PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA NAMED AFTER PATRICE LUMUMBA

Institute of Environmental Engineering

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

COURSE SYLLABUS

Applied Ecology

course title

Recommended by the Didactic Council for the Education Field of:

44.04.02 "Psychological and pedagogical education"

field of studies / speciality code and title

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

Environmental pedagogy

higher education programme profile/specialisation title

1. COURSE GOALS

The course goal is to form theoretical knowledge and practical competencies in the field of applied ecology: the study, protection, reproduction of natural resources and prevention of environmental problems

2. LEARNING OUTCOMES

The mastering of the discipline "Прикладная экология/ Applied Ecology" is aimed at the formation of the following competencies (parts of competencies) in students:

Table 2.1. List of competencies formed by students during the development of the discipline (LEARNING OUTCOMES)

Code	Competence	Indicators of competence achievement (within the framework of this discipline)
GC-1	Able to carry out a critical analysis of problem situations based on a systematic approach, to develop a strategy of actions	**GC-1.1.** Knows how to solve problematic problems and identify their components and connections between them
		GC-1.2 Is able to search for solutions to a problem problem based on available and reliable sources of information
		GC-1.3 Has a strategy for solving a problem situation based on systemic and interdisciplinary approaches
GC-2	Able to manage the project at all stages of its life cycle	**GC-2.1** Formulates a project task based on the problem posed and a way to solve it through the implementation of project management
		GC-2.2 Develops a project concept within the framework of the designated problem (in the chosen professional field): formulates the purpose, objectives, substantiates the relevance, significance (scientific, practical, methodological and other, depending on the type of project), expected results and possible areas of their application
		GC-2.3 Develops a project implementation plan using planning tools; develops and analyzes alternative project options to achieve the intended results
		GC-2.4 Plans the necessary resources, including taking into account their interchangeability
GC-6	He is able to determine and implement the priorities of his own activities and ways to improve it on the basis of self-assessment	**GC-6.1** Able to analyze large amounts of information of professional content
		GC-6.2 Capable of analyzing, synthesizing and optimizing solutions to assigned tasks
GPC-2	Able to design basic and additional educational programs and develop scientific and methodological support for their implementation	**GPC-2.1** Knows the principles, methods and approaches to the design of basic and additional educational programs, the main approaches to the development of scientific and methodological support for the implementation of programs
		GPC-2.2 Is able to develop target, content and organizational sections of the main and additional educational programs of the educational process; develop

Code	Competence	Indicators of competence achievement (within the framework of this discipline)
		elements of the content of programs and carry out their selection taking into account the planned educational results; select elements of the content of programs, determine the principles of their continuity, determine the planned educational results; develop scientific and methodological support for the implementation of programs
		GPC-2.3 Is able to develop targeted, substantive and organizational sections of basic and additional educational programs taking into account the planned educational results; to design basic and additional educational programs taking into account the planned educational results; to select and structure the content of basic and additional educational programs; develops scientific and methodological support for the implementation of basic and additional educational programs
GPC-8	Able to design pedagogical activities based on special scientific knowledge and research results	**GPC-8.1** Knows the modern methodology of pedagogical design, the state and trends in the development of international and domestic pedagogical research; methodology and technology of designing pedagogical activities, the content and results of research in the field of pedagogical design
		GPC-8.2 He is able to identify and systematize the main ideas and results of international and domestic pedagogical research; apply modern scientific knowledge and materials of pedagogical research in the process of pedagogical design; determine the purpose and objectives of designing pedagogical activities based on the conditions of the pedagogical situation; evaluate the pedagogical situation and determine pedagogical tasks, use the principles of the project approach in the implementation of pedagogical activities
		GPC-8.3 Is able to use modern scientific knowledge and the results of pedagogical research in pedagogical design; independently determine the pedagogical task and design the pedagogical process to solve it; choose methods of pedagogical design taking into account the given conditions of the pedagogical process; analyze and adjust the simulated pedagogical project taking into account scientific developments
PC-2	He is able to design and implement the educational process in natural sciences according to the programs of basic general, secondary general education and additional, including vocational education	**PC-2.1** He is able to design the educational process in natural sciences according to the programs of basic general, secondary general education and additional, including vocational education

3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The discipline "Applied ecology" refers to Compulsory Disciplines of the Higher Education Program.

Within the framework of the higher education program, students also master other disciplines and/or practices that contribute to expected learning outcomes of the discipline "Applied ecology ".

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

Code	**Competence**	Previous Disciplines (Modules)	Subsequent Disciplines (Modules)
GC-1	Able to carry out a critical analysis of problem situations based on a systematic approach, to develop a strategy of actions	International collaboration in invironmental protection	Research Methods of Environmental Pedagogy and Psychology Computer Technologies in Education Environmental Ethics Environmental Didactics Green Economy and Sustainability Assessment Tools
GC-2	Able to manage the project at all stages of its life cycle		Research Methods of Environmental Pedagogy and Psychology Computer Technologies in Education Environmental Didactics Green Economy and Sustainability Assessment Tools
GC-6	Is able to determine and implement the priorities of his own activities and ways to improve it on the basis of self-assessment		Environmental Education Research Methods of Environmental Pedagogy and Psychology Environmental Culture: Genesis and Modern Issues Computer Technologies in Education Fundamentals of Environmental Science Social Ecology Environmental Ethics Concept of Environmental Pedagogy Concept of Environmental Psychology Psychology of Environmental Behaviour Environmental Didactics Fundamentals of Biodiversity Humanitarian Ecology Environmental Phylosopy Sustainable Development in the Context of Environmental Culture

Code	Competence	Previous Disciplines (Modules)	Subsequent Disciplines (Modules)
			Green Economy and Sustainability Assessment Tools Psychology of Environmental Consciousness Psychology of Environmental Perception and Emotions
GPC-2	Able to design basic and additional educational programs and develop scientific and methodological support for their implementation		Fundamentals of Environmental Science Social Ecology Concept of Environmental Pedagogy Concept of Environmental Psychology Environmental Didactics Fundamentals of Biodiversity Sustainable Development in the Context of Environmental Culture Green Economy and Sustainability Assessment Tools
GPC-8	Able to design pedagogical activities based on special scientific knowledge and research results		Fundamentals of Environmental Science Social Ecology Concept of Environmental Pedagogy Concept of Environmental Psychology Psychology of Environmental Behavior Environmental Didactics Fundamentals of Biodiversity Sustainable Development in the Context of Environmental Culture Green Economy and Sustainability Assessment Tools Psychology of Environmental Consciousness Psychology of Environmental Perception and Emotions
ПК-2 **РС-2**	He is able to design and implement the educational process in natural sciences according to the programs of basic general, secondary general education and additional, including vocational education		Environmental Culture: Genesis and Modern Issues Computer Technologies in Education Fundamentals of Environmental Science Social Ecology Environmental Ethics Psychology of Environmental Behaviour Environmental Didactics Fundamentals of Biodiversity Humanitarian Ecology

Code	Competence	Previous Disciplines (Modules)	Subsequent Disciplines (Modules)
			Environmental Phylosopy Sustainable Development in the Context of Environmental Culture Green Economy and Sustainability Assessment Tools Psychology of Environmental Consciousness Psychology of Environmental Perception and Emotions

4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

Workload of the course «Applied ecology» is 4 ECTS.

Table 4.1. Types of academic activities during the period of the HE program mastering

Types of academic activities		TOTAL	Semesters			
			1	2	3	4
Contact academic hours		*10*				
Incl.:						
Lectures		5				
Lab work		0				
Seminars		5				
Self-study		*128*				
Evaluation and assessment		*6*				
Total workload	Ac.hours	**144**	**144**			
	ECTS	**4**	**4**			

5. COURSE CONTENTS

Table 5.1. The content of the discipline (module) by type of academic work

Name of the discipline section	Content of the section (topics)	Type of academic activity*
1. Global environmental problems	The laws of the relationship between nature and man. Modern environmental problems as a consequence of violation of the law of nature management	Lectures, Seminars
2. Natural resources, their study, use and conservation	Natural resources and their types. Economic and environmental assessment of natural resources. Resource cost estimation.	Lectures, Seminars
3. Environmental problems of nature management and solutions	Industrial nature management. Environmental problems of the mining industry and their solution. Environmental problems of energy sector and their solution.	Lectures, Seminars

	Environmental problems of agriculture and their solution Civil engineering and green building	
4. Mechanisms of nature management	State regulation of environmental management. Economic methods of regulation. Information methods of environmental management and solving environmental problems. Elimination of accumulated harm. Application of the best available technologies.	Lectures, Seminars

6. CLASSROOM EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 6.1. Classroom equipment and technology support requirements

Classroom for Academic Activity Type	**CLASSROOM EQUIPMENT**	**Specialized learning, laboratory equipment, software and materials for the mastering the course**
Lecture	An auditorium for conducting lecture-type classes, equipped with a set of specialized furniture; a board (screen) and technical means of multimedia presentations.	-
Seminars	Classroom, equipped with a set of specialized furniture; whiteboard; a set of devices includes portable multimedia projector, laptop, projection screen, Stable wireless Internet connection. Software: Microsoft Windows, MS Office / Office 365, MS Teams, Chrome (latest stable release), Skype	-
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. Huang C. Y. et al. Introduction to ecology. – 2018.
2. Benjaminsen T. A., Svarstad H. Political ecology: A critical engagement with global environmental issues. – Springer Nature, 2021.

Additional sources:

1. Currie D. J. Where Newton might have taken ecology //Global Ecology and Biogeography. – 2019. – Т. 28. – №. 1. – С. 18-27.
2. Riisgård H. U. General Ecology. – 2018.
3. Хаустов А.П., РединаМ.М. Environmental standards and norms. Экологические стандарты и нормы. Учебное пособие – М.: Мир науки, 2020. – Сетевое издание. Режим доступа: https://izdmn.com/PDF/47MNNPU20.pdf – Загл. с экрана.

Internet-sources:

1. Electronic library system of the RUDN and third-party electronic library systems, to which university students have access on the basis of concluded contracts:

- electronic library system of the RUDN University http://lib.rudn.ru/MegaPro/Web
- electronic library system «Университетская библиотека онлайн» http://www.biblioclub.ru
- electronic library system Юрайт http://www.biblio-online.ru
- electronic library system «Консультант студента» www.studentlibrary.ru
- electronic library system «Лань» http://e.lanbook.com/
- electronic library system «Троицкий мост»

2. Databases and search engines:

- electronic fund of legal and regulatory and technical documentation http://docs.cntd.ru/
- Yandex search engine https://www.yandex.ru/
- Google search engine 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 "Applied ecology".

* - 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 AND EVALUATION TOOLKIT

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" Applied ecology" are presented in the Appendix to this Work Program of the discipline.

* - evaluation toolkit and ranking system are formed on the basis of the requirements of the relevant local regulatory act of the RUDN (regulations / order).

DEVELOPER:

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Position, Department	Signature	Name
HEAD OF THE DEPARTMENT: Head of the Department of Environmental Safety and Product Quality Management		**Savenkova E.V.**
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HEAD OF THE HIGHER EDUCATION PROGRAM: Assoc. Professor of the Department of Environmental Safety and Product Quality Management		**Zakirova Yu.L.**
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