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

Academy of Engineering

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

Approved at the meeting of the Academic
Council of RUDN University
Protocol No. 4
April 10, 2023

(date, month, year)

Opened by order of the Rector of
RUDN University No. 232

May 02, 2023

(date, month, year)

PROFESSIONAL EDUCATION PROGRAMME OF HIGHER EDUCATION

Field of Studies/ Speciality:

05.04.01 Geology

field of studies / speciality code and title

Profile/Specialisation:

Mining Geology

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 21.05.2021

(day, month, 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)

AGREED by:

Head
of Educational Programme

A.E. Kotelnikov

(signature)

(day, month, year)

Chairperson
of Didactic Council

M.D. Kharlamova

(signature)

(day, month, year)

Head
of Educational
Department

Yu.N. Razoumny

(signature)

(day, month, year)

2023

1. EDUCATIONAL PROGRAMME GOAL (MISSION)

The aims of the educational programme are agreed with the mission of the University and are formulated taking into account the Educational Standard of RUDN University and employers' recommendations. The objectives are aimed at the development of students' personal qualities, preparation of highly qualified competent geologists (geological engineer, geophysical engineer, hydrogeological engineer, geological technician) who have knowledge, skills and abilities in the field of mining and industrial geology.

Objectives of the educational programme:

Aim 1. Ability to conduct research activities in the field of geology, geophysics and hydrogeology using digital technologies and effective solutions.

Aim 2. Ability to carry out organizational and managerial activities in the field of mining geology (hydrogeological study of the territory at the stage of exploration and development of the mineral deposit, geological study of the subsoil area at various stages of its development).

Aim 3. Ability of graduates to self-study and continuous professional development.

Aim 4. The ability to demonstrate professional qualities, regardless of nationality, race and religion, to work successfully in the chosen field of activity and be competitive in the labor market, as well as to become a leader who can make the world a better place.

In the field of personal development goals of the master's programme are aimed at forming individuals who are patriots of their countries and friends of Russia, introduced to the achievements of world culture, carrying the ideals of humanism, democracy and friendship among peoples, education of young people capable of working successfully in any country of the world and to show their creative abilities in the interconnection of civilizations and the diversity of modern society, as well as combining knowledge of different nationalities, races and religions.

In the field of education, the goals of the master's programme "Mining" are aimed at formation of universal, general professional and professional competencies that allow the graduate to work successfully in the chosen field of activity and to be competitive in the labor market, as well as to become a leader who can make the world a better place.

2. EDUCATIONAL PROGRAMME RELEVANCE, SPECIFICITY, AND UNIQUENESS

During the training students form competences of a modern geologist (geological engineer, geophysical engineer, hydrogeological engineer, geological technician), researcher, production engineer. Students develop skills of complex analysis and digital processing of geological, geophysical, hydrogeological and mining information, acquire skills of independent research and organizational and managerial work.

The programme is focused not only on teaching the traditional methods of solving standard geological problems, but also on an effective integrated approach to the choice of different methods to achieve the most effective results in solving geological, mining and hydrogeological problems. To this aim the students:

- learn to understand analog and digital geological, geophysical, and hydrogeological data;

- form understanding and purpose of modern methods of geological-geophysical, hydrogeological, mining research and information processing, and develop skills of their application in solving urgent issues of mining geology;

- develop the ability to navigate in specialized mining and geological programs (Micromine, GEOMIX, ArcGIS, QGIS, etc.) and effectively use their capabilities.

During the training, along with the traditional types of classes, there are:

- seminar sessions in the form of round table / presentations, report and subsequent discussion / etc.;

- individual or team solutions to small situational tasks (mini-cases).

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

Development of deposits of solid minerals, plays an important role in many countries, including Tanzania and Namibia, and the issues of studying geological factors and characteristics (spatial-morphological, volume-quality, hydrogeological and engineering-geological) that determine the possibility, feasibility and conditions of industrial development of geological objects, are relevant and significant. This contributes to the development of this industry and increases the demand for highly qualified graduates - geologists (geological engineer, geophysical engineer, hydrogeological engineer, geological engineer-technician).

Graduates are oriented to work in Russian and international companies and research centers specializing in the development of deposits of solid minerals, including uranium deposits. For example, Rosatom State Corporation (Rosatom State Nuclear Energy Corporation), JSC Uranium One Group.

5. SPECIAL REQUIREMENTS FOR POTENTIAL APPLICANTS

For admission to the programme, there are Admission Rules approved by the relevant local normative act and available on the official website of RUDN university.

6. FEATURES OF EDUCATIONAL PROGRAMME IMPLEMENTATION

6.1. The Educational Programme is implemented using distance learning technologies and elements of e-learning through the Telecommunication Educational and Information System of the Peoples' Friendship University of Russia (TUIS).

6.2. The language of implementation of the Educational Programme is English.

6.3. The Educational Programme can be adapted for teaching disabled people and people with disabilities.

6.4. The Educational Programme is implemented by Federal State Autonomous Educational Institution for Higher Education "Peoples' Friendship University of Russia named after Patrice Lumumba" (RUDN University).

The information about partner organizations involved in the implementation of the Educational Programme

Наименование организации-партнера	Функционал взаимодействия
JSC "ZARUBEZHGEOLOGIA"	Scientific work of students on the base of the organization-partner (collection of geological materials), internship.
Federal State Budgetary Institution "Russian Federal Geological Fund"	Scientific work of students on the base of the organization-partner (collection of geological materials), internship.
Rosatom State Corporation (Rosatom State Nuclear Energy Corporation)	Support of scientific work of students (collection of geological, geophysical, hydrogeological mining materials)
JSC Uranium One Group	Interaction on the issues of internships

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

Internship	Internship location (organisation name and location)
Производственная практика (производственная, выездная)	Rosatom State Corporation, Moscow; JSC Uranium One Group, Tanzania/ Namibia
Научно-исследовательская работа (производственная, стационарная)	Rosatom State Corporation, Moscow; JSC Uranium One Group, Moscow; RUDN University, Moscow; MISIS University, Moscow
Преддипломная практика (производственная, стационарная)	RUDN University, Moscow

7. CHARACTERISTICS OF EDUCATIONAL PROGRAMME GRADUATE'S PROFESSIONAL ACTIVITIES

7.1. The fields of professional activities of the Educational Programme graduate, where he/she can carry out his/her professional activities:

- 01 Education and science (in the field of scientific research of structure, geological, hydrogeological and mining-industrial characteristics of solid minerals deposits, geophysical fields; research of natural and technogenic geological processes occurring during the development of deposits);

- 40 Cross-cutting types of professional activity in industry (in the field of scientific research of structure, geological, hydrogeological and mining characteristics of deposits of solid minerals, geophysical fields; research of natural and technogenic geological processes occurring during the development of deposits).

Graduates can carry out professional activity in other areas of professional activity and (or) spheres of professional activity, provided that the level of their education and received competencies meet the requirements for the qualification of the employee.

7.2. The types of professional activities tasks, which the graduate is trained to solve when mastering the Educational Programme:

- research (main);
- organizational and managerial.

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
<p><i>Systemic and critical thinking.</i> GC-1. Able to search, critical analysis of problem situations based on a systematic approach, develop an action strategy.</p>	<p>GC-1.1. Analyzes the problem, identifying its basic components; GC-1.2. Performs information retrieval for solving the task by various types of inquiries; GC-1.3. Suggests options for solving the problem, analyzes the possible consequences of their use.</p>
<p><i>Project development and implementation.</i> GC-2. Able to manage a project at all stages of its life cycle.</p>	<p>GC-2.1. Formulates a problem whose solution is directly related to the achievement of the project goal; GC-2.2 Identifies the connections between the tasks and the expected results of their solution; GC-2.3 Identifies the available resources and constraints within the assigned tasks and the applicable legal regulations.</p>
<p><i>Teamwork and leadership.</i> GC-3. Able to organize and manage the work of the team, developing a team strategy to achieve the goal.</p>	<p>GC-3.1 Defines his/her role in the team based on a collaborative strategy to achieve the goal; GC-3.2 Exchange information, knowledge, and experience with team members; GC-3.3 Argues his/her point of view regarding the use of other team members' ideas to achieve the goal set.</p>
<p><i>Communications.</i> GC-4. Able to carry out modern communication technologies in the state language of the Russian Federation and foreign language(s) for academic and professional interaction.</p>	<p>GC-4.1. searches for necessary information to solve standard communicative tasks in Russian and foreign languages; GC-4.2. conducts business correspondence in Russian and foreign languages, taking into account the stylistics of official and unofficial letters and socio-cultural differences in correspondence format; GC-4.3. Uses dialogue for cooperation in academic communication taking into account the personality of interlocutors, their communicative and verbal strategies and tactics, the degree of officiality of the situation.</p>
<p><i>Intercultural interaction.</i> GC-5. Able to analyze and take into account the diversity of cultures in the process of intercultural interaction.</p>	<p>GC-5.1 Finds and uses in social and professional communication information about the cultural characteristics and traditions of different social groups; GC-5.2. gathers information on a given topic, taking into account ethnicities and religions most widely represented in the places of research;</p>

Code and descriptor of generic competence	Code and competence level indicator
	GC-5.3 Adheres to the principles of non-discriminatory interaction in personal and mass communication in order to fulfill professional tasks and enhance social integration.
<i>Self-organization and self-development.</i> GC-6. Able to identify and implement the priorities of their own activities and ways to improve it based on self-assessment.	GC-6.1 Controls the amount of time spent on specific activities; GC-6.2. develops time management tools and methods for accomplishing specific tasks, projects, and goals; GC-6.3 Analyze one's resources and their limits (personal, situational, time, etc.) to successfully complete the assigned task.
<i>Digital Intelligence.</i> GC-7. Capable: - search for the necessary sources of information and data, perceive, analyze, memorize and transmit information using digital means, as well as using algorithms when working with data received from various sources in order to effectively use the information received to solve problems; - evaluate information, its reliability, build logical conclusions based on incoming information and data.	GC-7.1 Searches for relevant sources of information and data, perceives, analyzes, remembers and communicates information using digital tools and algorithms when working with data from various sources in order to effectively use the information to solve problems; GC-7.2 Evaluates information, its reliability, and draws logical conclusions from incoming information and data.

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. Capable of using the theoretical foundations of special and new sections of geological sciences to solve professional activity problems.	GPC-1.1. Knowledge of the basics of special and new sections of geological sciences; GPC-1.2. GPC-1.2. Selects a method or technique to solve a professional problem; GPC-1.3; GPC-1.3. Knows how to select a method or method of solving a professional problem.
GPC-2. Able of independently formulating the research objectives and establishing a sequence for resolving professional problems.	GPC-2.1. Knows the basics and methods of organizing research activities, methods of setting goals and methods of achieving them; GPC-2.2. is able to develop research methods; GPC-2.3. has methods of establishing cause-effect relationships and identifying the most significant among them and skills of independent formulation of research objectives.

Code and descriptor of general professional competence	Code and competence level indicator
GPC-3. Accomplished of totally independent generalizing the results obtained while solving professional problems and developing recommendations for their practical application.	GPC-3.1 Know the theoretical foundations of the generalization of results and development of recommendations; GPC-3.2. be able to summarize the results obtained in the process of solving professional tasks, develop recommendations for their practical use; GPC-3.3. Have the skills to summarize the results obtained in the process of solving professional tasks and develop recommendations for their practical use.
GPC-4. Suitable of representing, protecting, and disseminating the outcomes of their professional activities.	GPC-4.1 Knows the main results of his/her scientific activity, methods of their presentation, protection and dissemination; GPC-4.2. is able to understand and analyze the results of professional activities, use own scientific achievements. discuss and disseminate the results of their professional activities. GPC-4.3. Have the skills to analyze, discuss and disseminate the results of professional activities
GPC-5. Proficient of conducting critical analysis and utilizing a systematic approach in the field of digital economy.	GPC-5.1. Knows the basics of digital economy, basic methods of critical analysis, principles of systems approach; GPC-5.2. Knows how to critically analyze information, understand the principles of systems approach; GPC-5.3. Knows how to critically analyze and apply systems approach to the digital economy.

8.3. The list of professional competencies (PC) that a graduate who has fully mastered the Educational Programme should have:

Code and descriptor of professional competence	Code and competence level indicator	Code and title of occupational standard for relevant PC
PC-1. Capable of processing geological data, modeling ore bodies with modern software, resolving quality and mineral reserve management issues, and developing engineering and geological surveying measures for the territory.	PC-1.1. Knowledge of the basics of geological structure of ore deposits, the possibility of using specialized software; PC-1.2. Is able to apply methods of geological data processing, build ore body models, solve problems on quality and mineral reserves management, develop measures for engineering and geological study of the territory; PC-1.3. Have the skills to process geological data and build models of ore bodies using modern software.	01 Education and science (in the field of scientific research of structure, geological, hydrogeological and mining characteristics of solid mineral deposits, geophysical fields; studies of natural and technogenic geological processes occurring during field development); analysis of experience, expert opinion
PC-2. Capable of justifying the need, choosing the best methodology, planning, implementing, interpreting results,	PC-2.1. Know the theoretical basics of geophysical research; PC-2.2 Know how to select the best methodology, design, implement, interpret the results of geophysical works; PC-2.3 Know how to justify and select optimal methodology, manage geophysical	01 Education and science (in the field of scientific research of structure, geological, hydrogeological and mining characteristics of solid mineral deposits, geophysical fields; studies of natural and

Code and descriptor of professional competence	Code and competence level indicator	Code and title of occupational standard for relevant PC
and supervising geophysical work at various stages of mineral site development.	work at different stages of subsoil area development.	technogenic geological processes occurring during field development); analysis of experience, expert opinion
PC-3. Capable of projecting, implementing, and managing a hydrogeological study of the territory during the exploration and development of a mineral deposit.	PC-3.1 Know the theoretical foundations and methods of hydrogeological study of the territory at the stage of exploration and development of mineral deposits; PC-3.2 Be able to apply methodological solutions in the design, implementation and management of hydrogeological study of the territory at the stage of exploration and development of mineral deposits; PC-3.3 Be able to apply the knowledge and skills obtained in the design, implementation and management of the hydrogeological study of the territory at the stage of exploration and development of mineral deposits.	40 Cross-cutting types of professional activities in industry (in the field of scientific research of the structure, geological, hydrogeological and mining characteristics of solid mineral deposits, geophysical fields; research of natural and man-made geological processes occurring during the development of deposits); analysis of experience, expert opinion
PC-4. Capable of designing, assisting with, and supervising a geologic study of a subsoil area at various stages of development.	PC-4.1 Know the theoretical basis and methods of geological study of the subsoil area at various stages of its development; PC-4.2 Be able to apply methodological solutions in the design and implementation of the geological study of a subsoil area at various stages of its development; PC-4.3 Be able to apply the acquired knowledge and skills in the design, support and management of the geological study of a subsoil area at various stages of its development.	40 Cross-cutting types of professional activities in industry (in the field of scientific research of the structure, geological, hydrogeological and mining characteristics of solid mineral deposits, geophysical fields; research of natural and man-made geological processes occurring during the development of deposits); analysis of experience, expert opinion

9. MATRIX OF COMPETENCIES which students acquire during the study of the programme "Mining Geology" in the higher education field 05.04.01 Geology

Code	Disciplines (modules) Courses/modules that form students' competences	GENERIC COMPETENCES						
		GC-1. Able to search, critical analysis of problem situations based on a systematic approach, develop an action strategy.	GC-2. Able to manage a project at all stages of its life cycle.	GC-3. Able to organize and manage the work of the team, developing a team strategy to achieve the goal.	GC-4. Able to carry out modern communication technologies in the state language of the Russian Federation and foreign language(s) for academic and professional interaction.	GC-5. Able to analyze and take into account the diversity of cultures in the process of intercultural interaction.	GC-6. Able to identify and implement the priorities of their own activities and ways to improve it based on self-assessment.	GC-7. Capable: - search for the necessary sources of information and data, perceive, analyze, memorize and transmit information using digital means, as well as using algorithms when working with data received from various sources in order to effectively use the information received to solve problems; - evaluate information, its reliability, build logical conclusions based on incoming information and data.
Block 1.	Disciplines (modules)							
B1.C	Compulsory part							
B1.C.01	Base Component							
B1.C.01.01	Russian as a Foreign Language				GC-4.1; GC-4.2; GC-4.3			
B1.C.01.02	Regional Geology. Geology of Central and Southern Africa					GC-5.1; GC-5.2; GC-5.3		
B1.C.02	Variable Component							
B1.C.02.01	Geological and geophysical module							

		GENERIC COMPETENCES						
Code	Courses/modules that form students' competences							
B1.C.02.01.01	Digital Technologies in Geology	GC-1.1; GC-1.2; GC-1.3						GC-7.1; GC-7.2
B1.C.02.01.02	Geological and Geophysical Basics of Mineral Prospecting and Exploration						GC-6.1; GC-6.2; GC-6.3	
B1.C.02.02	Mining geology module							
B1.C.02.02.01	Engineering and Geological Support of Subsoil Use							
B1.C.02.02.02	Mining Geology						GC-6.1; GC-6.2; GC-6.3	
B1.C.02.02.03	Modelling of Mineral Deposits		GC-2.1; GC-2.2; GC-2.3				GC-6.1; GC-6.2; GC-6.3	GC-7.1; GC-7.2

		GENERIC COMPETENCES							
Code	Courses/modules that form students' competences								
B1.C.02.02.04	Sustainable Mining								
B1.C.02.03	Hydrogeological module								
B1.C.02.03.01	Hydrogeology								
B1.C.02.03.02	Groundwater Dynamics	GC-1.1; GC-1.2; GC-1.3	GC-2.1; GC-2.2; GC-2.3						
B1.C.02.03.03	Mining Hydrogeology								
B1.C.02.03.04	Applied Groundwater Modeling		GC-2.1; GC-2.2; GC-2.3						
B1.B	University Disciplines Module								
B1.B.E.01	Electives (Geological and geophysical module)								
		GC-1. Able to search, critical analysis of problem situations based on a systematic approach, develop an action strategy.	GC-2. Able to manage a project at all stages of its life cycle.	GC-3.1; GC-3.2; GC-3.3	GC-3. Able to organize and manage the work of the team, developing a team strategy to achieve the goal.	GC-4. Able to carry out modern communication technologies in the state language of the Russian Federation and foreign language(s) for academic and professional interaction.	GC-5. Able to analyze and take into account the diversity of cultures in the process of intercultural interaction.	GC-6. Able to identify and implement the priorities of their own activities and ways to improve it based on self-assessment.	GC-7. Capable: - search for the necessary sources of information and data, perceive, analyze, memorize and transmit information using digital means, as well as using algorithms when working with data received from various sources in order to effectively use the information received to solve problems; - evaluate information, its reliability, build logical conclusions based on incoming information and data.

		GENERIC COMPETENCES						
Code	Courses/modules that form students' competences							
B2.C.01	Base Component	GC-1. Able to search, critical analysis of problem situations based on a systematic approach, develop an action strategy.	GC-2. Able to manage a project at all stages of its life cycle.	GC-3. Able to organize and manage the work of the team, developing a team strategy to achieve the goal.	GC-4. Able to carry out modern communication technologies in the state language of the Russian Federation and foreign language(s) for academic and professional interaction.	GC-5. Able to analyze and take into account the diversity of cultures in the process of intercultural interaction.	GC-6. Able to identify and implement the priorities of their own activities and ways to improve it based on self-assessment.	GC-7. Capable: - search for the necessary sources of information and data, perceive, analyze, memorize and transmit information using digital means, as well as using algorithms when working with data received from various sources in order to effectively use the information received to solve problems; - evaluate information, its reliability, build logical conclusions based on incoming information and data.
B2.C.01.01(E)	Introductory Practical Training						GC-6.1; GC-6.2; GC-6.3	
B2.C.02	Variable Component							
B2.C.02.01(R)	Research Work (Mining Geology). Part 1							
B2.C.02.02(R)	Research Work (Geological and Geophysical Survey). Part 1							
B2.C.02.03(R)	Research Work (Mining Geology). Part 2							
B2.C.02.04(R)	Research Work (Geological and Geophysical Survey). Part 2							
B2.B	University Disciplines Module							
B2.B.01(PG)	Pre-Graduation Practice							

		GENERIC COMPETENCES						
Code	Courses/modules that form students' competences							
Block 3	State Final Attestation	GC-1. Able to search, critical analysis of problem situations based on a systematic approach, develop an action strategy.	GC-2. Able to manage a project at all stages of its life cycle.	GC-3. Able to organize and manage the work of the team, developing a team strategy to achieve the goal.	GC-4. Able to carry out modern communication technologies in the state language of the Russian Federation and foreign language(s) for academic and professional interaction.	GC-5. Able to analyze and take into account the diversity of cultures in the process of intercultural interaction.	GC-6. Able to identify and implement the priorities of their own activities and ways to improve it based on self-assessment.	GC-7. Capable: - search for the necessary sources of information and data, perceive, analyze, memorize and transmit information using digital means, as well as using algorithms when working with data received from various sources in order to effectively use the information received to solve problems; - evaluate information, its reliability, build logical conclusions based on incoming information and data.
AD	Additional disciplines							
AD.01	Russian as a Foreign Language				GC-4			
AD.02	Mineralogy							

Code		GENERAL PROFESSIONAL COMPETENCES				
Courses/modules that form students' competences						
Block 1.	Disciplines (modules)	GPK-1. Capable of using the theoretical foundations of special and new sections of geological sciences to solve professional activity problems.	GPK-2. Able of independently formulating the research objectives and establishing a sequence for resolving professional problems.	GPK-3. Accomplished of totally independent generalizing the results obtained while solving professional problems and developing recommendations for their practical application.	GPK-4. Suitable of representing, protecting, and disseminating the outcomes of their professional activities.	GPK-5. Proficient of conducting critical analysis and utilizing a systematic approach in the field of digital economy.
B1.C	Compulsory part					
B1.C.01	Base Component					
B1.C.01.01	Russian as a Foreign Language					
B1.C.01.02	Regional Geology. Geology of Central and Southern Africa					
B1.C.02	Variable Component					
B1.C.02.01	Geological and geophysical module					
B1.C.02.01.01	Digital Technologies in Geology				GPC-4.1; GPC-4.2; GPC-4.3	
B1.C.02.01.02	Geological and Geophysical Basics of Mineral Prospecting and Exploration	GPC-1.1, GPC-1.2, GPC-1.3	GPC-2.1, GPC-2.2, GPC-2.3			
B1.C.02.02	Mining geology module					
B1.C.02.02.01	Engineering and Geological Support of Subsoil Use	GPC-1.1, GPC-1.2, GPC-1.3				
B1.C.02.02.02	Mining Geology	GPC-1.1, GPC-1.2, GPC-1.3				

Code		Courses/modules that form students' competences	GENERAL PROFESSIONAL COMPETENCES					
			GPK-1. Capable of using the theoretical foundations of special and new sections of geological sciences to solve professional activity problems.	GPK-2. Able of independently formulating the research objectives and establishing a sequence for resolving professional problems.	GPK-3. Accomplished of totally independent generalizing the results obtained while solving professional problems and developing recommendations for their practical application.	GPK-4. Suitable of representing, protecting, and disseminating the outcomes of their professional activities.	GPK-5. Proficient of conducting critical analysis and utilizing a systematic approach in the field of digital economy.	
B1.C.02.02.03	Modelling of Mineral Deposits			GPC-2.1, GPC-2.2, GPC-2.3				
B1.C.02.02.04	Sustainable Mining					GPC-3.1; GPC-3.2; GPC-3.3	GPC-4.1; GPC-4.2; GPC-4.3	GPC-5.1, GPC-5.2, GPC-5.3
B1.C.02.03	Hydrogeological module							
B1.C.02.03.01	Hydrogeology		GPC-1.1, GPC-1.2, GPC-1.3					
B1.C.02.03.02	Groundwater Dynamics							
B1.C.02.03.03	Mining Hydrogeology		GPC-1.1, GPC-1.2, GPC-1.3					
B1.C.02.03.04	Applied Groundwater Modeling			GPC-2.1, GPC-2.2, GPC-2.3				
B1.B	University Disciplines Module							
B1.B.E.01	Electives (Geological and geophysical module)							
B1.B.E.01.01	Innovative Methods of Remote Research in Geology							
B1.B.E.01.02	Geoinformation Systems for Geology Based on Space Imagery							

Code		Courses/modules that form students' competences	GENERAL PROFESSIONAL COMPETENCES				
			GPC-1.1, GPC-1.2, GPC-1.3	GPC-2.1, GPC-2.2, GPC-2.3	GPC-3.1, GPC-3.2, GPC-3.3	GPC-4.1, GPC-4.2, GPC-4.3	GPC-4.1, GPC-4.2, GPC-4.3
B1.B.E.02	Electives (Mining geology module)		GPC-1.1, GPC-1.2, GPC-1.3	GPC-2.1, GPC-2.2, GPC-2.3	GPC-3.1, GPC-3.2, GPC-3.3	GPC-4.1, GPC-4.2, GPC-4.3	
B1.B.E.02.01	Geological Support for Solid Minerals Extraction						
B1.B.E.02.02	Management of Reserves and Quality of Mineral Raw Materials						
Block 2	Practice						
B2.C	Compulsory part						
B2.C.01	Base Component						
B2.C.01.01(E)	Introductory Practical Training						
B2.C.02	Variable Component						
B2.C.02.01(R)	Research Work (Mining Geology). Part 1		GPC-1.1, GPC-1.2, GPC-1.3	GPC-2.1, GPC-2.2, GPC-2.3	GPC-3.1, GPC-3.2, GPC-3.3		
B2.C.02.02(R)	Research Work (Geological and Geophysical Survey). Part 1		GPC-1.1, GPC-1.2, GPC-1.3	GPC-2.1, GPC-2.2, GPC-2.3	GPC-3.1, GPC-3.2, GPC-3.3	GPC-4.1, GPC-4.2, GPC-4.3	
B2.C.02.03(R)	Research Work (Mining Geology). Part 2		GPC-1.1, GPC-1.2, GPC-1.3	GPC-2.1, GPC-2.2, GPC-2.3	GPC-3.1, GPC-3.2, GPC-3.3	GPC-4.1, GPC-4.2, GPC-4.3	
B2.C.02.04(R)	Research Work (Geological and Geophysical Survey). Part 2		GPC-1.1, GPC-1.2, GPC-1.3	GPC-2.1, GPC-2.2, GPC-2.3	GPC-3.1, GPC-3.2, GPC-3.3	GPC-4.1, GPC-4.2, GPC-4.3	
B2.B	University Disciplines Module						

		GENERAL PROFESSIONAL COMPETENCES				
Code	Courses/modules that form students' competences					
B2.B.01(PG)	Pre-Graduation Practice	GPC-1.1, GPC-1.2, GPC-1.3	GPC-2.1, GPC-2.2, GPC-2.3	GPC-3.1, GPC-3.2, GPC-3.3	GPC-4.1, GPC-4.2, GPC-4.3	GPC-5.1, GPC-5.2, GPC-5.3
Block 3	State Final Attestation					
AD	Additional disciplines					
AD.01	Russian as a Foreign Language					
AD.02	Mineralogy					

		PROFESSIONAL COMPETENCIES			
Code	Courses/modules that form students' competences				
Block 1.	Disciplines (modules)				
B1.C	Compulsory part				
B1.C.01	Base Component				
B1.C.01.01	Russian as a Foreign Language				
B1.C.01.02	Regional Geology: Geology of Central and Southern Africa		PC-2.1, PC-2.2		PC-4.1, PC-4.2
B1.C.02	Variable Component				
B1.C.02.01	Geological and geophysical module				
B1.C.02.01.01	Digital Technologies in Geology	PC-1.1			
B1.C.02.01.02	Geological and Geophysical Basics of Mineral Prospecting and Exploration	PC-1.1, PC-1.2	PC-2.1, PC-2.2		PC-4.1, PC-4.2, PC-4.3
B1.C.02.02	Mining geology module				
B1.C.02.02.01	Engineering and Geological Support of Subsoil Use	PC-1.2			
B1.C.02.02.02	Mining Geology		PC-2.1, PC-2.2	PC-3.1, PC-3.2, PC-3.3	PC-4.1, PC-4.2, PC-4.3
B1.C.02.02.03	Modelling of Mineral Deposits	PC-1.1, PC-1.2, PC-1.3	PC-2.1, PC-2.2		PC-4.1, PC-4.2

		PROFESSIONAL COMPETENCIES							
Code	Courses/modules that form students' competences	B1.C.02.02.04	Sustainable Mining		PC-1. Capable of processing geological data, modeling ore bodies with modern software, resolving quality and mineral reserve management issues, and developing engineering and geological surveying measures for the territory.				
		B1.C.02.03	Hydrogeological module						
		B1.C.02.03.01	Hydrogeology		PC-2.1, PC-2.2	PC-2. Capable of justifying the need, choosing the best methodology, planning, implementing, interpreting results, and supervising geophysical work at various stages of mineral site development.			
		B1.C.02.03.02	Groundwater Dynamics		PC-3.1	PC-3. Capable of projecting, implementing, and managing a hydrogeological study of the territory during the exploration and development of a mineral deposit.			
		B1.C.02.03.03	Mining Hydrogeology		PC-2.1, PC-2.2	PC-3.1, PC-3.2, PC-3.3	PC-4.1, PC-4.2		
						PC-3.1, PC-3.2, PC-3.3			
		B1.C.02.03.04	Applied Groundwater Modeling						
		B1.B	University Disciplines Module						
		B1.B.E.01	Electives (Geological and geophysical module)						
		B1.B.E.01.01	Innovative Methods of Remote Research in Geology						
B1.B.E.01.02	Geoinformation Systems for Geology Based on Space Imagery								
B1.B.E.02	Electives (Mining geology module)								
B1.B.E.02.01	Geological Support for Solid Minerals Extraction								
B1.B.E.02.02	Management of Reserves and Quality of Mineral Raw Materials								
Block 2	Practice								
B2.C	Compulsory part								

Code		Courses/modules that form students' competences	PROFESSIONAL COMPETENCIES			
			PC-1. Capable of processing geological data, modeling ore bodies with modern software, resolving quality and mineral reserve management issues, and developing engineering and geological surveying measures for the territory.	PC-2. Capable of justifying the need, choosing the best methodology, planning, implementing, interpreting results, and supervising geophysical work at various stages of mineral site development.	PC-3. Capable of projecting, implementing, and managing a hydrogeological study of the territory during the exploration and development of a mineral deposit.	PC-4. Capable of designing, assisting with, and supervising a geologic study of a subsoil area at various stages of development.
B2.C.01	Base Component					
B2.C.01.01(E)	Introductory Practical Training					
B2.C.02	Variable Component					
B2.C.02.01(R)	Research Work (Mining Geology). Part 1	PC-1.2, PC-1.3	PC-2.2	PC-3.2, PC-3.3	PC-4.2, PC-4.3	
B2.C.02.02(R)	Research Work (Geological and Geophysical Survey). Part 1	PC-1.2, PC-1.3	PC-2.2		PC-4.2, PC-4.3	
B2.C.02.03(R)	Research Work (Mining Geology). Part 2	PC-1.3	PC-2.2, PC-2.3	PC-3.3	PC-4.2, PC-4.3	
B2.C.02.04(R)	Research Work (Geological and Geophysical Survey). Part 2	PC-1.3	PC-2.2, PC-2.3		PC-4.2, PC-4.3	
B2.B	University Disciplines Module					
B2.B.01(PG)	Pre-Graduation Practice	PC-1.1, PC-1.2, PC-1.3	PC-2.2, PC-2.3	PC-3.2, PC-3.3	PC-4.2, PC-4.3	
Block 3	State Final Attestation	PC-1.1, PC-1.2, PC-1.3	PC-2.1, PC-2.2, PC-2.3	PC-3.1, PC-3.2, PC-3.3	PC-4.1, PC-4.2, PC-4.3	
AD	Additional disciplines					
AD.01	Russian as a Foreign Language					

<p style="text-align: center;">Code</p>	<p style="text-align: center;">Courses/modules that form students' competences</p>	PROFESSIONAL COMPETENCIES				
		<p style="text-align: center;">AD.02</p>	<p style="text-align: center;">Mineralogy</p>	<p>PC-1. Capable of processing geological data, modeling ore bodies with modern software, resolving quality and mineral reserve management issues, and developing engineering and geological surveying measures for the territory.</p>	<p>PC-2. Capable of justifying the need, choosing the best methodology, planning, implementing, interpreting results, and supervising geophysical work at various stages of mineral site development.</p>	<p>PC-3. Capable of projecting, implementing, and managing a hydrogeological study of the territory during the exploration and development of a mineral deposit.</p>