impacts. Concept of pollution. Forms of pollution. Sources of pollution. Consequences of pollution. Control of pollution. Composition of human environment. Laws of man-nature</p>	<p>Seminar classes</p>

	relations. Ways of solving environmental problems. Rational extraction and processing of natural mineral resources. Preservation and restoration of vegetation. Conservation and use of fauna. Red books. Specially protected natural areas.	
	Topic 1.8 Environmental standards and regulations. The goals and objectives of environmental standards. The principles of environmental standardization. Norms of the quality of the environment. MPC. MPL. MPE. Methodological features of hygienic standardization	Seminar classes
	Topic 1.9 Environmental monitoring and control. Monitoring: the concept and types. Environmental control.	Seminar classes
	Topic 1.10. Resources of living things as an environmental factor. Resources of living things. Classification of resources. Ecological significance of irreplaceable resources. Ecological significance of food resources.	Seminar classes
Module 2. Veterinary ecology	Topic 2.1. The use and protection of the agricultural landscape. Microflora of the post office. Interaction of pathogenic bacteria with protozoa. The system of integrated nature protection measures on the territory of the farm.	Seminar classes
	Topic 2.2. Parasitism, pathogenicity and parasitic systems. Self-regulation of parasitic systems. The regulation of the number of pathogens in natural ecosystems. Classification of infectious diseases in connection with environmental factors.	Seminar classes
	Topic 2.3 Ecology of microorganisms causing infectious diseases and conditionally pathogenic microflora.	Seminar classes
	Topic 2.4. Ecological aspects of invasive diseases	Seminar classes
	Topic 2.5. Gas-air emissions from livestock and poultry farms. Air microflora. The role of sanitary protection bottoms. Identification of pollutants in the air.	Seminar classes

	Topic 2.6. Hydrotreatment facilities of livestock and residential areas.	Seminar classes
	Topic 2.7. Utilization and decontamination of manure. Biological waste of animal origin. Manure decontamination. Disposal of biological waste.	Seminar classes
	Topic 2.8. State veterinary supervision for the safety of livestock products. Microflora of milk, meat and livestock products. Ecological certification of livestock and poultry farms.	Seminar classes

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>	Specialized educational/laboratory equipment, software and materials for the development of the course (if necessary)
Lecture	An auditorium for conducting lecture-type classes, equipped with a set of specialized furniture; a board (screen) and technical means of multimedia presentations.	-
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. Mosina L.V. Ecology (modular course) : textbook for higher educational institutions of agronomic and agrotechnological profile / L.V. Mosina, E.A. Dovletyarova. - Moscow : PFUR, 2020. - 121 c.
2. Mitina N.N. Ecology : textbook and practical work for academic baccalaureate / N.N. Mitina, B.M. Malashenkov; Ed. by V.I. Danilov-Danilyan. - M. : Yurite, 2018. - 363c.
3. Sakhno NV, Timokhin OV, Vatnikov SA, Tutkyshbay IA Fundamentals of general and veterinary ecology. Technogenic diseases of animals: a training manual / Ed. by N.V. Sakhno. - Sb.: Publishing house "Lan", 2017. - 372 c.

Additional Readings:

1. Kislenko V.N. General and veterinary ecology : textbook / V.N. Kislenko, N.A. Kalinenko. - Moscow : INFRA-M, 2020. - 344 c.
2. Potapov A.D. Ecology. - Moscow : High School, 2000.
3. Polischuk Y.M. General Ecology. - Khanty-Mansiysk: Publishing house of YuGU, 2004.
4. General ecology: textbook for high schools / author-compiler A.S. Stepanovskikh. - COMPILED BY A.S. STEPANOVSKIKH. M.: UNITY-DANA, 2000. - 510 c.
5. Reimers N.F. Nature Management: Dictionary-Reference Book. - Moscow: Mysl, 1990. - 637 c.
6. Ecology, Nature Conservation, Ecological Safety: Textbook / edited by A.T. Nikitin and S.A. Stepanov. MEPU, 2000.

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/](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 "**General and Veterinary Ecology**".
2. Seminary workshop on the course "**General and Veterinary Ecology**".

* - 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:

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Khairova N.I.

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Position, Basic curriculum

Signature

Full name.

HEAD OF EDUCATIONAL DEPARTMENT:

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