

*Federal State Autonomous Educational Institution of Higher Education*

*"Peoples' Friendship University of Russia"*

*Faculty of Ecology*

Recommended by the Methodological council  
on specialties and study directions

WORKING PROGRAM OF THE DISCIPLINE

Name of the discipline

**NATURAL AND INDUSTRIAL  
EMERGENCY SITUATIONS AND ACCIDENTS**

Recommended for the specialty/ direction

**05.04.06 Ecology and nature management**

Masters' program:

***Economics of natural resources management***

## 1. Goals and objectives of the discipline:

The purpose of the discipline is to familiarize students with the theoretical foundations of identification and management of prevention and elimination of the consequences of natural and industrial emergency situations and accidents.

The main tasks of the discipline are:

- familiarizing students with the basic approaches of the identification of the risk sources and consequences of natural and industrial emergency situations and accidents;
- familiarization of students with the main approaches to the elimination of the consequences of natural and industrial emergency situations and accidents.

## 2. Place of discipline in the structure of the educational program:

The discipline Environmental Management Standards refers to an optional part of block 2 of the curriculum.

Table No. 1 shows the previous and subsequent disciplines aimed at the formation of the discipline's competencies in accordance with the competence matrix of EP HE.

Table 1

### Previous and subsequent disciplines aimed at building competencies

Nr.	Code and name of competence	Preceding disciplines	Subsequent disciplines (groups of disciplines)
General professional competencies			-
1	GPC-3, 4, 6, 8		Natural resource management Economic valuation of natural resources Ecologic-economical aspects of environmental projects
Professional competencies (type of professional activity - research, control and expert, organizational and management)			
3	PC-3, 5	-	Research work

## 3. Requirements for the results of mastering the discipline:

The process of studying the discipline is aimed at the formation of the following competencies:

- the ability to carry out the organization and management of research and development and expert and analytical work using advanced knowledge in the field of environmental management; develop measures in the organization for economic regulation and personnel management in the field of environmental protection; planning, development, implementation and maintenance of functioning monitoring of the functioning and improvement of the OSMS; to apply in practice regulations in the field of environmental protection; work with federal information resources and information systems in the field of environmental protection, with statistical and reporting data (PC9).

(indicated in accordance with OS VO RUDN / FGOS VO)

As a result of studying the discipline, the student must:

Know: the legal basis for standardization, the structure and purpose of environmental management standards.

Be able to: develop basic documents for environmental management systems.

Possess: modern mathematical apparatus, computing facilities and basic mathematical knowledge.

#### 4. The scope of the discipline and types of educational work

The total labor intensity of the discipline	2 credits								
Type of educational work	Total hours	Semesters							
		1	2	3	4	5	6	7	8
<b>Classroom Lessons (total)</b>									
<b>Including:</b>									
<i>Lectures</i>	8	8					8		
<i>Practical lessons</i>	8	8					8		
<i>Seminars</i>	-								
<i>Laboratory work</i>	-								
<i>Independent work</i>	54								
Control	2								
The total labor intensity, hours.	72								
The total labor intensity, credits	2								

#### 5. Discipline content

##### 5.1 Contents of discipline sections

Discipline section name	Section content (topics)
1. Natural risks: types, sources	Environmental risks in the countries of the world. Natural disasters and their consequences
2. Technogenic risks: sources, types	Technogenic risks in the branches of the economy. Technogenic disasters and their consequences
3. Methodology of risk evaluation	Methodology of risk evaluation: regulations, estimation approaches
4. Risk management approaches	Main principles of risk management for the regulation of natural and technogenic risks: stages, regulations, problems
5. Praxis of risk management	Practical examples of risk management approaches for the regulation of natural and technogenic risks in the countries of the world

##### 5.2\* Sections of disciplines and types of classes

№ п/п	Discipline section name	Lectures	Practical lessons	Independent work	Total hours
1.	Natural risks: types, sources	2	0	10	12
2.	Technogenic risks: sources, types	2	2	10	14
3.	Methodology of risk evaluation	2	2	10	14
4.	Risk management approaches	2	2	10	14
5.	Praxis of risk management		2	12	12

#### 6. Laboratory workshop (if available) - NO

#### 7. Practical lessons; seminars

Nr	Discipline section	Subjects of practical classes (seminars)	Total hours
1.	Natural risks: types, sources	Natural disasters and their consequences	1

2.	Technogenic risks: sources, types	Technogenic disasters and their consequences	2
3	Methodology of risk evaluation	Methodology of risk evaluation: regulations, estimation approaches	2
4	Risk management approaches	Main principles of risk management for the regulation of natural and technogenic risks:	2
5	Praxis of risk management	Practical examples of risk management approaches	1

## 8. Material and technical base of the discipline:

An auditorium equipped with multimedia equipment and a personal computer with a standard package of office programs.

## 9. Information support of the discipline

*When studying the discipline, traditional information technologies are used to present the theoretical part of the material by the teacher (PowerPoint presentation).*

### a) Software

MSWindows; MSOffice

### b) databases, reference and search systems

www.mnr.gov.ru - site of the Ministry of Natural Resources of the Russian Federation;

http://rpn.gov.ru/ - Federal Service for Supervision in the Sphere of Natural Resources

(Rosprirodnadzor);

www.ecoindustry.ru - site of the journal "Production Ecology";

www.unep.org - site of the United Nations Environment Program;

www.wwf.ru - site of the World Wildlife Fund.

http://burondt.ru/ - website of the BAT Bureau - information on the introduction of standardization based on the best available technologies

http://www.mnr.gov.ru/activity/directions/zelenye\_standarty/zelenye\_standarty/?sphrase\_id=124597 - information on the development, application and implementation of "green standards"

http://www.mnr.gov.ru/activity/directions/natsionalnyy\_proekt\_ekologiya/ - information on the progress of the National Project "Ecology"

## 10. Literature

### Basic list

1. Khaustov A.P., Redina M.M. Rationing and reduction of environmental pollution. M.: Yurayt, 2017. -- 364 p. - Presented at the RUDN UNIBC and available on the website of the Yurayt publishing house at: [https://biblio-online.ru/viewer/normirovanie-i-snizhenie-zagryazneniya-okruzhayuschey-sredy-432790?share\\_image\\_id=#page/1](https://biblio-online.ru/viewer/normirovanie-i-snizhenie-zagryazneniya-okruzhayuschey-sredy-432790?share_image_id=#page/1)

2. Leikin Yu.A. "Fundamentals of environmental regulation: Textbook. M.: Publishing house "Forum", 2018

### Additional list

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>

### **11. Methodical instructions for students on mastering the discipline (module)**

Independent work of students includes:

- individual study of theoretical material on the subject of the course (links to information sources are presented in the previous sections);
- study of additional material;
- preparation of abstracts on the topics specified in the program.

11.1. Independent study of additional theoretical material is carried out by students on an individual basis; the list of recommended information sources is given above.

11.2. Requirements for writing abstracts

Academic ethics, respect for copyright. In the first lesson, students are informed about the need to comply with the norms of academic ethics and copyright during their studies. In particular, information is provided:

- general information about copyright;
- citation rules;
- link formatting rules

All footnotes in the text are carefully checked and provided with “addresses”. It is not permissible to include in your work excerpts from the works of other authors without indicating this, to retell someone else's work close to the text without referring to it, to use other people's ideas without indicating the primary sources. This also applies to sources found on the Internet. You must specify the full site address. All cases of plagiarism must be excluded. If unjustified and incorrect borrowings are identified, the abstract is not accepted.

When preparing written works, the following must be submitted without fail: work plan; a list of used literature, drawn up in accordance with the current rules for the bibliographic description of used sources.

For the preparation of the abstract, only special relevant sources should be used. In addition to abstracts, the subject of which is related to the dynamics of any phenomena over many years, or the historical development of scientific views on any problem, sources should be used for a period of no more than 10 years.

The prepared essay should be presented at one of the classes in agreement with the teacher. Use of PowerPoint presentations (or those prepared using similar licensed or free software) is encouraged, but not required. The approximate time of the presentation is up to 15 minutes. The structure of the report and additional requirements for the quality of materials are determined by the chosen topic and are additionally discussed with the teacher.

**12. Fund of appraisal funds for intermediate certification of students in the discipline (module)** (developed in accordance with the requirements of the "Regulations for the formation of funds of appraisal funds", approved by order of the rector dated 05.05.2016 No. 420).

**Department of Applied Ecology**

APPROVED

at the meeting of the department

August 28, 2019, minutes No. 1

Head of the Department

\_\_\_\_\_ М.М. Redina

(подпись)

# **VALUATION FUND**

## **ON THE EDUCATIONAL DISCIPLINE**

### **NATURAL AND INDUSTRIAL EMERGENCY SITUATIONS AND ACCIDENTS**

direction 05.04.05 "Ecology and nature management"

Program:

*Economics of natural resources management*

Qualification (degree) of the graduate –

*Master of Ecology and Nature Management*

## Passport of the fund of assessment tools by discipline

Direction 05.04.6 «Экология и природопользование»:

Discipline: Environmental statistics

Code Б1.В.05

### *12.1. Балльно-рейтинговая система оценки и характеристика шкалы оценивания Rating assessment system and characteristics of the assessment scale*

#### *Балльно-рейтинговая система оценки и характеристика шкалы оценивания*

Controlled competence code or part thereof Код контролируемой компетенции или ее части	Controlled discipline topic Контролируемая тема дисциплины	Forms of control ФОСы (формы контроля уровня освоения ООП)					Topic points Баллы темы
		Classroom work Аудиторная работа			Самостоятельная работа	Экзамен	
		Test / Тест	Test work Контрольная работа	Class work Работа на занятии	Report Доклад seminar report		
GPC-3, 4, 6, 8 PC-3, 5	1. Natural risks: types, sources	X		10			4
GPC-3, 4, 6, 8 PC-3, 5	2. Technogenic risks: sources, types	X		12			4
GPC-3, 4, 6, 8 PC-3, 5	3. Methodology of risk evaluation	X		12			6
GPC-3, 4, 6, 8 PC-3, 5	4. Risk management approaches	X		10			8
GPC-3, 4, 6, 8 PC-3, 5	5. Praxis of risk management	X		12			10
	<b>Exam Экзамен</b>		15	56	15	14	

12.2 The maximum number of credits in the course is 3. At the same time, the following ratio is established between the number of points and the number of credits:

#### Points to credits ratio

Total points	Final assessment	Amount of credits
91	5	3
91-100	5	3
86 - 91	5 (B)	3

71-85	4 (C)	2
61-70	3+ (D)	1
51 - 60	3 (E)	1
21 - 51	2 (FX)	0
<21	2 (F)	0

6. Deciphering of grades is also accepted according to the specified document:
7. - A: "Excellent" - the theoretical content of the course has been fully mastered, without gaps, the necessary practical skills for working with the material learned have been formed, all the educational tasks provided for by the training program have been completed, the quality of their implementation was assessed by the number of points close to the maximum.
8. - B: "Very good" - the theoretical content of the course is mastered completely, without gaps, the necessary practical skills of working with the acquired material are basically formed, all the educational tasks provided for by the training program are completed, the quality of most of them is assessed by the number of points close to the maximum ...
9. - C: "Good" - the theoretical content of the course has been mastered completely, without gaps, some practical skills of working with the mastered material are not sufficiently formed, all the educational tasks provided for by the training program have been completed, the quality of performance of none of them has not been assessed with a minimum number of points, some types of tasks have been completed with mistakes.
10. - D: "Satisfactory" - the theoretical content of the course is partially mastered. but the gaps are not significant, the necessary practical skills to work with the acquired material are basically formed, most of the educational tasks provided for in the training program have been completed, some of the completed tasks may contain errors.
11. - E: "Mediocre" - the theoretical content of the course is partially mastered, some practical skills have not been formed, many of the educational tasks provided for by the training program have not been completed, or the quality of some of them is assessed by the number of points close to the minimum.
- FX: "Conditionally unsatisfactory" - the theoretical content of the course has been partially mastered, the necessary practical skills have not been formed, most of the educational tasks provided for by the training program have not been completed, or the quality of their implementation was assessed by the number of points close to the minimum; with additional independent work on the course material, it is possible to improve the quality of completing educational tasks.
- F: "Certainly unsatisfactory" - the theoretical content of the course has not been mastered, the necessary practical skills are not formed, all the completed study tasks contain gross errors, additional independent work on the course material will not lead to any significant improvement in the quality of the study tasks.

### ***12.3 List of competencies and stages of their formation***

Nr.	Code and name of competence
	General professional competencies
3	OPK-3 Ability to use special and new sections of ecology, geocology and nature management in solving scientific research and applied problems of professional

	activity
4	OPK-4 Ability to apply normative legal acts in the field of ecology and nature management, norms of professional ethics
	OPK-5 Professional competencies (type of professional activity - research, control and expert, organizational and management)
	OPK-6 Professional competencies (type of professional activity - research, control and expert, organizational and management)
5	PC-3 the ability to monitor compliance with environmental protection requirements, conduct environmental expertise of various types of design assignments, carry out environmental audits of any facility and develop recommendations for preserving the natural environment; organize and carry out work with statistical and reporting data
	PC-5 the ability to monitor compliance with environmental protection requirements, conduct environmental expertise of various types of design assignments, carry out environmental audits of any facility and develop recommendations for preserving the natural environment; organize and carry out work with statistical and reporting data

***12.4. Typical control tasks or other materials necessary to assess knowledge, skills, skills and (or) experience of activities, characterizing the stages of the formation of competencies in the process of mastering the educational program***

***Questions to prepare for certification***

1. Give the classification of catastrophic situations
2. What are the main sources of risks of natural disasters and emergencies?
3. Name the main sources of risks of natural disasters and emergencies using the example of one of the industries.
4. Give the definition of an accident. How can these definitions differ across industries?
5. What are the main sources of statistical information on natural and man-made accidents in your country?
6. What methods are used to manage natural risks?
7. What methods are used to identify industrial safety risks?
8. What methods are used to quantitatively assess the risks of natural and man-made accidents and disasters?
9. Describe the state system for regulating the risks of natural and man-made accidents and disasters.
10. International collaboration in the prevention and elimination of the consequences of natural and man-made accidents and disasters

***12.4. Methodological materials defining the procedures for assessing knowledge, skills, and activity skills, characterizing the stages of the formation of competencies).***

The assessment of knowledge, skills and abilities is carried out using the components of the WCF presented in paragraphs. 12.1-12.34, in accordance with the sequence of acquisition of competencies indicated in table. p. 12.2.

The program is compiled in accordance with the requirements of the ES HE RUDN / FGOS HE.

**Developers:**

Professor of the Department of Applied Ecology

**подпись**

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инициалы>фамилия