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

Institute of Environmental Engineering

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

COURSE SYLLABUS

Environmental rationing

course title

Recommended by the Didactic Council for the Education Field of:

05.04.06 Ecology and nature management; 08.04.01 Construction

field of studies / speciality code and title

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

Environmental engineering in construction

higher education programme profile/specialisation title

2024 г

1. COURSE GOALS

The course goal is to form students' systematic ideas about the theoretical and methodological foundations of environmental regulation; about the role of environmental regulation as the main tool for environmental protection; about current trends in the development of the environmental regulatory framework and its implementation, about the role of environmental regulation as a basis for effective environmental management and the formation of a sustainable economy; about approaches to the harmonization of standards and current trends in the development of domestic environmental standards, as well as the development of skills in the development of environmental standards and assessments of the sustainability of natural complexes, skills in the application of environmental standards in organizational, management and design and production activities.

2. LEARNING OUTCOMES

The mastering of the discipline " Environmental rationing " 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)
GPC 4 ₃	Able to apply regulatory legal acts and norms of professional ethics in the field of ecology and nature management	GPC 4_{3.1} Is well versed on the modern system of regulatory and legal support for engineering and environmental surveys and environmental impact assessment of urban agglomerations
		GPC 4_{3.2} Knows the international practice of development and harmonization, as well as the application of environmental standards
		GPC 4_{3.3} Has the skills to analyze the need for environmental protection measures based on the application of environmental standards, the skills to select and apply indicators for environmental expertise and forms of environmental control based on environmental standards
PC 4	Capable of developing design solutions and measures to ensure the safety of industrial and civil construction facilities	PC 4.1 Capable of developing standard environmental protection measures, monitoring the state of the environment to ensure the safety of industrial and civil construction facilities
		PC 4.2 Has the skills of environmental design and preparation of special documentation at the pre-project stage of the project life cycle
		PC 4.3 Capable of carrying out the necessary calculations for planning, modeling and forecasting the development of a territorial object

3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The discipline "Environmental rationing" 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 "Environmental rationing".

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

Code	Competence	Previous Disciplines (Modules)	Subsequent Disciplines (Modules)
GPC 4 ³	Able to apply regulatory legal acts and norms of professional ethics in the field of ecology and nature management	Regulation System in Construction	Industrial practice
PC 4	Able to apply regulatory legal acts in the field of ecology and nature management, norms of professional ethics.	Project management Theoretical foundations and design methods of pipeline systems for water supply and sanitation Regional and municipal waste management systems Dynamics of environmental systems Applied scientific research	Pre-graduate practice

4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

Workload of the course «Environmental rationing» is 6 ECTS.

Table 4.1 Types of academic activities during the period of the HE program mastering (for the full-time students)

Types of academic activities	TOTAL	Semesters			
		1	2	3	4
<i>Contact academic hours</i>	34			34	
Incl.:					
Lectures	17			17	
Lab work					
Seminars	17			17	
<i>Self-study</i>	157			157	
<i>Evaluation and assessment</i>	25			25	
Total workload	Ac.hours	216		216	
	ECTS	6		6	

Table 4.3 Types of academic activities during the period of the HE program mastering (for the extramural form of study)

Types of academic activities	TOTAL	Semesters			
		1	2	3	4
Contact academic hours	8			34	
Incl.:					
Lectures	4			4	
Lab work					
Seminars	4			4	
Self-study	204			204	
Evaluation and assessment	4			4	
Total workload	Ac.hours	216		216	
	ECTS	6		6	

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. Environmental rationing in the system of nature management	Environmental norms and standards as nature management tools. The role of environmental regulation in ensuring the sustainable development of ecological and economic systems. The combination of environmental management tools and the effectiveness of their use.	(L,S)
2. Theoretic basics of Environmental rationing	Concepts of sustainability. Types of stability of natural systems. Factors affecting the body, reactions of organisms and ecosystems to impacts	(L,S)
3. International cooperation in the field of environmental regulation	Environmental obligations of Russia. Harmonization of standards. The main directions of development of the domestic system of environmental regulation.	(L,S)
4. Harmonization of environmental regulations in the field of impacts on the atmosphere	The domestic system of rationing in the field of assessing the quality and use of atmospheric resources: basic principles and approaches. Current documents and prospects for modernization.	(L,S)
5. Harmonization of environmental regulations in the field of impacts on surface waters	The domestic system of rationing in the field of assessing the quality and use of resources of the surface hydrosphere: basic principles and approaches. Current documents and prospects for modernization.	(L,S)
6. Harmonization of environmental regulations in the field of impacts on groundwater	Domestic rationing system in the field of assessing the quality and use of underground hydrosphere resources: basic principles and approaches. Current documents and prospects for modernization.	(L,S)

7. Harmonization of environmental standards in the field of impacts on soil and land resources	The domestic system of rationing in the field of assessing the quality and use of soil and land resources: basic principles and approaches. Current documents and prospects for modernization. Global trends	(L,S)
8. Harmonization of environmental regulations in the field of waste management	Harmonization projects (including specific waste categories). Domestic rationing system in the field of assessing the quality and use of underground hydrosphere resources: basic principles and approaches. Current documents and prospects for modernization. Specifics of waste rationing in construction.	(L,S)
9. Concept of the best available technologies	The concept of BAT. The register of the best technologies. Prospects for the application of rationing based on the best existing technologies in Russia. But in building and construction	(L,S)
10. Norms and regulations for management of specific pollutants	POPS, hydrocarbons, heavy metals. Domestic and foreign approaches to the regulation. Prospects for the modernization of domestic standards. Specific pollutants in construction.	(L,S)
11. Environmental regulation and economics	Environmental regulations and standards as a basis for the development of economic methods of nature management regulation.	(L,S)
12. Environmental regulation and environmental design. Green standards	Environmental rationing and environmental design. Consideration of environmental regulations and standards in projects. Green standards.	(L,S)

* - filled in only for full-time education: L - lectures; LW - laboratory work; S - 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	-

Classroom for Academic Activity Type	CLASSROOM EQUIPMENT	Specialized learning, laboratory equipment, software and materials for the mastering the course
	access to an electronic information and educational environment.	

7. RECOMMENDED SOURCES FOR COURSE STUDIES

Main reading:

1. Khaustov A. P., Redina M. M. Environmental rationing. – 2020. URL: <https://izd-mn.com/PDF/47MNNPU20.pdf>.

Additional sources:

1. DEVELOPMENT AND INTERNATIONAL ECONOMIC CO-OPERATION: ENVIRONMENT. Report of the World Commission on Environment and Development. URL: <http://upload.wikimedia.org/wikisource/en/d/d7/Our-common-future.pdf>
2. REPORT OF THE UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT (Rio de Janeiro, 3-14 June 1992). URL: <https://www.un.org/documents/ga/conf151/aconf15126-3annex3.htm>
3. Shaker, R.R. (2015). The spatial distribution of development in Europe and its underlying sustainability correlations. *Applied Geography*, 63, 304-314.
4. SUSTAINABLE DEVELOPMENT KNOWLEDGE PLATFORM. URL: <https://sustainabledevelopment.un.org>.

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/>
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*Educational and methodological materials for independent work of students during the development of the discipline/ module *:*

1. A course of lectures on the discipline "Прикладная экология/ 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 "Environmental rationing" 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:

Consulting Professor of the
Department of Environmental
Safety and Product Quality
Management

Position, Department



Signature

Khaustov A.P.

Name

HEAD OF THE DEPARTMENT:

Head of the Department of
Environmental Safety and
Product Quality Management

Department



Signature

Savenkova E.V.

Name

HEAD OF THE HIGHER EDUCATION PROGRAM:

Head of the Department of Nature
Management

Position, Department



Signature

Kucher D.E.

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