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**Federal State Autonomous Educational Institution of Higher Education
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA
NAMED AFTER PATRICE LUMUMBA
RUDN University**

Institute of Environmental Engineering

educational division (faculty/institute/academy) as higher education programme developer

Approved at the meeting of the Academic
Council of RUDN University

Opened by order of the Rector of
RUDN University No. 298

Protocol No.10

May, 20, 2024

(month, date, year)

June, 04, 2024

(month, date, year)

PROFESSIONAL EDUCATION PROGRAMME OF HIGHER EDUCATION

Field of Studies/ Speciality:

05.04.06 Ecology and Nature Management

field of studies / speciality code and title

Profile/Specialisation:

Integrated Solid Waste Managment

higher education programme title

The Educational Programme is developed in compliance with:

Educational Standard of RUDN University, approved by Order of the Rector No. 371
dated May 21, 2021

(month, day, year)

Level of education:

master's

(bachelor's / specialist's / master's – to fill in the required)

Graduate's Qualification:

Master

(graduate's qualification in compliance with the order of the Ministry of Education and Science of Russian Federation dated
September 12, 2013, No. 1061)

Length of Educational Programme:

2 years

(full-time education)

-

(part-time education)

-

(correspondence education)

Information about the specific features of the programme: it is implemented in English.

AGREED by:

Head
of Educational Programme

D.O. Kapralova

(signature)

(month, date, year)

Chairperson
of Didactic Council

M.D. Kharlamova

(signature)

(month, date, year)

Head
of Educational
Department
E.V. Savenkova

(signature)

(month, date, year)

2025

EDUCATIONAL PROGRAMME DESCRIPTION

1. EDUCATIONAL PROGRAMME GOAL (MISSION)

The mission of the Joint Educational Programme «Integrated Solid Waste Management» (in English) is a highly qualified specialist joint training in the field of solid waste management, using innovative programs and new distance learning technologies that guarantee a master's degree graduate high competitiveness in the international labor market, in particular in the SCO countries.

The overall goal of the Joint Educational Programme «Integrated Solid Waste Management» (in English) is to receive professional education in the field of waste management, which allows the graduate to work successfully in the chosen activity field, to possess general cultural, professional and special competencies that contribute to the graduate social mobility and sustainability in the labor market, as well as preparing graduates for self-study and continuous professional self-improvement.

The purpose of the Joint Educational Programme «Integrated Solid Waste Management» (in English) is graduates social and personal qualities formation, contributing to the development of general cultural needs, creative abilities, social adaptation, communication, tolerance, perseverance in achieving goals.

2. EDUCATIONAL PROGRAMME RELEVANCE, SPECIFICITY, AND UNIQUENESS

Benchmarking results of similar educational programs is presented below:

University	Programme Title	Number of students	Notes
Glasgow Caledonian University	Environmental Management (Waste, Energy, Water, Oil and Gas)	No data available	It does not provide highly specialized knowledge in the waste management field, since waste management presents 1/5 of the program content.
Ecole des Ponts Paristech	Water, Soil And Waste: Management And Treatment	No data available	It does not provide highly specialized knowledge in the waste management field, since waste management presents 1/3 of the program content.

Distinctive features of the Joint Educational Programme «Integrated Solid Waste Management» (in English) in comparison with the abovementioned programs is presented below:

For students	The opportunity to acquire unique competencies in the various types of waste management throughout the full life cycle
For university	The students contingent in the University of SCO
For the country / region	The highly qualified personnel ready to work in the rapidly developing area of waste management and the circular economy, including in the SCO regions

3. LABOUR MARKET NEEDS FOR PERSONNEL TRAINING IN EDUCATIONAL PROGRAMME PROFILE

Master's program graduates are highly qualified specialists who will be able to work effectively at large industrial enterprises, in higher educational institutions, work in the field of waste management and protect the environment and humans from the negative impact of hazardous waste.

Potential consumers of graduates of the educational program are:

- municipal and regional structures carrying out activities for the environment and natural resources protection;
- municipal and regional structures carrying out activities in the field of production and consumption waste management;
- industrial enterprises of different forms of ownership, laboratories for environmental protection, labor protection;
- research organizations and centers whose activities are related to the development and improvement of innovative technologies for the processing and disposal of production and consumption waste or the solution of environmental problems from their impact;
- public and international organizations and other units related to the production and consumption waste management.

5. SPECIAL REQUIREMENTS FOR POTENTIAL APPLICANTS

Applicants who have the first higher education in the the master's program profile and who wish to improve their professional level and acquire additional competencies can enter the educational program. Also, it is possible to enroll applicants with non-core education in related fields (economics, law, etc.).

Applicant must have the appropriate competencies to Joint Educational Programme «Integrated Solid Waste Management» (in English):

- have English level not lower than Intermediate;

- own a culture of thinking, the ability to generalize, analyze, perceive information, set a goal and choose ways to achieve it;
- be aware of the future profession social significance, have a high motivation to perform professional activities, the ability to find professional solutions, including in non-standard situations, and the willingness to bear responsibility for them;
- be ready to perform professional functions working in a team;
- have basic fundamental training in the field of natural sciences and mathematics,
- be able to apply information technology to solve technical problems,
- be able to use (read) graphic and cartographic documentation;
- be able to navigate the techniques and technologies for protecting the environment and humans from technogenic hazards, to promote the goals and objectives of ensuring the safety of humans and the natural environment in the technosphere;
- know the standards for the levels of permissible negative impacts on humans and the natural environment;
- understand technical documentation related to technological processes;
- be able to read and understand specialized technical literature;
- have experience in participating in research projects in the training field; – be able to systematize scientific information, process the received data.

6. FEATURES OF EDUCATIONAL PROGRAMME IMPLEMENTATION

6.1. Joint Educational Programme «Integrated Solid Waste Management» (in English) is implemented with elements of distance learning technologies (TEIS, MOOC, lectures / seminars on the Microsoft Teams Platform).

6.2. The language of the Joint Educational Programme «Integrated Solid Waste Management» implementation is English.

6.3. The Educational Programme does not provide for education of people with disabilities.

6.4. The information on the planned introductory/advanced field internships and (or) research & development internships

Internship	Internship location (<i>organisation name and location</i>)
Pre-graduate Internship	Joint Stock Company EcoStandard Company group ", Moscow
Pre-graduate Internship	HUBER TECHNOLOGIES, Moscow
Pre-graduate Internship	Waste Paper Recyclers League, Moscow

Industrial Internship	JSC "ECOTECHNOLOGIES", Voronezh
Industrial Internship	Moscow waste incineration plant No. 4 "Rudnevo", Moscow
Industrial Internship	Torbeevsky landfill for municipal solid waste, Moscow region, urban district of Lyubertsy, village of Torbeevo
Research Internship	Moscow State University M.V. Lomonosov, Moscow
Research Internship	Togliatti State University (TSU), Togliatti
Research Internship	Kurchatov Institute, Moscow
Research Internship	Joint Institute for High Temperatures, Russian Academy of Sciences, Moscow

7. CHARACTERISTICS OF EDUCATIONAL PROGRAMME GRADUATE'S PROFESSIONAL ACTIVITIES

7.1. The field of professional activity of the Educational Programme graduate

The field(s) of professional activities of the Educational Programme graduate includes design, survey, research, production, marketing, consulting, economic, legal, training, expert departments, bureaus, centers, companies, institutions in the field of ecology and nature management.

Professional activity is aimed at ensuring environmental safety from the all types of waste impact, the comfortable technosphere formation for human life and activity, minimizing the technogenic impact of waste on the natural environment, preserving human life and health through the modern technologies use, control methods, monitoring and forecasting.

7.2. The type(s) of professional activities tasks, which the graduate is trained to solve when mastering the Educational Programme

The graduate of Joint Educational Programme «Integrated Solid Waste Management» (in English) must be prepared for solving professional problems in accordance with the Federal State Educational Standard of Higher Professional Education and the master's program profile focus. A graduate must be proficient in the following types of professional activities, namely, to have knowledge, skills and abilities in the field:

design and production activities:

- designing standard of environmental measures;
- environmental design, the investment project justification and impact assessment of the planned facilities and economic activity forms in the field of waste management;
- environmental control and monitoring organization;
- environmental problems identification and diagnosis, development of practical recommendations for the natural environment conservation;
- production waste management;

organizational and managerial activities:

- activities management of the department, sector, working group;
- drawing up final documents based on the production results or scientific task implementation;
- environmental protection management systems development for enterprises and industries;

A graduate of the Joint Educational Programme «Integrated Solid Waste Management» must also have the following **additional professional skills and abilities**: in the field of **design and production activities**

- use of the waste energy potential as a renewable energy source;
- use of the waste resource potential as a source of secondary material resources;
- biotechnologies use for environmental protection, biodegradation of organic waste, waste bio thermal processing in order to obtain energy;
- carrying out environmental and economic calculations (environmental payments, environmental collection of industrial enterprises within the framework of extended producer responsibility, fines, costs and profitability of activities, etc.)
- the ability to analyze and select the best available technologies (BAT) for the processing, recovery, regeneration and recycling of municipal solid waste (MSW) components and calculate economic profitability when designing small enterprises in the field of MSW management, to put into practice the principles of organizing an economically profitable low-waste and resource-saving production; in the field **of organizational and managerial activity**:
- improvement of the production and consumption waste management system in the regions of the world;
- effective management of state and commercial enterprises operating in the field of waste management at the level of department, sector, working group;
- sustainable environmental management, evaluation of efficiency and improvement of waste management systems in the world regions;

- programs development for the elimination of accumulated environmental damage (reclamation and reconstruction of closed dumps and MSW landfills, reclamation of lands contaminated with waste from oil production and oil refining, elimination and use of the resource potential of sludge reservoirs, slag dumps, etc.)
- the ability to conduct comprehensive studies of the functioning effectiveness of territorial schemes for the municipal solid waste treatment at the regional and municipal levels

7.3. The list of generalized labor functions and labor functions which are related to the professional activities of the Educational Programme graduate and are taken into account in the course of its development

Code and title of occupational standard	Generalized labor functions			Labor functions		
	Code	Title	Qualification level	Type	Code	Qualification level (sublevel)
40.117 in "Specialist (in environmental safety industry)"	C	Measures development and implementation to improve the organization's environmental activities efficiency	6	Conducting an environmental analysis of expansion projects, reconstruction, existing production facilities modernization, new technologies and equipment being created in the organization	C/01.6	6
				Development and environmental economic justification of plans for the introduction of new environmental protection equipment and technologies in the organization	C/03.6	6
				Economic regulation of organization environmental activities	C/05.6	6
				The organization's personnel training organization in the field of environmental safety	C/06.7	6
16.006 in "Specialist the of field"	B	Coordination of activities for the organization and control in the field	6	Control activities in the field of waste management	B/01.6	6

waste management"		of production and consumption waste management		Infrastructure organization for environmentally safe neutralization and processing of production and consumption waste	B/02.6	6
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8. REQUIREMENTS FOR EDUCATIONAL PROGRAMME OUTCOMES

8.1. Upon completion of the Educational Programme, the graduate is expected to acquire the following Generic Competences (GCs):

Code and descriptor of generic competence	Code and competence level indicator
GC-1. Able to carry out a problem situations critical analysis based on a systematic approach, to develop an action strategy.	GC-1.1 can analyze the problem situation as a system, identifying its components and the links between them
	GC-1.2 owns argumentation and develops a meaningful strategy for solving a problem situation based on a systematic and interdisciplinary approach
	GC-1.3 knows the basics strategies and identifies possible risks, suggesting ways to eliminate them
GC-2. Able to manage a project at all stages of its life cycle.	GC-2.1 can formulate a project task based on the problem posed and a way to solve it
	GC-2.2 capable to develop the concept of the project, formulate the goal, objectives, justify the relevance, expected results and scope of their application
	GC-2.3 can develop a project implementation plan taking into account possible risks, plans the necessary resources
GC-3. Able to organize and manage the team work, developing a team strategy to achieve the goal.	GC-3.1 owns the techniques and methods of teamwork, organizes the selection of team members to achieve the goal;
	GC -3.2 capable to organize and adjust the work of the team, including on the basis of collegial decisions
	GC-3.3 can delegate authority to team members and distribute assignments, give feedback on the results, take responsibility for the overall result
GC-4. Able to apply modern communication technologies, including foreign language(s) for academic and professional interaction	GC -4.1 can establish contacts and organize communication in accordance with the needs of joint activities, using modern communication technologies
	GC-4.2 knows the basics of business documentation and uses professional vocabulary in foreign and Russian languages
	GC-4.3 capable to organize a results discussion and present the results of research and project activities at various public events in Russian or a foreign language, choosing the most appropriate format.

GC-5. Able to analyze and take into account the diversity of cultures in the intercultural interaction process.	GC -5.1. knows the main categories of philosophy, the laws of historical development, the intercultural communication basics
	GC-5.2 is able to communicate in the world cultural diversity and demonstrate mutual understanding between students - representatives of different cultures in compliance with ethical and intercultural standards
	GC -5.3. owns the practical skills of philosophical and historical facts analyzing, evaluating cultural phenomena; ways of analyzing and revising one's views in case of disagreements and conflicts in intercultural communication
GC-6. Able to identify and implement the priorities of their own activities and ways to improve it based on selfesteem.	GC-6.1 can evaluate resources and their limits (personal, situational, temporary), use them appropriately
	GC-6.2 capable to determine educational needs and ways to improve their own (including professional) activities based on self-assessment
	GC -6.3 owns skills building a flexible professional trajectory, taking into account the accumulated
	experience of professional activity, dynamically changing labor market requirements and personal development strategies
GC-7. Able to use digital technologies and methods of searching, processing, analyzing, storing and presenting information (in the field of Ecology and nature management) in the digital economy and modern corporate information culture.	GC-7.1 owns the skills of digital technologies use and search methods
	GC-7.2 can process, analyze, store and correctly present information
	GC-7.3 knows the principles and techniques of modern corporate information culture and the digital economy basics

8.2. Upon completion of the Educational Programme, the graduate is expected to acquire the following general professional competences (GPCs):

Code and descriptor of general professional competence	Code and competence level indicator
GPC-1. Able to use philosophical concepts and methodology of scientific creation in the study of various levels of matter, space and time organization.	GPC-1.1 Knows the philosophical concepts of natural science and methodology of scientific creation
	GPC-1.2 Able to use in-depth knowledge in the philosophical concepts of natural science in assessing the professional activities consequences
	GPC-1.3 Able to apply the acquired knowledge in the research activities, to make correct generalizations and conclusions

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 Capable of finding, analyzing and competently using latest information and modern techniques in the research and applied tasks performance
GPC-3. Able to apply environmental research methods to solve research and applied problems of professional activity.	GPC-3.1 Knows the principles and methods of environmental monitoring related with different environmental components
	GPC-3.2 Owns analytical methods of pollutants control, physical impacts and processing of the received information
	GPC-3.3 Able to develop environmental monitoring and control systems in production and solve applied problems in professional activities
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 environmental regulation and legislation basics 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 professional ethics norms in their professional activities
GPC-5. Able to solve the problems of professional activity in the field of ecology, nature management and protection using information and communication, including geoinformation technologies.	GPC-5.1 Knows how to choose and apply algorithm for solving environmental problems and implements algorithms using software
	GPC-5.2 Has the skills to use information technology tools for searching, storing, processing, analyzing and presenting information
	GPC-5.3 Able to process earth remote sensing data and use cartographic materials, owns modern GIS technologies
GPC-6. Able to design, represent, protect and disseminate the results of their professional activities, including research.	GPC-6.1 Able to receive, analyze, summarize the necessary scientific information using modern research methods, present their own results in the form of scientific articles and public speeches

	GPC-6.2 Possesses the skills of oral report and presentation with regards to the project and scientific activities results
	GPC-6.3 Knows methodological foundations of scientific research, copyright and scientific ethics requirements

8.3. Upon completion of the Educational Programme, the graduate is expected to acquire the following professional competences (PCs)*

Code and descriptor of professional competence	Code and competence level indicator	Code and title of occupational standard for relevant PC
In organizational and managerial activities :		
PC-1 Able to organize and manage the enterprise activities using in-depth knowledge in the field of environmental management	PC-1.1 Knows the basics and principles of production management, the legal framework for effective environmental management, including production and consumption waste management	40.117 "Specialist in environmental safety (in industry)"
	PC-1.2 Able to organize the management of research, scientific and production and expert-analytical work at the enterprise	
PC-2 Able to develop and economically justify plans for the introduction of new equipment and technologies to ensure minimal waste impact on the environment	PC-2.1 Has the skills to select and implement the best available technologies (BAT) for the processing and recycling of production and consumption waste	40.117 "Specialist in environmental safety (in industry)"
	PC-2.2 Can economically justify plans for the introduction of new equipment and technologies for waste management, using them as a secondary resource	
	PC-2.3 Capable of minimizing the waste impact on the environment	
PC-3 Able to develop measures for the economic regulation of the organization's environmental activities	PC-3.1 Able to predict socioeconomic development based on environmental forecasts	40.117 "Specialist in environmental safety (in industry)"
	PC-3.2 Knows how to determine the economic effect of the measures application aimed at ensuring the enterprise environmental safety	
In design and production activities :		

PC-4 Capable of assessing the impact of economic activity on the environment	PC-4.1 Able to conduct an environmental impact assessment (EIA) of the designed enterprise and facilities, predict and evaluate negative consequences	40.117 "Specialist in environmental safety (in industry)"
	PC-4.2 Able to develop standard environmental measures	
	PC-4.3 Possesses the skills of environmental design and preparation with regards to special documentation at the pre-project stage of the project life cycle	
PC-5 Able to analyze the causes and minimize the consequences of the production negative impact on the environment	PC-5.1 Able to identify the causes and sources of harmful substances entering the environment and the causes and sources of solid waste generation	40.117 "Specialist in environmental safety (in industry)"
	PC-5.2 Has the skills to prepare proposals to eliminate the causes and eliminate the negative consequences of the impact	
	PC-5.3 Ensures the plans implementation for environmental protection measures and the elimination of accumulated environmental damage objects to the environment, including the existing waste disposal sites reclamation, lands after the elimination of unauthorized dumps, etc.	
PC-6 Able to coordinate activities for the organization and control in the field of production and consumption waste management	PC-6.1 Capable of monitoring activities in the field of waste management	40.117 "Specialist in environmental safety (in industry)"
	PC-6.2 Has the skills to organize the infrastructure for environmentally safe disposal and processing of production and consumption waste	
PC-8 Possesses the skills of preparing thematic maps and plans, analytical information on engineering and environmental surveys	PC-8.1 Possesses the skills of preparing thematic maps and plans, analytical information on engineering and environmental surveys	40.117 "Specialist in environmental safety (in industry)"
	PC-8.2 Able to collect, analyze and summarize materials from cartographic studies of the territory,	

	<p>hydrometeorological observations, surveys of past years; information about the presence and nature of manifestation of hazardous processes and phenomena; cartographic material, materials from aerial photography and space topographic surveys; navigation maps, etc.</p> <p>PC-8.3 Able to use modern information technologies and specialized programs to process the received data and carry out their analysis</p>	
PC-9 Able to carry out a full-scale examination of an object, its parts, foundation or environment and has the skills of desk processing and formalization of research results	<p>PC-9.1 Possesses the skills of sampling water, soil, air and biological objects to assess their environmental condition</p> <p>PC-9.2 Able to carry out laboratory research, measurements, analyzes of selected natural samples</p> <p>PC-9.3 Capable of performing statistical analysis of obtained data on the state of the natural environment</p>	40.117 "Specialist in environmental safety (in industry)"
PC-10 Capable of monitoring the state of the environment using environmental technologies	<p>PC-10.1 Capable of monitoring compliance with environmental protection requirements</p> <p>PC-10.2 Capable of developing an action plan aimed at meeting the requirements of regulatory legal acts in the field of environmental protection, taking into account best practices</p> <p>PC-10.3 Able to analyze large amounts of professional information</p>	40.117 "Specialist in environmental safety (in industry)"
PC-11 Able to determine the structure and master the methods of zoning the assessed territory according to the types of anthropogenic load and environmental components	<p>PC-11.1 Knows methods of zoning the assessed territory according to the permissible anthropogenic load on environmental components</p> <p>PC-11.2 Able to determine the structure of anthropogenic load on environmental components</p> <p>PC-11.3 Able to identify areas of increased environmental danger</p>	40.117 "Specialist in environmental safety (in industry)"

PC-12 Able to use modern means of geographic information systems and information and communication technologies in professional activities	PC-12.1 Able to use modern information technologies and specialized programs to process the received data and carry out their analysis	40.117 "Specialist in environmental safety (in industry)"
	PC-12.2 Able to use modern means of geographic information systems and information and communication technologies in professional activities	
PC-13 Capable of conducting spatial, territorial, demographic, sociological, economic research, engineering-geological, cartographic surveys	PC-13.1 Able to analyze and evaluate available resources and conditions necessary for the implementation of research	40.117 "Specialist in environmental safety (in industry)"
	PC-13.2 Capable of assessing the extent of damage and degradation of the natural environment	
	PC-13.3 Knows methods of developing models for the development of the environmental situation under various anthropogenic loads	

9. MATRIX OF COMPETENCES that students acquire when mastering the Educational Programme «**Integrated Solid Waste Management**»,

Code	Courses/modules that form students' competences	GENERIC COMPETENCES						
		GC-1. Able to carry out a problem situations critical analysis based on a systematic approach, to develop an action strategy.	GC-1. Able to carry out a problem situations critical analysis based on a systematic approach, to develop an action strategy.	GC-3. Able to organize and manage the team work, developing a team strategy to achieve the goal.	GC-4. Able to organize and manage the team work, developing a team strategy to achieve the goal.	GC-5. Able to analyze and take into account the diversity of cultures in the intercultural interaction process.	GC-5. Able to analyze and take into account the diversity of cultures in the intercultural interaction process.	GC-7. Able to use digital technologies and methods of searching, processing, analyzing, storing and presenting information (in the field of Ecology and nature management) in the digital economy and modern corporate information culture.
Block 1	Mandatory part							
B1.O.01.01	Foreign (Russian) Language				GC-4.1-4.4			
B1.O.01.02	IT in Ecology and Natural Resources Management / Компьютерные технологии и статистические методы в экологии и природопользовании							GC-7.1-7.3
B1.O.01.03	Philosophical problems of natural sciences / Философские проблемы естественных наук					GC-5.1-5.3	GC-6.1-6.2	
B1.O.01.04	Methodology of Scientific Creation / Методология научных исследований	GC-1.1-1.3					GC-6.1-6.2	GC-7.2
	Core component							
B1.O.02.01	Modern Technologies for Nature Protection / Современные технологии защиты ОС	GC-1.1-1.3						
B1.O.02.02	Environmental Impact Assessment (EIA) of SWM Objects / ОВОС объектов в сфере управления отходами		GC-2.1-2.3					

Б1.О.02.03	Regional & Municipal MSW Management Systems / Региональные и муниципальные системы управления отходами			GC-3.1-3.2				
Б1.О.02.04	Modern remediation technologies / Современные технологии рекультивации		FGC-2.1					
Б1.О.02.05	MSW Recycling and Utilization Technics / Технологии рециклинга и утилизации ТКО							
Б1.О.02.06	Management of Environmental-economic Risks / Управление эколого-экономическими рисками						GC-6.1-6.2	
Б1.О.02.07	International Cooperation in the Field of Nature Protection / Международное сотрудничество в области охраны окружающей среды			GC-3.1-3.2		GC-5.1-5.3		
Б1.О.02.08	Environmental norms for sustainability / Экологические нормы для устойчивого развития							
	Variable component							
Б1.В.ДВ.01.01	Environmental Control and MSW Monitoring Programs / Методы контроля и мониторинга в системе управления отходами	GC-1.1-1.3					GC-6.1-6.2	
Б1.В.ДВ.01.02	Physicochemical Methods of Waste Testing / Физико-химические методы контроля компонентов отходов	GC-1.1-1.3					GC-6.1-6.2	
Б1.В.ДВ.02.01	Mapping And GIS-technologies in MSW Management / Методы картографирования и ГИС-технологии в управлении ТКО							GC-7.1-7.3
Б1.В.ДВ.02.02	Remote Sensing of MSW Objects / Методы ДЗЗ и обработки информации объектов управления ТКО							GC-7.1-7.3
Б1.В.ДВ.03.01	Basics of Circular Economics / Основы циркулярной экономики							
Б1.В.ДВ.03.02	Green Economy and Tools for Enterprises Sustainable Development / Зеленая							

	экономика и инструменты устойчивого развития предприятий							
Б1.В.ДВ.04.01	Engineering Ecology / Инженерная экология							
Б1.В.ДВ.04.02	Monitoring of Environmental Impacts / Мониторинг воздействия на окружающую среду							
Block 2	Internship							
B2.V.01(R)	Industrial / Pedagogical Internship	GC-1.1-1.3	GC-2.1-2.4	GC-3.1-3.2	GC-4.1-4.4	GC-5.1-5.3	GC-6.1-6.2	GC-7.1-7.3
B 2. V .02(Pd)	Pre-graduate Internship	GC-1.1-1.3	GC-2.1-2.4	GC-3.1-3.2	GC-4.1-4.2	GC-5.2-5.3	GC-6.1	GC-7.1-7.3
B2.O.01.02(N)	Research work in the term including projects	GC-1.3	GC-2.2-2.3		GC-4.1-4.3			
B2.O.01.01(P)	R&D		GC-2.1-2.4	GC-3.1-3.2			GC-6.1-6.2	
Block 3	Final State Examination	GC-1.1-1.3	GC-2.1-2.4	GC-3.1-3.2	GC-4.1-4.4	GC-5.1-5.3	GC-6.1-6.2	GC-7.1-7.3
B3.01	State Exam	GC-1.1-1.3	GC-2.1-2.4	GC-3.1-3.2	GC-4.1-4.4	GC-5.1-5.3	GC-6.1-6.2	GC-7.1-7.3
B3.02	Degree Diploma	GC-1.1-1.3	GC-2.1-2.4	GC-3.1-3.2	GC-4.1-4.4	GC-5.1-5.3	GC-6.1-6.2	GC-7.1-7.3

GENERAL PROFESSIONAL COMPETENCES

Code	Courses/modules that form students' competences	GPC-1. Able to use philosophical concepts and methodology of scientific creation in the study of various levels of matter, space and time organization	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-3. Able to use special and new sections of ecology, geoecology and nature management in solving research and applied problems of professional activity.	GPC-4. Able to apply regulatory legal acts and norms of professional ethics in the field of ecology and nature management.	GPC-5. Able to apply regulatory legal acts and norms of professional ethics in the field of ecology and nature management.	GPC-5. Able to design, represent, protect and disseminate the results of their professional activities, including research.
Block 1	Mandatory part						
Б1.О.01.01	Foreign (Russian) Language						
Б1.О.01.02	IT in Ecology and Natural Resources Management / Компьютерные технологии и статистические методы в экологии и природопользовании					GPC-5.1-5.3	
Б1.О.01.03	Philosophical problems of natural sciences / Философские проблемы естественных наук	GPC-1.1-1.2					
Б1.О.01.04	Methodology of Scientific Creation / Методология научных исследований	GPC-1.1-1.4		GPC-3.4			GPC-6.1-6.3
	Core component						
Б1.О.02.01	Modern Technologies for Nature Protection / Современные технологии защиты ОС		GPC-2.1-2.3		GPC-4.1-4.3		
Б1.О.02.02	Environmental Impact Assessment (EIA) of SWM Objects / ОВОС объектов в сфере управления отходами		GPC-2.1-2.3	GPC-3.1-3.3			
Б1.О.02.03	Regional & Municipal MSW Management Systems /		GPC-2.1-2.5			GPC-5.1-5.3	

	Региональные и муниципальные системы управления отходами						
Б1.О.02.04	Modern remediation technologies / Современные технологии рекультивации		GPC-2.1	GPC-3.1-3.2			
Б1.О.02.05	MSW Recycling and Utilization Technics / Технологии рециклинга и утилизации ТКО	GPC-1.1, 1.2, 1.4	GPC-2.1-2.5				
Б1.О.02.06	Management of Environmental-economic Risks / Управление эколого-экономическими рисками						GPC-6.1-6.3
Б1.О.02.07	International Cooperation in the Field of Nature Protection / Международное сотрудничество в области охраны окружающей среды				GPC-4.2		
Б1.О.02.08	Environmental norms for sustainability / Экологические нормы для устойчивого развития			GPC-3.1			
	Variable component						
Б1.В.ДВ.01.01	Environmental Control and MSW Monitoring Programs / Методы контроля и мониторинга в системе управления отходами						
Б1.В.ДВ.01.02	Physicochemical Methods of Waste Testing / Физико-химические методы контроля компонентов отходов						
Б1.В.ДВ.02.01	Mapping And GIS-technologies in MSW Management / Методы картографирования и ГИС-технологии в управлении ТКО						
Б1.В.ДВ.02.02	Remote Sensing of MSW Objects / Методы ДЗЗ и обработки информации объектов управления ТКО						
Б1.В.ДВ.03.01	Basics of Circular Economics / Основы циркулярной экономики						
Б1.В.ДВ.03.02	Green Economy and Tools for Enterprises Sustainable Development /						

	Зеленая экономика и инструменты устойчивого развития предприятий						
Б1.В.ДВ.04.01	Engineering Ecology / Инженерная экология						
Б1.В.ДВ.04.02	Monitoring of Environmental Impacts / Мониторинг воздействия на окружающую среду						
Block 2	Internship						
B2.V.01(P)	Industrial / Pedagogical Internship	GPC-1.1 - GPC-1.4	GPC-2.1 - GPC-2.5	GPC-3.1-GPC-3.5	GPC-4.1-GPC-4.3	GPC-5.1 - GPC-5.3	GPC-6.1-6.3
B 2. V .02(Pd)	Pre-graduate Internship	GPC-1.1 - GPC-1.4	GPC-2.1 - GPC-2.5	GPC-3.1-GPC-3.5	GPC-4.1-GPC-4.3	GPC-5.1 - GPC-5.3	GPC-6.1-6.3
B2.O.01.02(N)	Research work in the term including projects	GPC-1.1 - GPC-1.4	GPC-2.1 - GPC-2.5	GPC-3.1-GPC-3.5	GPC-4.1-GPC-4.3	GPC-5.1 - GPC-5.3	GPC-6.1-6.3
B2.O.01.01(P)	R&D		GPC-2.1 - GPC-2.5	GPC-3.1-GPC-3.5	GPC-4.1-GPC-4.3	GPC-5.1 - GPC-5.3	GPC-6.1-6.3
Block 3	Final State Examination	GPC-1.1-GPC-1.4	GPC-2.1-GPC-2.5	GPC-3.1-GPC-3.5	GPC-4.1-GPC-4.3	GPC-5.1-GPC-5.3	GPC-6.1-6.3
B3.01	State Exam	GPC-1.1-GPC-1.4	GPC-2.1 - GPC-2.5	GPC-3.1-GPC-3.5	GPC-4.1-GPC-4.3	GPC-5.1 - GPC-5.3	GPC-6.1-6.3
B3.02	Degree Diploma	GPC-1.1-GPC-1.4	GPC-2.1 - GPC-2.5	GPC-3.1-GPC-3.5	GPC-4.1-GPC-4.3	GPC-5.1 - GPC-5.3	GPC-6.1-6.3

Code	Courses/modules that form students' competences	PC-1	PC-2	PC-3	PC-4	PC-5	PC-6	PC-8	PC-9	PC-10	PC-11	PC-12	PC-13
Block 1	Mandatory part												
Б1.О.01.01	Foreign (Russian) Language												

Б1.О.01.02	IT in Ecology and Natural Resources Management / Компьютерные технологии и статистические методы в экологии и природопользовании				PC-4.1-4.3								
Б1.О.01.03	Philosophical problems of natural sciences / Философские проблемы естественных наук												
Б1.О.01.04	Methodology of Scientific Creation / Методология научных исследований												
	Core component												
Б1.О.02.01	Modern Technologies for Nature Protection / Современные технологии защиты ОС	PC-1.1-1.2											
Б1.О.02.02	Environmental Impact Assessment (EIA) of SWM Objects / ОВОС объектов в сфере управления отходами		PC-2.1-2.4			PC-5.1					PC-10.1-10.3		
Б1.О.02.03	Regional & Municipal MSW Management Systems / Региональные и муниципальные системы управления отходами			PC-3.1-3.3			PC-6.1-6.3						
Б1.О.02.04	Modern remediation technologies / Современные технологии рекультивации		PC-2.1		PC-4.1-4.2	PC-5.2	PC-6.1						
Б1.О.02.05	MSW Recycling and Utilization Technics / Технологии рециклинга и утилизации ТКО		PC-2.1-2.4										
Б1.О.02.06	Management of Environmental-economic Risks / Управление эколого-экономическими рисками			PC-3.1-3.3		PC-5.1	PC-6.1						
Б1.О.02.07	International Cooperation in the Field of Nature Protection / Международное сотрудничество в области охраны окружающей среды	PC-1.1-1.2											
Б1.О.02.08	Environmental norms for sustainability / Экологические нормы для устойчивого развития			PC-3.2			PC-6.2						
	Variable component												
Б1.В.ДВ.01.01	Environmental Control and MSW Monitoring Programs / Методы контроля и мониторинга в системе управления отходами												

Б1.В.ДВ.01.02	Physicochemical Methods of Waste Testing / Физико-химические методы контроля компонентов отходов												
Б1.В.ДВ.02.01	Mapping And GIS-technologies in MSW Management / Методы картографирования и ГИС-технологии в управлении ТКО					PC-5.1-5.3							PC-12.1-12.2
Б1.В.ДВ.02.02	Remote Sensing of MSW Objects / Методы ДЗЗ и обработки информации объектов управления ТКО					PC-5.1-5.3							PC-12.1-12.2
Б1.В.ДВ.03.01	Basics of Circular Economics / Основы циркулярной экономики						PC-6.1-6.3						
Б1.В.ДВ.03.02	Green Economy and Tools for Enterprises Sustainable Development / Зеленая экономика и инструменты устойчивого развития предприятий						PC-6.1-6.3						
Б1.В.ДВ.04.01	Engineering Ecology / Инженерная экология										PC-10.1-10.3	PC-11.1-11.3	
Б1.В.ДВ.04.02	Monitoring of Environmental Impacts / Мониторинг воздействия на окружающую среду										PC-10.1-10.3	PC-11.1-11.3	
Block 2	Internship												
В2.В.01(P)	Industrial / Pedagogical Internship	PC-1.1 - 1.2	PC-2.1 - PC-2.5	PC-3.1-3.3	PC-4.1-4.3	PC-5.1 - 5.3	PC-6.1-6.3	PC-8.1-11.3	PC-9.1-9.3	PC-10.1-10.3	PC-11.1-11.3	PC-12.1-12.3	PC-13.1-13.3
В 2. В.02(Pd)	Pre-graduate Internship	PC-1.1 - PC-1.2	PC-2.1 - 2.5	PC-3.1-3.3	PC-4.1-	PC-5.1 - 5.3	PC-6.1-6.3	PC-8.1-11.3	PC-9.1-9.3	PC-10.1-10.3	PC-11.1-11.3	PC-12.1-12.3	PC-13.1-13.3
В2.О.01.02(N)	Research work in the term including projects	PC-1.1 - PC-1.2	PC-2.1 - 2.5	PC-3.1-3.3	PC-4.1-4.3	PC-5.1 - 5.3	PC-6.1-6.3	PC-8.1-11.3	PC-9.1-9.3	PC-10.1-10.3	PC-11.1-11.3	PC-12.1-12.3	PC-13.1-13.3
В2.О.01.01(P)	R&D		PC-2.1 - 2.5	PC-3.1-3.3	PC-4.1-4.3	PC-5.1 - 5.3	PC-6.1-6.3	PC-8.1-11.3	PC-9.1-9.3	PC-10.1-10.3	PC-11.1-11.3	PC-12.1-12.3	PC-13.1-13.3
Block 3	Final State Examination	PC-1.1-PC-1.2	PC-2.1 - 2.5	PC-3.1-3.3	PC-4.1-4.3	PC-5.1 - 5.3	PC-6.1-6.3	PC-8.1-11.3	PC-9.1-9.3	PC-10.1-10.3	PC-11.1-11.3	PC-12.1-12.3	PC-13.1-13.3

B3.01	State Exam	PC-1.1- PC-1.2	PC-2.1 - 2.5	PC-3.1- 3.3	PC-4.1- 4.3	PC-5.1 - -5.3	PC-6.1- 6.3	PC-8.1- 11.3	PC-9.1- 9.3	PC-10.1- 10.3	PC-11.1- 11.3	PC-12.1- 12.3	PC- 13.1- 13.3
B3.02	Degree Diploma	PC-1.1- PC-1.2	PC-2.1 - 2.5	PC-3.1- 3.3	PC-4.1- 4.3	PC-5.1 - -5.3	PC-6.1- 6.3	PC-8.1- 11.3	PC-9.1- 9.3	PC-10.1- 10.3	PC-11.1- 11.3	PC-12.1- 12.3	PC- 13.1- 13.3