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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

### **Industrial safety**

(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 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. LEARNING OUTCOMES

The mastering of the discipline "Industrial safety" 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 -2	Able to use special and new sections of ecology, geoecology and nature management in solving research and applied problems of professional activity.	<b>GPC -2.1</b> Knows the basics of ecology, geoecology, environmental economics and circular economy, as well as environmental management
		<b>GPC -2.2</b> Able to use environmental, economic and other special knowledge and algorithms to solve professional problems
		<b>GPC -2.3</b> Able to find, analyze and competently use the latest information and modern techniques in the performance of research and applied tasks
SPC-6	Able to develop standard environmental measures and assess the impact of planned facilities or other forms of economic activity on the environment	<b>SPC-6.1</b> Capable of detecting inconsistencies in the state of environmental components with the requirements of national and international standards
		<b>SPC-6.2</b> Able to develop programs for monitoring natural complexes under conditions of technogenic loads and programs for environmental rehabilitation of territories

## 3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The discipline " Industrial safety " 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 " Industrial safety ".

*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>GPC -2</b>	Able to use special and new sections of ecology, geoecology and nature management in solving research and applied problems of professional activity.	Estimations of natural resources / Оценки природных ресурсов Methodology of scientific creation / Методология научного творчества Экономические аспекты природопользования Management of water resources / Управление водными ресурсами Environmental-economic aspects of environmental projects / Эколого-экономические аспекты экологических проектов History and methology of ecology and natural resources management / История и методология экологии и природопользования International collaboration / Международное сотрудничество Учебная практика / Educational practice	Environmental standards and nature management / Экологические стандарты и природопользование Modern remediation technologies / Современные технологии ремедиации Economic aspects of natural resources management / Environmental norms for sustainability / Экологические нормы для устойчивого развития Engineering ecology / Инженерная экология Monitoring of environmental impacts / Мониторинг экологических воздействий Производственная практика / Production practice Научно-исследовательская работа / Research work НИР / Research work Преддипломная практика / Pre-graduate practice
<b>SPC-6</b>	Able to diagnose problems of nature conservation, develop practical recommendations for its protection and sustainable development	Management of natural resources / Менеджмент природных ресурсов Industrial nature management and economics / Промышленное природопользование и экономика Economic aspects of natural resources management / Экономические	Environmental standards and nature management / Экологические стандарты и природопользование Modern remediation technologies / Современные технологии ремедиации Management of energy resources / Менеджмент ресурсов энергетики Environmental noms for sustainability / Экологические

Code	Competence	Previous Disciplines (Modules)	Subsequent Disciplines (Modules)
		аспекты природопользования Wastes: Landfills, Processing and Recycling / Отходы: хранение, захоронение, рециклинг Surface water quality: modeling and management / Качество поверхностных вод: моделирование и менеджмент Учебная практика / Educational practice Научно-исследовательская работа / Research work	нормы для устойчивого развития Standards of environmental management and occupational safety / Стандарты экологического менеджмента и охраны труда Occupational safety and HSE-audit / Охрана труда и HSE-аудит Environmental statistics / Экологическая статистика Environmental accounting and reporting / Экологический учет и отчетность Производственная практика / Production practice НИР / Research work Преддипломная практика / Pre-graduate practice

#### 4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

Workload of the course «Industrial safety» 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>	17			17	
Incl.:					
Lectures					
Lab work					
Seminars	17			17	
<i>Self-study</i>	43			43	
<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*
1. Introduction to Industrial Safety. Hazardous production facilities. Threats to	Industrial safety concept. Russian legislation in the field of industrial safety. Relevance of industrial safety issues.	Seminars

industrial safety: accidents and emergencies.	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 foreign experience in industrial safety management	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 techniques	Seminars
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	Seminars
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	Seminars
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	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
Seminars	Classroom, equipped with a set of specialized furniture; whiteboard; a set of devices includes	-

Classroom for Academic Activity Type	CLASSROOM EQUIPMENT	Specialized learning, laboratory equipment, software and materials for the mastering the course
	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. Fuller T. P. (ed.). Global Occupational Safety and Health Management Handbook. – CRC Press, 2019.

### *Additional sources:*

Asfahl, C. R., Rieske D. W., Asfahl C. R., Rieske D. W. Industrial Safety and Health Management. Великобритания: Prentice Hall, 2010. Alting L., Boothroyd G. Notes on Industrial Safety //Manufacturing Engineering Processes. – CRC Press, 2020. – С. 457-460.

Chemezov E. N. Industrial safety principles in coal mining //Записки Горного института. – 2019. – Т. 240. – С. 649-653.

Haupt T. C. Management of Safety, Health and Environment in South Africa: A Handbook. – Cambridge Scholars Publishing, 2021. URL:

<https://www.sciencedirect.com/science/article/pii/S092575352100182X>

Soh Z. H. C. et al. Home and industrial safety IoT on LPG gas leakage detection and alert system //Int. J. Advance Soft Compu. Appl. – 2019. – Т. 11. – №. 1.

WORKING U. I. S. I. N. M., WELDING U. I. I. S. I. N., CUTTING G. A. S. OME553 INDUSTRIAL SAFETY ENGINEERING. URL:

<https://files.allabtengg.com/FilesUpload/Syllabus/2/4/16/12/3471/2021-02-09.05.15.46-OME553%20INDUSTRIAL%20SAFETY%20ENGINEERING.pdf>

### *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 "Industrial safety".

\* - 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 "Industrial safety" 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