

*Федеральное государственное автономное образовательное учреждение  
высшего образования «Российский университет дружбы народов»*

*Faculty of Ecology*

Recommended by the Methodological council  
on specialties and study directions

## WORKING PROGRAM OF THE DISCIPLINE

Name of the discipline

**INDUSTRIAL SAFETY**

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 mastering the discipline is to familiarize students with the industrial safety requirements established by Federal Laws and other regulatory legal acts of the Russian Federation on general issues of industrial safety, industrial safety in industries and with foreign regulatory practice.

The main tasks of mastering the discipline are:

- training in working with legislative documents and subordinate normative legal acts in the field of industrial safety;
- familiarization with approaches to the identification of hazardous production facilities for the purpose of compulsory insurance of civil liability for harm during their operation;
- training in the principles of licensing, certification of production expertise;
- familiarization with the procedure for conducting a technical investigation of the causes of accidents;
- familiarization with the methods of hazard and risk analysis and methods of risk management.

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

The discipline **Industrial safety** refers to the disciplines of the choice of block 1 of the curriculum.

Discipline Environmental regulation refers to the basic part of block 1 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)
Universal competencies			
1	UK-1 Able to search, critically analyze problem situations based on a systematic approach, develop an action strategy	-	
Professional competencies (type of professional activity - research, control and expert, organizational and management)			
2	PC-2 the ability to creatively use knowledge of fundamental and applied sections of special disciplines in production and technological activities	-	Occupational safety and health management systems Environmental risk management
3	PC-8 with the ability to monitor compliance with environmental protection requirements, conduct environmental expertise of various types of design assignments, carry out an environmental audit of any facility and develop recommendations for preserving the natural environment; organize and carry out work with statistical and reporting data		Системы управления профессиональной безопасностью и охраной труда Управление экологическими рисками

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

The process of studying the discipline is aimed at the formation of the following competencies (in accordance with the areas of activity: research, control and expert and organizational and managerial professional):

UK-1. Able to search, critically analyze problem situations based on a systematic approach, develop an action strategy

PC 2 - the ability to creatively use knowledge of fundamental and applied sections of special disciplines in industrial and technological activities;

PC 8 - the ability to monitor compliance with environmental protection requirements, conduct environmental expertise of various types of design assignments, carry out an environmental audit of any facility and develop recommendations for preserving the natural environment; organize and carry out work with statistical and reporting data.

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

Know: the theoretical basis for identifying risks in the field of industrial safety and their management; legal basis for ensuring industrial safety of hazardous facilities in the Russian Federation and the main international documents in this area; international practice of risk management in the field of industrial safety; the main approaches to the prevention and elimination of man-made emergencies at hazardous production facilities, procedures for the identification of hazardous production facilities and accident investigation.

To be able to: conduct a critical analysis of practical developments and research results on the listed issues; apply the obtained theoretical knowledge for planning, design, control and examination of projects to ensure the safe operation of hazardous production facilities; form the main sections of emergency response plans and oil spill response plans.

Possess: the skills of analyzing the choice of optimal methods for identifying risks in the field of industrial safety; skills in identifying hazardous industrial facilities.

#### 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>									
<i>Practical lessons</i>	18			18					
<i>Seminars</i>	-								
<i>Laboratory work</i>	-								
<i>Independent work</i>	52								
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. Introduction to Industrial Safety. Hazardous production facilities. Threats to industrial safety: accidents and emergencies.	Industrial safety concept. Russian legislation in the field of industrial safety. Relevance of industrial safety issues. Understanding of hazardous production facilities, their functioning and identification methods. Regulation of hazardous production facilities. International cooperation and foreign experience in industrial safety management. International documents in the field of industrial safety management. International organizations. Russia's commitments
2. State regulation in the field of industrial safety. Critical objects of the economy. International cooperation and	State bodies for ensuring industrial safety. Their functions and powers. Industrial safety management methods. Critical objects of the economy: methods of their identification and methods of ensuring their functioning. Normative base. Security

foreign experience in industrial safety management	techniques
3. Industrial safety risks. Emergency events and procedures for their investigation Software for risk analysis	Understanding the risks and dangers. Risk identification and management methods. Industrial safety insurance. Software for risk analysis at hazardous production facilities. Information Systems. Software complexes. Domestic and foreign practice
4. Planning and prevention of emergency situations at chemically hazardous facilities Planning and prevention of emergencies with oil spills	Planning and prevention of emergency situations at chemically hazardous facilities in Russia. PLAS formation: main sections, the order of their filling; procedures for approval and implementation of the plan. Russian and foreign practice Planning and prevention of emergencies with oil spills. Formation of OSRP: main sections, the order of their filling; procedures for approval and implementation of the plan. Major planning mistakes. Russian and foreign practice
5. Industrial safety declaration and examination of hazardous industrial facilities	Industrial safety declaration for hazardous industrial facilities. Industrial safety expertise. Normative base. Emergency events and procedures for their investigation. Normative base. Practical examples of accident investigation procedures

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

№ п/п	Discipline section name	Lectures	Practical lessons	Independent work	Total hours
1.	1. Introduction to Industrial Safety. Hazardous production facilities. Threats to industrial safety: accidents and emergencies.		2	10	12
2.	2. State regulation in the field of industrial safety. Critical objects of the economy. International cooperation and foreign experience in industrial safety management		4	10	14
3.	3. Industrial safety risks. Emergency events and procedures for their investigation Software for risk analysis at hazardous production facilities		4	10	14
4.	4. Planning and prevention of emergency situations at chemically hazardous facilities Planning and prevention of emergencies with oil spills		4	10	14
5.	5. Industrial safety declaration and examination of hazardous industrial facilities		4	12	14

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

### 7. Practical lessons; seminars

Discipline section	Subjects of practical classes (seminars)	Total hours
1. Introduction to Industrial Safety. Hazardous production facilities. Threats to industrial safety: accidents and emergencies.	Threats to industrial safety: accidents and emergencies: official state and companies' statistics	1
2. State regulation in the field of industrial safety. Critical objects of the economy. International cooperation and foreign experience in industrial safety management	State policy and state system of industrial safety regulation	2
3. Industrial safety risks. Emergency events and procedures for their investigation Software for risk analysis at hazardous production facilities	Evaluation of risks in the sphere of industrial safety	2
4. Planning and prevention of emergency situations at chemically hazardous facilities Planning and prevention of emergencies with oil spills	Analyses of consequences of accidental events in oil and gas industry: in chemical industry	2
5. Industrial safety declaration and examination of hazardous industrial facilities	Preparation of the industrial safety declaration	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 (Rospirodnadzor);

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/?sphere\_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

\_\_\_\_\_ M.M. Redina

(подпись)

# **VALUATION FUND**

**ON THE EDUCATIONAL DISCIPLINE**

**ENVIRONMENTAL NORMS AND REGULATIONS**

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

Шифр 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		
UC-1 PC-2, 8	1. Introduction to Industrial Safety. Hazardous production facilities. Threats to industrial safety: accidents and emergencies.	X		10		4
UC-1 PC-2, 8	2. State regulation in the field of industrial safety. Critical objects of the economy. International cooperation and foreign experience in industrial safety management	X		12		4
UC-1 PC-2, 8	3. Industrial safety risks. Emergency events and procedures for their investigation Software for risk analysis at hazardous production facilities	X		12		6
UC-1 PC-2, 8	4. Planning and prevention of emergency situations at chemically hazardous facilities Planning and prevention of emergencies with oil spills	X		10		8
UC-1 PC-2, 8	5. Industrial safety declaration and examination of hazardous industrial facilities	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**

<b>Total points</b>	<b>Final assessment</b>	<b>Amount of credits</b>
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
1	UK-1 Able to search, critically analyze problem situations based on a systematic approach, develop an action strategy
2	PC-2 the ability to creatively use knowledge of fundamental and applied sections of special disciplines in production and technological activities
3	PC-8 ability to monitor compliance with environmental protection requirements, conduct environmental expertise of various types of design assignments, carry out an environmental audit 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. The concept of industrial safety.
2. Russian legislation in the field of industrial safety
3. Causes and consequences of accidents in sectors of the economy: industry, transport, agriculture, infrastructure
4. Natural and technogenic risks and approaches to their minimization
5. The concept of critical objects of the economy: their identification and approaches to maintaining security
6. Hazardous industrial facilities: criteria for their identification, security
7. Planning for the containment and elimination of chemical accidents
8. Planning and response to emergency oil and oil products spills
9. Risk management in the field of industrial and environmental safety.
10. Modern software tools for analysis and risk management
11. Safety rules for the organization of work in industries
12. Integrated management systems for professional, industrial and environmental safety: experience of creation and development prospects
13. State regulation in the field of industrial safety
14. International obligations of Russia in the field of industrial safety.
15. The order of investigation of emergency situations at HIFs in Russia.
16. Environmental consequences of emergencies. Their preliminary assessment and methods of elimination.
18. Accounting and analysis of information on accidents in sectors of the economy.

#### ***Sample topics of presentations***

1. Russian legislation in the field of industrial safety.
2. Regulation of hazardous production facilities: practical examples by sectors of the national economy.
3. Critical analysis of information about accidents, emergencies and catastrophic events of natural and man-made origin.
4. Russian statistics in the field of emergency situations and industrial safety. Features of industrial accidents in various industries.
5. State bodies for ensuring industrial safety. Their functions and powers in foreign countries.
6. Understanding the risks and dangers. Risk identification and management methods.
7. Practice of insurance in the field of industrial safety.
8. Emergency events and procedures for their investigation.
9. Software for risk analysis at hazardous production facilities.

10. Analysis of risks in the field of industrial safety (on the example of emergencies in sectors of the economy).

***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:**

Head of the Department of Applied Ecology

**M.M. Redina**

**подпись**

**Head of the Department**

**applied ecology**

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**название кафедры**

**подпись**

**инициаль>фамилия**