Federal State Autonomous Educational Institution of Higher Education
"Peoples' Friendship University of Russia"

Institute of Environmental Engineering
(наименование основного учебного подразделения (ОУП)-разработчика ОП ВО)

COURSE SYLLABUS

Environmental standards and nature management
(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)

2022

1. COURSE GOALS

The purpose of the discipline is to get acquainted with modern international standards on environmental management, first of all the ISO 14000 group. In the course there will be considered stages of the development and implementation of standards, practical steps on the support of the regulatory system in the organization in order to achieve environmental improvements and regulate the environmental protection issues.

2. LEARNING OUTCOMES

The mastering of the discipline " Environmental standards and nature management " 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 -7	able to use digital technologies and methods of search, processing, analysis, storage and presentation of information (in the field of ecology and nature management) in the digital economy and modern corporate information culture	**GC--7.1** has skills in using digital technologies and search methods
		GC--7.2 is able to process, analyze, store and correctly present information
		GC--7.3 knows the principles and techniques of modern corporate information culture and the basics of the digital economy
GPC-2	Able to use special and new sections of ecology, geoecology and nature management in solving research and applied problems of professional activity.	**GPC -2.1** Knows the basics of ecology, geoecology, environmental economics and circular economy, as well as environmental management
		GPC -2.2 Able to use environmental, economic and other special knowledge and algorithms to solve professional problems
		GPC -2.3 Able to find, analyze and competently use the latest information and modern techniques in the performance of research and applied tasks
SPC -4	Able to use modern methods of processing and interpreting environmental information in scientific and industrial research.	**SPC-4.1** Able to apply modern methods of processing and interpreting environmental information when conducting industrial research
		SPC-4.2 Able to interpret the results of studies in terms of compliance with safety and performance indicators
		SPC-4.3 Has the skills to conduct control and supervisory activities based on modern methods of processing environmental information
SPC-5	Able to develop standard environmental measures	SPC-5.1 Able to develop and plan the implementation of standard environmental measures, taking into account

Code	Competence	Indicators of competence achievement (within the framework of this discipline)
	and assess the impact of planned facilities or other forms of economic activity on the environment	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
		SPC-5.3 Knows the requirements for the preparation and implementation of programs for the environmental modernization of enterprises, the introduction of BAT, the organization of environmental monitoring, accounting and reporting
SPC-6	Able to develop standard environmental measures and assess the impact of planned facilities or other forms of economic activity on the environment	**SPC-6.1** Capable of detecting inconsistencies in the state of environmental components with the requirements of national and international standards
		SPC-6.2 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 "Environmental standards and nature management" 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 standards and nature management ".

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

Code	Competence	Previous Disciplines (Modules)	Subsequent Disciplines (Modules)
GC -7	able to use digital technologies and methods of search, processing, analysis, storage and presentation of information (in the field of ecology and nature management) in the digital economy and modern corporate information culture	IT in ecology and natural resources management / Компьютерные технологии в управлении природопользование м Учебная практика / Educational practice	Производственная практика / Production practice Научно-исследовательская работа / Research work НИР / Research work
GPC -2	new sections of ecology, geoecology and nature management in	Modern technologies for nature protection / Современные	Estimations of natural resources / Оценки природных ресурсов Methodology of scientific creation / Методология научного творчества

Code	Competence	Previous Disciplines (Modules)	Subsequent Disciplines (Modules)
	solving research and applied problems of professional activity.	технологии защиты окружающей среды History and methology of ecology and natural resources management / История и методология экологии и природопользования Iternational collaboration / Международное сотрудничество Учебная практика / Educational practice Научно-исследовательская работа / Research work	Modern remediation technologies / Современные технологии ремедиации Economic aspects of natural resources management / Экономические аспекты природопользования Management of water resources / Управление водными ресурсами Environmental-economic aspects of environmental projects / Эколого-экономические аспекты экологических проектов Environmental noms for sustainability / Экологические нормы для устойчивого развития Engineering ecology / Инженерная экология Monitoring of environmental impacts / Мониторинг экологических воздействий Industrial safety / Промышленная безопасность Simulation and prevention of accidents / Моделирование и предупреждение аварий Производственная практика / Production practice НИР / Research work Преддипломная практика / Pre-graduate practice
SPC -4	Able to use modern methods of processing and interpreting environmental information in scientific and industrial research.	Industrial nature management and economics / Промышленное природопользование и экономика Standards of environmental management and occupational safety / Стандарты экологического менеджмента и охраны труда Occopational safety and HSE-audit / Охрана труда и HSE-аудит	Environmental statistics / Экологическая статистика Environmental accounting and reporting / Экологический учет и отчетность Wastes: Landfills, Processing and Recycling / Отходы: хранение, захоронение, рециклинг Surface water quality: modeling and management / Качество поверхностных вод: моделирование и менеджмент Базовая компонента Учебная практика / Educational practice Вариативная компонента Производственная практика / Production practice

Code	Competence	Previous Disciplines (Modules)	Subsequent Disciplines (Modules)
			Научно-исследовательская работа / Research work НИР / Research work Преддипломная практика / Pre-graduate practice
SPC-5	Able to develop standard environmental measures and assess the impact of planned facilities or other forms of economic activity on the environment	Estimations of natural resources / Оценки природных ресурсов Management of environmental-economic risks / Управление эколого-экономическими рисками Учебная практика / Educational practice Научно-исследовательская работа / Research work	Modern remediation technologies / Современные технологии ремедиации Management of water resources / Управление водными ресурсами Environmental-economic aspects of environmental projects / Эколого-экономические аспекты экологических проектов Environmental statistics / Экологическая статистика Environmental accounting and reporting / Экологический учет и отчетность Wastes: Landfills, Processing and Recycling / Отходы: хранение, захоронение, рециклинг Surface water quality: modeling and management / Качество поверхностных вод: моделирование и менеджмент Производственная практика / Production practice НИР / Research work Преддипломная практика / Pre-graduate practice
SPC-6	Able to develop standard environmental measures and assess the impact of planned facilities or other forms of economic activity on the environment	Management of natural resources / Менеджмент природных ресурсов Modern technologies for nature protection / Современные технологии защиты окружающей среды Industrial nature management and economics / Промышленное природопользование и экономика Economic aspects of natural resources management /	Modern remediation technologies / Современные технологии ремедиации Management of energy resources / Менеджмент ресурсов энергетики Environmental noms for sustainability / Экологические нормы для устойчивого развития Environmental statistics / Экологическая статистика Environmental accounting and reporting / Экологический учет и отчетность Wastes: Landfills, Processing and Recycling / Отходы: хранение, захоронение, рециклинг Surface water quality: modeling and management / Качество

Code	Competence	Previous Disciplines (Modules)	Subsequent Disciplines (Modules)
		Экономические аспекты природопользования Standards of environmental management and occupational safety / Стандарты экологического менеджмента и охраны труда Occupational safety and HSE-audit / Охрана труда и HSE-аудит	поверхностных вод: моделирование и менеджмент Industrial safety / Промышленная безопасность Simulation and prevention of accidents / Моделирование и предупреждение аварий Учебная практика / Educational practice Производственная практика / Production practice Научно-исследовательская работа / Research work НИР / Research work Преддипломная практика / Pre-graduate practice

4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

Workload of the course «Environmental standards and nature management» 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**
Contact academic hours		*34*				
Incl.:						
Lectures		17		17		
Lab work						
Seminars		17		17		
Self-study		*22*		*58*		
Evaluation and assessment		*16*		*16*		
Total workload	Ac.hours	**108**		**108**		
	ECTS	**3**		**3**		

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	Modern problems of nature management. Environmental norms and standards as a base for the efficient nature management	Lectures, Seminars
ISO 14001 and Environmental management system	Main requirements and steps of the EMS development. Environmental aspects and their identification. Environmental polisy	Lectures, Seminars

ISO 14030 standards	Indicators of the environmental performance. Development of environmental indicators as a base of environmental policy	Lectures, Seminars
Environmental life cycle analyses: ISO 14040 group	Concept of a life cycle of the product. Organization boarders. Production system. Assessment cycle and it's interpretation and improvement. Practical approaches	Lectures, Seminars
Environmental norms for climate protection and decarbonization	ISO 14060+ group: requirements to the carbon footprint assessment, regulation of GHG-reporting, validation of projects, verification of reporting and projects.	Lectures, Seminars
International environmental norms on emvironmental monitorng	Main monitoring procedures, their regulation. Requirements to the instrumental control of environmental impacts.	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:*

Khaustov A., Redina M. Environmental standards and norms. Moscow: Mir nauki publ. 2020.

Additional sources:

1. Ahmad T. A. Environmental Issues in the History Textbook. – 2019.
2. Antweiler W. Elements of environmental management //Elements of Environmental Management. – University of Toronto press, 2018.

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/
- ……..

*Educational and methodological materials for independent work of students during the development of the discipline/ module *:*
1. A course of lectures on the discipline " Environmental standards and nature management ".

* - 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 standards and nature management " 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:

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Position, Department	Signature	Name

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