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**PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA**  
**NAMED AFTER PATRICE LUMUMBA**  
**Institute of Environmental Engineering**

(наименование основного учебного подразделения (ОУП)-разработчика ОП ВО)

## **COURSE SYLLABUS**

### **MANAGEMENT OF ENVIRONMENTAL-ECONOMIC RISKS**

(наименование дисциплины/модуля)

#### **Recommended by the Methodological Council for the Education Field:**

**05.04.06 Ecology and nature management**

(код и наименование направления подготовки/специальности)

#### **The discipline is mastered within the framework of the main professional higher education program:**

**Economics of natural resources management**

(наименование (профиль/специализация) ОП ВО)

## 1. COURSE GOALS

The course goal is to familiarize students with the main criteria, indicators and methods of qualitative and quantitative assessment of natural resources.

Tasks:

- familiarization with the criteria and indicators for the quantitative assessment of resources;
- familiarization with the criteria and indicators for the qualitative assessment of resources;
- familiarization with the role of natural resources in environmental management;
- familiarization with the techniques and methods of qualitative and quantitative assessment of natural resources.

## 2. LEARNING OUTCOMES

The mastering of the discipline " Management of environmental-economic risks" 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 -2	Able to manage the project at all stages of its life cycle	GC -2.1 able to formulate a project task based on the problem posed and the way to solve it
		GC-2.2 able to develop a project concept, formulates a goal, tasks, justifies the relevance, expected results and scope of their application
		GC-2.3 knows how to develop a project implementation plan taking into account possible risks, plans the necessary resources
GPC -4	Able to apply regulatory legal acts and norms of professional ethics in the field of ecology and nature management.	GPC -4.1 Knows the basics of environmental regulation and the basics of legislation in the field of nature management
		GPC -4.2 Knows how to use and apply regulatory legal acts in the field of ecology and nature management
		GPC -4.3 Able to use the norms of professional ethics in their professional activities
SPC-5	Able to develop standard environmental measures and assess the impact of planned facilities or other forms of economic activity on the environment	SPC-5.1 Able to develop and plan the implementation of standard environmental measures, taking into account international practice and the requirements of national legislation
		SPC-5.2. Has the skills to assess the impact of planned structures or other forms of economic activity on the environment

## 3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The discipline "Management of environmental-economic risks" 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 " Management of environmental-economic risks ".

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

<b>Code</b>	<b>Competence</b>	<b>Previous Disciplines (Modules)</b>	<b>Subsequent Disciplines (Modules)</b>
<b>GC -2</b>	Able to manage the project at all stages of its life cycle		Management of natural resources / Менеджмент природных ресурсов Industrial nature management and economics / Промышленное природопользование и экономика Modern remediation technologies / Современные технологии ремедиации Management of energy resources / Менеджмент ресурсов энергетики Базовая компонента Учебная практика / Educational practice Производственная практика / Production practice Научно-исследовательская работа / Research work НИР / Research work Преддипломная практика / Pre-graduate practice
<b>GPC -4</b>	Able to apply regulatory legal acts and norms of professional ethics in the field of ecology and nature management.	Estimations of natural resources / Оценки природных ресурсов	Management of natural resources / Менеджмент природных ресурсов Учебная практика / Educational practice Производственная практика / Production practice Научно-исследовательская работа / Research work НИР / Research work Преддипломная практика / Pre-graduate practice
<b>SPC-5</b>	Able to develop standard environmental measures and assess the impact of planned facilities or other forms of economic activity on the environment		IT in ecology and natural resources management / Компьютерные технологии в управлении природопользованием Учебная практика / Educational practice Производственная практика / Production practice Научно-исследовательская работа / Research work НИР / Research work

Code	Competence	Previous Disciplines (Modules)	Subsequent Disciplines (Modules)
			Преддипломная практика / Pre-graduate practice Защита ВКР / Protection of the final qualifying work

#### 4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

Workload of the course «Management of environmental-economic risks» is 3 ECTS.

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

Вид учебной работы	TOTAL	Semesters			
		1	2	3	4
<i>Contact academic hours</i>	34			34	
Incl.:					
Lectures					
Lab work					
Seminars	34			34	
<i>Self-study</i>	26			26	
<i>Evaluation and assessment</i>	12			12	
<b>Total workload</b>	Ac.hours	<b>72</b>		<b>72</b>	
	ECTS	<b>2</b>		<b>2</b>	

#### 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*
Introduction	Ecology as a complex science direction. Stages of the development of the ecological knowledge and science. System of the ecological disciplines. Ecology and nature management. Ecology and sustainability	Lectures, Seminars
Concept of the nature (use) management	Main directions and types of nature management. Laws and rules in ecology. Modern ecological problems of nature management: environmental consequences of gaps in nature management.	Lectures, Seminars
Human ecology	Stages of human development as a biological species. Dependence on natural conditions and factors. Periods of the noosphere development	Lectures, Seminars
Crises in the history of mankind	Crises in the historical development: sources and consequences. Modern stage of the development: difficulties in the functioning of ecosystems. Demographic crisis. Social crisis. Energy crisis	Lectures, Seminars
Strategies for overcoming the environmental crisis	Sustainable development strategies and goals. Solving environmental and social problems. Solving the problems of resource availability. Modern ecological research.	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. Van Gestel C. A. M. et al. Environmental toxicology, an open online textbook. – 2019..
2. Koutsoyiannis D. Stochastics of Hydroclimatic Extremes–A Cool Look at Risk [Undergraduate textbook]. Athens: Kallipos, Open Academic Editions. – 2021.
3. Coolsaet B. (ed.). Environmental justice: key issues. – Routledge, 2020.

*Additional sources:*

- Ackermann T., Andersson G., Soder L. (2001): Distributed Generation: A Definition. In: *Electric Power System Research*, Vol. 57 (2001), pp. 195-204.
- Anderson W., White V., Finney A. (2010): ‘You just have to get by’: Coping with low incomes and cold homes. University of Bristol. <https://core.ac.uk/download/pdf/29025974.pdf>.
- Bashmakov (2009): Resource of energy efficiency in Russia: scale, costs, and benefits. *Energy Efficiency* 2, 369–386. [www.mdpi.com/journal/sustainability](http://www.mdpi.com/journal/sustainability). In: section 7.6.2 Climate Change 2014: Mitigation of Climate Change. Intergovernmental Panel on Climate Change. <http://www.ipcc.ch/report/ar5/wg3/>
- BlackRock (2017): *BlackRock. Black Rock Investment Stewardship engages on Climate Risk*. <https://www.blackrock.com/corporate/en-us/literature/market-commentary/how-blackrock-investment-stewardship-engages-on-climate-risk-march2017.pdf>

- Blok, K., Hofheinz, P., Kerkhoven, J. (2015): *The 2050 Energy Productivity and Economic Prosperity Index. How Efficiency Will Drive Growth, Create Jobs and Spread Wellbeing Throughout Society.* <https://www.ecofys.com/files/files/the-2015-energy-productivity-andeconomic-prosperity-index.pdf>
- Bloomberg New Energy Finance (2017): *New Energy Outlook 2017.* <https://about.bnef.com/new-energy-outlook/>
- Bondarak J. (2016): *Poland Coal Sector Update.* Presented at the Global Methane Initiative Coal Subcommittee Meeting 24 October 2016. [https://www.unece.org/fileadmin/DAM/energy/se/pp/coal/cmm/11cmm\\_gmi.cs\\_oct2016/4\\_GMI\\_Poland\\_coal.pdf](https://www.unece.org/fileadmin/DAM/energy/se/pp/coal/cmm/11cmm_gmi.cs_oct2016/4_GMI_Poland_coal.pdf)
- BPIE and i24c - Buildings Performance Institute Europe; Industrial Innovation for Competitiveness (2016): *Scaling up Deep Energy Renovation, Unleashing the Potential through Innovation and industrialization. Building Performance Institute of Europe and Industrial Innovation for Competitiveness.* <http://bpie.eu/publication/scaling-up-deep-energy-renovation/>
- Brunner K., Spitzerb M., Christanell A. (2012): *Experiencing fuel poverty. Coping strategies of low-income households in Vienna/Austria.* <http://www.sciencedirect.com/science/article/pii/S0301421511009748>

*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](http://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 "Estimations of natural resources ".

\* - 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 "Estimations of natural resources " 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:

Professor of the Department of  
Environmental Safety and  
Product Quality Management

Position, Department



Signature

**Redina M.M.**

Name

### HEAD OF THE DEPARTMENT:

Head of the Department of  
Environmental Safety and  
Product Quality Management

Department



Signature

**Savenkova E.V.**

Name

### HAED OF THE HIGHER EDUCATION PROGRAM:

Professor of the Department of  
Environmental Safety and  
Product Quality Management

Position, Department



Signature

**Redina M.M.**

Name