



K. Turysoff Institute of Geology, Oil, and Gas Industry

**Department of Geological Survey,
Prospecting and Exploration of Mineral Deposits**

EDUCATIONAL PROGRAM

7M07218 "GEOLOGY AND EXPLORATION OF SOLID MINERAL DEPOSITS"

Code and classification of the field of education: 7M07-Engineering, manufacturing, and construction sectors

Code and classification of training directions: 7M072-Manufacturing and processing sectors

Group of educational programs: M121-Geology

Level based on NQF: 7

Level based on IQF: 7

Study period: 1.5 years

Amount of credits: 90 credits

Almaty 2025

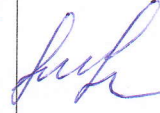
Educational program 7M07218-"Geology and exploration of solid mineral deposits"
Was approved at the meeting of K.I. Satbayev KazNRTU Academic Council

Minutes # 10 dated «06» 03 2025

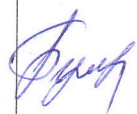
was reviewed and recommended for approval at the meeting of K.I. Satbayev
KazNRTU Educational and Methodological Council

Minutes # 3 dated «20» 12 2024

Educational program 7M07218-"Geology and exploration of solid mineral deposits"
was developed by Academic committee based on direction «7M072-Manufacturing
and processing sectors »

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NON-COMMERCIAL JOINT STOCK COMPANY «KAZAKH NATIONAL RESEARCH TECHNICAL
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NON-COMMERCIAL JOINT STOCK COMPANY «KAZAKH NATIONAL RESEARCH TECHNICAL
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Table of contents

	List of abbreviations and designations	4
1.	Description of educational program	5
2.	Purpose and objectives of educational program	6
3.	Requirements for the evaluation of educational program learning outcomes	7
4.	Passport of educational program	9
4.1.	General information	9
4.2.	Relationship between the achievability of the formed learning outcomes according to educational program and academic disciplines	12
5.	Curriculum of educational program	21

List of abbreviations and designations

NQF	The National Qualifications Framework
BC	Basic competencies
PC	Professional competencies
UNT	Unified national testing
CTE	credit technology of education
RD	required component
CGES	the cycle of general education subjects
PD	profile disciplines
ECTAS	The European Credit Transfer and Accumulation System
AS	academic staff
EP	Educational Program
TSS	training and support staff
CES	catalog of elective subjects
SMSE	The State mandatory standard of education
LO	learning outcome
SRW	scientific research work
MSRW	Master's student's research work
GIS	geological information system
SDGs	Sustainable Development Goals

1. Description of educational program

The program is designed for specialized training of master's students in the "Geology and Exploration of Solid Mineral Deposits" educational program at Satbayev University and has been developed within the framework of the "Manufacturing and Processing Industries" field.

Types of Professional Activities:

Industrial;

Project-based;

Organizational and managerial.

Graduates of the "Geology and Exploration of Solid Mineral Deposits" program acquire the knowledge and skills necessary to address a wide range of professional tasks, depending on their field of activity.

Professional Tasks of Graduates:

a. Industrial Activity:

- Independent organization and execution of field, laboratory, and interpretative research to solve practical problems;
 - Professional selection, configuration, and operation of modern equipment and instruments used in field and laboratory studies;
 - Collection, analysis, and systematization of specialized information using modern digital technologies;
 - Comprehensive processing and interpretation of data obtained during field and laboratory research to solve industrial tasks;
- Assessment of the economic efficiency of ongoing production activities.

b. *Project-Based Activity:*

- development and implementation of industrial and technical projects;
- participation in expert evaluation of projects related to geological research;
- development of regulatory and methodological documents governing geological exploration activities.

c. *Organizational and Managerial Activity:*

- planning and coordination of field, laboratory, and interpretative work within production and technical processes;
- organization and conduct of scientific and practical seminars and conferences in the field of geology and geological exploration.

Objects of Professional Activity for Graduates:

- The Earth's crust, lithosphere, rock formations, and solid mineral deposits;
- Physical properties of rocks;
- Minerals, crystals, geochemical processes, and fields;
- The geological environment, natural and anthropogenic geological processes, and the ecological functions of the lithosphere.

2. Purpose and objectives of educational program

Purpose of EP: The goal of the Master's educational program 7M07218 "Geology and Exploration of Solid Mineral Deposits" Preparation, taking into account the development prospects of the country, of competitive, highly qualified personnel with high spiritual and moral qualities, capable of independent thinking and ensuring the progressive scientific, technical, socio-economic and cultural development of society.

Tasks of EP:

- The readiness of specialists for research and project work in the field of exploration, development, and operation of solid mineral deposits.
- Competence in production and technological activities, aimed at the development, implementation, and efficient operation of innovative geological technologies, contributing to industrial growth, infrastructure modernization, and the sustainable development of the mining sector at the regional level (*SDG No. 9*).
- Mastering methods for assessing and forecasting the state of ecological-geological systems, ecological-geological monitoring and mapping, as well as engineering and environmental surveys, aimed at minimizing negative impacts on the lithosphere and preserving biodiversity (*SDG No. 15*).
- The readiness of specialists to search for and acquire new information necessary to solve professional tasks in the field of knowledge integration relevant to their area of activity, and to actively participate in the activities of an enterprise or organization.
- The readiness of specialists for scientific-information, ideological, and problem-oriented communications in a professional environment and with non-specialist audiences, clearly and deeply justifying their position, engaging in organizational, managerial, and service activities, and understanding the responsibility for their professional decisions.
- The readiness of specialists for self-learning and continuous professional development throughout their scientific or professional careers.

3. Requirements for evaluating the educational program learning outcomes

The previous level of education for applicants is higher professional education (bachelor's degree). The candidate must have a diploma of the established form and confirm their level of English proficiency with a certificate or diploma of the established form.

The admission procedure for citizens to the master's program is established in accordance with the "Model Rules for Admission to Educational Organizations Implementing Postgraduate Education Programs."

The formation of the master's student contingent is carried out through the placement of a state educational order for the training of scientific and pedagogical personnel, as well as through payment for education from the citizens' own funds and other sources. Citizens of the Republic of Kazakhstan are granted the right to receive free postgraduate education on a competitive basis in accordance with the state educational order, if it is their first time pursuing education at this level.

At the "entry point," a master's student must have all the prerequisites necessary for mastering the corresponding master's educational program. The list of required prerequisites is determined independently by the higher educational institution.

If the necessary prerequisites are not met, the master's student may be allowed to acquire them on a paid basis.

Awarded qualification degree:

The graduate of this educational program is awarded the academic degree of "Master of Technical Sciences" in the field of "Manufacturing and Processing Industries" with a specialization in "Geology and Exploration of Solid Mineral Deposits."

A graduate who has completed the master's program should possess the following general professional competencies:

- The ability to independently acquire, understand, structure, and apply new knowledge and skills in professional activities, as well as to develop innovative capabilities;
- The ability to independently formulate research objectives and establish the sequence for solving professional tasks;
- The ability to apply in practice the knowledge of fundamental and applied areas of disciplines that define the focus (profile) of the master's program;
- The ability to professionally select and creatively use modern scientific and technical equipment to solve scientific and practical tasks;
- The ability to critically analyze, present, defend, discuss, and disseminate the results of professional activities;
- Proficiency in drafting and preparing scientific-technical documentation, scientific reports, reviews, presentations, and articles;
- The readiness to lead a team in their professional field, with tolerance for social, ethnic, religious, and cultural differences;
- The readiness to communicate in both oral and written forms in a foreign language to solve professional tasks.

A graduate who has completed the master's program should possess professional competencies corresponding to the types of professional activities that the master's program is aimed at:

Production Activity:

- The ability to independently conduct production and research-production field, laboratory, and interpretative work to solve practical tasks;
- The ability to professionally operate modern field and laboratory equipment and instruments within the scope of the master's program;
- The ability to use modern methods for processing and interpreting complex information to solve production tasks.

Project Activity:

- The ability to independently develop and present projects for research and research-production work;
- The readiness to design complex research and research-production work to solve professional tasks.

Organizational and Managerial Activity:

- The readiness to apply practical skills in organizing and managing research and research-production activities to solve professional tasks;
- The readiness to practically apply regulatory documents when planning and organizing research-production work;

When developing the master's program, all general cultural and general professional competencies, as well as professional competencies related to the types of professional activity that the master's program is aimed at, are included in the set of required outcomes for mastering the program.

4. Passport of educational program

4.1. General information

№	Field name	Comments
1	Code and classification of the field of education	7M07 Engineering, Manufacturing, and Construction Industries.
2	Code and classification of training directions	7M072 Manufacturing and Processing Industries.
3	Educational program group	M121 Geology
4	Educational program name	7M07218 Geology and Exploration of Solid Mineral Deposits
5	Short description of educational program	The educational program is designed to provide scientific and pedagogical training for master's students in the program "Geology and Exploration of Solid Mineral Deposits" at Satbayev University and is developed within the framework of the field "Manufacturing and Processing Industries." At the master's level, training in the specialty "Geology and Exploration of Solid Mineral Deposits" is carried out through trajectories aimed at implementing educational programs for training personnel in the geological sector, possessing advanced technical-analytical, scientific-pedagogical, and prognostic training.
6	Purpose of EP	The goal of the Master's educational program 7M07218 "Geology and Exploration of Solid Mineral Deposits" Preparation, taking into account the development prospects of the country, of competitive, highly qualified personnel with high spiritual and moral qualities, capable of independent thinking and ensuring the progressive scientific, technical, socio-economic and cultural development of society.
7	Type of EP	New EP
8	The level based on NQF	7
9	The level based on IQF	7
10	Distinctive features of EP	-
11	List of competencies of educational program	Basic Competencies (BC) Professional Competencies (PC)
12	Learning outcomes of educational program	LO1 - To know the main concepts of business communication in English, including the ability to identify the main idea, core message, and specific details in spoken and written language within the context of business and management. To be able to comprehend and analyze monologues, dialogues, and group discussions, as well as produce managerial texts (reports, letters, emails, meeting minutes) in accordance with grammatical norms and business style standards. To be capable of critically evaluating information and selecting appropriate language tools for various business situations. To possess skills in effective written and oral business communication in English in pairs, groups, meetings, and negotiations. To be ready for independent

	development of language and professional competencies in the field of business English. LO2 - To know modern standards in project management and their key characteristics, the PMI approach, principles of investment planning, methods of accounting for project risks and optimizing the use of available resources, approaches to resolving conflicts, and methods for analyzing actual performance indicators for timely project adjustment. LO3 - To be able to prepare project initiation documents such as a feasibility study and a project charter, to develop and analyze documents related to project planning, and to apply various decision-support methods. To have the skills to select personnel, resolve conflicts between team members, and manage risks arising during project implementation. To possess the competencies for managing projects in accordance with modern project management standards and to use MS Project software in the project management process. LO4 - To know the laws of propagation, refraction, birefringence, and interference of light waves in crystalline media, and the associated optical constants of minerals. To be able to use a polarizing microscope and a Fedorov stage. To have skills in studying and identifying rock-forming minerals using a polarizing microscope. LO5 - To know the methods and fundamental principles of geological modeling of mineral deposits in relation to geological tasks. To be able to interpret and create wireframe and block models of ore bodies based on primary geological data, construct digital surface models (DSMs), and visualize interpreted geological, geochemical, and other types of data. To know the skills of applying GIS technologies for solving geological evaluation tasks of mineral deposits and for estimating ore reserves using various methods in the “Micromine” software. LO6 - To know the object, subject, and tasks of environmental geology, its relation to geoecology, the ecological functions of the lithosphere, types of lithological systems and their role in maintaining ecological balance, criteria for assessing the state of ecosystems, as well as the methodological foundations of environmental geology. To understand the principles of environmental geological monitoring, methods of environmental geological mapping, the content of environmental engineering surveys, and the role of environmental geology in substantiating decisions for managing environmental conditions.
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		To be able to develop environmental geological maps, organize and conduct monitoring, carry out engineering-environmental surveys, and demonstrate readiness for professional activity and further learning in the field of environmental geology. LO7 - To know the principles of developing a comprehensive understanding of ecological and geological processes and their impact on the environment for the purpose of sustainable natural resource management and the preservation of terrestrial ecosystems. To understand the methods for assessing and forecasting the state of ecological and geological systems, approaches to environmental geological monitoring and mapping, and the content of environmental engineering surveys aimed at minimizing negative impacts on the lithosphere and preserving biodiversity.
13	Education form	Full-time
14	Period of training	1.5 years
15	Amount of credits	90
16	Languages of instruction	Russian, Kazakh, English
17	Academic degree awarded	Master of Engineering and Technology
18	Developer(s) and authors	Baibatsha A., Arshamov Y., Assubayeva S., Baisalova A., Zhunusov A., Dauletuly A.

4.2. Relationship between the achievability of the formed learning outcomes based on educational program and academic disciplines

№	Discipline name	Short description of discipline	Amount of credits	Generated learning outcomes (codes)						
				LO1	LO2	LO3	LO4	LO5	LO6	LO7
Cycle of general education disciplines										
Required component										
1.	LNG212 Foreign Language (Professional)	The purpose of the discipline is to acquire and improve competencies in accordance with trade standards of foreign education, capable of competing in the labor market, because through a foreign language, the future master gains access to academic knowledge, new technologies and modern information, allowing the use of a foreign language as a means of communication in the intercultural, professional and scientific activities of the future master.	2	v						
2.	HUM211 Psychology management	To acquire skills in making strategic and managerial decisions, taking into account the psychological characteristics of the individual and the team. Content: the modern role and content of psychological aspects in management activities, methods for improving psychological literacy, the composition and structure of management activities, both at the local and foreign levels, the psychological feature of modern managers.	3			v				
3.	MNG726 Management	To form a scientific understanding of management as a type of professional activity. Contents: Mastering the general theoretical principles of managing socio-economic systems; acquiring skills and abilities in practical problem-solving of managerial issues; studying global management practices and the specificities of Kazakhstani management; training in solving practical issues related to managing various aspects of organizational activities.	2		v					
Cycle of general education disciplines										
University component										

4.	GEO209 Geological Modeling of Mineral Deposits	Goal: Study of geological modeling of mineral deposits. Objectives: familiarization with the need for computer programs for visualization and interpretation of geological exploration data in a three-dimensional environment; practical development of three-dimensional modeling of mineral deposits; learning to work with graphical applications in the context of geological modeling; application of Micromine software for reservoir modeling and reserve assessment.	5				v			
5.	GEO767 Genesis of the main industrial deposits	Purpose: Study of the genesis of the main industrial deposits. Objectives: Classification of pyrite deposits, provinces and ore regions; study of genetic types of deposits (Cypriot, Ural, Brazilian); analysis of the features of the formation of gold deposits in Kazakhstan; study of the spatiotemporal paragenetic connection of uranium and gold deposits and development of models for their formation; comparative analysis of uranium, iron ore and copper deposits of Kazakhstan with world analogues and development of theories of their formation.	5							v
6.	GEO764 Technology of underground borehole ore leaching	Features of deposits of hydrogenic type in Shu-Sarysu and Syrdarya provinces associated with zones of reservoir oxidation; systematization and use of uranium exploration and production data, determination of the site and direction of work, calculation of the volumes of exploration, exploration and technological drilling to open ore deposits, construction and commissioning of technological wells, geotechnological blocks, control of the operation of a geotechnological field (GTF), choice of acidification mode and the start of mining; carrying out measures to protect the environment, comply with the requirements of environmental, radiation and industrial safety.	5			v				
7.	GEO753 Petrogenic minerals	Refraction of light in minerals and the associated optical effects observed with a microscope; birefringence and optical indicatrix of minerals of various syngonies and the	4				v			

		associated optical properties of minerals; the course of light in a polarizing microscope; conoscopic method for determining the optical axis, sign and angle of the optical axes of minerals; immersion method for determining the refractive indices of minerals; investigation and determination of the petrogenic minerals of igneous, sedimentary, metamorphic and metasomatic rocks by the optical property using a polarization microscope.								
8.	GEO754 Actual problems of geology	The formation, structure and composition of the Earth according to the modern concepts of official science and the general scientific questions arising under this assumption; the meaning and content of the concept of "geological development of the Earth"; the main sources of the Earth's internal heat as the main energy base for the development of the planet; the main provisions of the leading geotectonic concepts, their advantages and disadvantages for understanding the essence of geological processes; problems associated with identifying the nature of the emergence and formation of the main structural elements of the earth's crust of the oceans and continents; problems associated with the establishment of the mechanism of deformation of the rock layers of the earth's crust.	4				v			
9.	GEO763 Basin analysis and sedimentary geology	1) the principle of isostasis and calculations of the subsidence of the base of sedimentary basins, 2) the main sedimentary systems and their transformation depending on fluctuations in sea level and the rate of subsidence of the sedimentation basin, 3) multi-order periodicity (cyclicality) of sedimentation and its role in the design of sedimentary basins, 4) the relationship the denudation rate of feeding areas and the filling of sedimentation basins; 5) the evolution of sedimentary basins and their geodynamic classification in the concept of tectonics of lithospheric plates.	4					v		
Cycle of profile disciplines Component of choice										

10.	GEO220 Metallogeny and Ore Formations of Kazakhstan	Goal: Study of metallogeny and ore formations of Kazakhstan in order to understand the processes of ore formation and consider various metallogenic situations. Objectives: familiarization with the concepts of metallogeny and minerageny; study of the general principles of ore-forming processes and systems; understanding of ore formation analysis and formations of various types; consideration of metallogenic studies and their general principles; analysis of metallogeny in various geological settings and modern seas and oceans	5							v
11.	GEO210 Geological Support of Subsoil Use	Goal: Study of geological support for subsoil use in order to increase the efficiency of use of subsoil resources. Objectives: study the features of modern subsoil use and identify objects and subjects of this process; analysis of legal regulation of subsoil ownership and geological information; assessing the reliability of geological data and developing ways and means to increase this reliability; study of modern methods of collecting, processing and analyzing information about the subsoil, including geoinformation technologies.	5			v				
Cycle of Specialized Disciplines Elective Component										
12.	GEO709 Geotectonics with geodynamics basics	Goal: Study of geotectonics and the fundamentals of geodynamics with an emphasis on the practical application of geophysical methods in the study of the earth's crust. Objectives: familiarization with the informational and educational lecture module; study of practical diagrams of various geophysical methods for visual analysis; familiarization with methods for interpreting geophysical data using examples of demonstration programs; analysis of the use of well modifications of geophysical methods and their limitations; solving typical geophysical and geological problems using borehole geophysics.	5							v
13.	GEO227 Mineralogy of Radioactive and	Goal: To prepare specialists in the field of uranium geology, equipped with in-depth knowledge of the mineralogy of	5							v

	Rare Earth Elements	radioactive and rare earth elements and methods of their diagnosis. Objectives: to study the mineral forms of radioactive and rare earth elements; master methods for diagnosing radioactive minerals; learn to identify paragenetic mineral associations and assess their significance for the search and development of deposits; analyze the types of ores and their genetic classification.								
14.	GEO231 Basics of petrology	Goal: Study the basics of petrology with an emphasis on modern data on magmas and their origin. Objectives: understand the physicochemical basis of crystallization of magmatic melts; study the main reasons for the diversity of magmatites; determine the chemical and mineral composition, structure of magmatites and their genetic significance; consider rocks of various compositions and their relationship with mineral deposits; master methods of studying rocks using a polarizing microscope; study igneous associations	5				v			v
15.	GEO758 Petrochemistry	Goal: Mastering the methods of petrochemical analysis to study the chemical composition of rocks. Objectives: study of the petrochemical method of recalculation according to A.N. Zavaritsky for magmatites and analysis of research results; mastering methods for studying the chemical composition of metamorphites according to various authors and identifying protoliths; study of the chemical composition of metasomatic rocks using various methods and construction of diagrams to analyze the research results.	5				v			
16.	GEO232 Fundamentals of Strategic Metals Technology	The purpose of the course: to familiarize and understand students of the theoretical and practical foundations of the technology for the extraction of strategic metals, as well as uranium ores by the method of underground well leaching. Application of the main methods for studying and evaluating the geotechnological properties and conditions of the deposit. As a result of studying the course, students develop the ability to analyze various technological conditions when	5							v

		mining strategic metals and designing a set of works for underground uranium leaching.								
17.	GEO214 Advanced well logging	The course contains an information and educational lecture module and practical diagrams of various geophysical methods, both in the form of hard copies for visual analysis, and in digital form to get acquainted with interpretation techniques using examples of demonstration programs. The course focuses on the practical application of borehole modifications of geophysical methods, on the analysis of the conditions for their applicability and natural limitations. A number of typical problems, both purely geophysical and geological, solved by borehole geophysics are considered.	5					v		
18.	GPH211 GIS of Uranium Deposits	Goal: Study the use of geographic information systems (GIS) in the analysis of uranium deposits. Objectives: to study the relationship between the geological characteristics of the section and their physical properties obtained from geophysical studies of ore wells; master methods for complex interpretation of well section diagrams to identify ore intervals and assess the quality of uranium minerals; use data from laboratory core studies to analyze the physical properties, composition of the section and parameters of ore bodies	5							v
19.	GEO223 Methods of Lithological Research	Purpose: To introduce students to lithological research methods to understand the structure, composition and origin of sedimentary rocks. Objectives: to study the mineral and chemical composition of sedimentary rocks; understand the occurrence patterns and origin of these rocks; consider methods for studying the composition and origin of minerals of sedimentary origin; study methods for determining the age and history of formation of sedimentary rocks; master techniques for interpreting lithological data to solve geological problems	5							v
20.	GEO208 The geological structure of	Goal: Study the geological structures of ore fields and deposits in order to understand their formation and role in	5							v

	ore fields and deposits	the process of ore formation. Objectives: analysis of the theoretical foundations of structural analysis and study of the tectonic properties of rocks; analysis of the main stages of development of the structures of ore fields and deposits; identifying the role of plicative and disjunctive dislocations in the process of ore formation; study of patterns of localization of mineralization in geological structures of various genetic types								
21.	GEO 734 Design of Hydrogeological and Geotechnological Wells	Design of hydrogeological and geotechnological wells. For undergraduates of NAC Kazatomprom. The general and regulatory requirements for the design of well construction and the composition of the project itself, the methods and methods of drilling wells, the equipment and tools used in various conditions, the methods of testing and developing wells are considered. As a result of studying the course, the student will receive design skills, get acquainted with the methods and methods of drilling hydrogeological wells. Get an idea about the methods of testing and development of wells in various hydrogeological conditions.	5		v					
22.	GEO240 Regional geology of the UIC	Goal: Study of the regional geology of the CIS and Baltic countries with an emphasis on the basics of tectonic zoning. Objectives: analysis of ancient platforms, including the East European and Siberian platforms; study of folded regions of the Ural-Mongolian belt, such as the Ural-Novozemelskaya, Southern Tien Shan, Kazakh-Kyrgyz, Zaisan, Altai-Sayan, and Sayan-Yenisei folded regions; consideration of the geological features of the Baikal and Transbaikal regions, as well as the Taimyr-Severozemelskaya region; study of young EpiPaleozoic plates of Eurasia.	5							v
23.	GEO212 Geochemistry of Radioactive Elements	Goal: Study the basics of geochemistry of radioactive elements in order to understand their distribution, forms of migration and concentration. Objectives: analyze the content of uranium and thorium in minerals, rocks, rock formations and complexes, lithosphere and space; identify patterns of	5						v	v

		distribution and forms of occurrence of radioactive elements; study the conditions of the form of migration; historically characterize the development of radiogeochemistry; describe the general features of the geochemistry of radioactive elements and their basic properties.								
24.	GEO246 Ecological geology	Acquaintance with the ecological functions of the lithosphere and the whole complex of ecological problems. Morphological, retrospective, predictive tasks are solved. The theoretical basis of environmental geology. Criteria for assessing the current state of ecosystems. Ecological, resource, ecological, geodynamic, geochemical functions of the lithosphere.	5						v	
25.	GEO283 Actual problems of stratigraphy	Goal: Study of current problems in stratigraphy in order to understand geochronological aspects. Objectives: study the international geochronological scale; carry out biostratigraphic division and correlation of geological sections; master seismostratigraphic methods of section subdivision and correlation; study the main common stratigraphic units; analyze local stratigraphic units of Kazakhstan; determine the types of stratigraphic units and criteria for their identification; study relative geochronology and its applications.	5			v			v	
26.	GEO285 Data Mining	Goal: Study of Datamine software and its application in the mining industry to solve various problems. Objectives: familiarization with the functionality of the program and its leading position in the industry; understanding the processes of constructing geological models and designing mines and quarries; studying production process management methods using the Datamine program; analysis of standard data from geology, geochemistry and surveying to optimize processes in the mining industry.	5			v				



WORKING CURRICULUM

Academic year	2025-2026 (Autumn, Spring)
Group of educational programs	M121 - "Geology"
Educational program	7M07218 - "Geology and exploration of solid mineral deposits"
The awarded academic degree	Master of engineering and technology
Form and duration of study	full time (professional track) - 1,5 years

Discipline code	Name of disciplines	Block	Cycle	Total ECTS credits	Total hours	lek/lab/pr Contact hours	in hours SIS (including TSIS)	Form of control	Allocation of face-to-face training based on courses and semesters			Prerequisites
									1 course		2 course	
									1 sem	2 sem	3 sem	
CYCLE OF GENERAL EDUCATION DISCIPLINES (GED)												
CYCLE OF BASIC DISCIPLINES (BD)												
M-1. Module of basic training (university component)												
LNG212	Foreign language (professional)		BD, UC	2	60	0/0/30	30	E	2			
MNG726	Management		BD, UC	2	60	15/0/15	30	E	2			
HUM211	Psychology of management		BD, UC	2	60	15/0/15	30	E	2			
M-2. Basic geological training module (component of choice)												
GEO753	Petrogenetic minerals	1	BD, CCH	4	120	30/0/15	75	E	4			
GEO754	Actual problems of geology	1	BD, CCH	4	120	30/0/15	75	E	4			
GEO763	Basin analysis & Sedimentary Geology	1	BD, CCH	4	120	30/0/15	75	E	4			
GEO209	Geological modeling of mineral deposits	2	BD, CCH	5	150	30/0/15	105	E	5			
GEO767	Genesis of the main industrial deposits	2	BD, CCH	5	150	30/0/15	105	E	5			
GEO764	Technology of underground borehole ore leaching	2	BD, CCH	5	150	30/0/15	105	E	5			
CYCLE OF PROFILE DISCIPLINES (PD)												
M-3. Module of professional geological training (university component)												
GEO220	Metallogeny and ore formations of Kazakhstan		PD, UC	5	150	30/0/15	105	E	5			
GEO210	Geological support of subsoil use		PD, UC	5	150	30/0/15	105	E	5			
GEO709	Geotectonics with geodynamics basics	1	PD, CCH	5	150	30/0/15	105	E	5			
GEO227	Mineralogy of radioactive and rare earth elements	1	PD, CCH	5	150	30/0/15	105	E	5			
GEO231	Basics of petrology	1	PD, CCH	5	150	30/0/15	105	E		5		
GEO758	Petrochemistry	1	PD, CCH	5	150	30/0/15	105	E		5		
GEO232	Fundamentals of technology of strategic metals	1	PD, CCH	5	150	30/0/15	105	E		5		
GEO214	Advanced well logging	2	PD, CCH	5	150	15/0/30	105	E		5		
GPH211	GIS uranium deposits	2	PD, CCH	5	150	30/15/0	105	E		5		
GEO223	Methods of lithological research	3	PD, CCH	5	150	30/0/15	105	E		5		
GEO208	The geological structure of ore fields and deposits	3	PD, CCH	5	150	30/0/15	105	E		5		
GEO734	Design of hydrogeological and geotechnological wells	3	PD, CCH	5	150	30/0/15	105	E		5		
GEO240	Regional geology of the UIC	4	PD, CCH	5	150	30/0/15	105	E		5		
GEO212	Geochemistry of radioactive elements	4	PD, CCH	5	150	30/0/15	105	E		5		

GEO246	Ecological geology	5	PD, CCH	5	150	30/0/15	105	E		5		
GEO283	Actual problems of stratigraphy	5	PD, CCH	5	150	30/0/15	105	E		5		
GEO285	Data Mining	5	PD, CCH	5	150	30/0/15	105	E		5		
M-4. Practice-oriented module												
AAP248	Internship		PD, UC	5				R		5		
AAP208	Internship		PD, UC	4				R			4	
M-5. Experimental and research module												
AAP249	Experimental research work of a master student, including an internship and the implementation of a master's project		ERWMS	18				R			18	
M-6. Module of final attestation												
ECA213	Design and defense of the master's project		FA	8							8	
Total based on UNIVERSITY:									30	30	30	
									60		30	

Number of credits for the entire period of study					
Cycle code	Cycles of disciplines	Credits			
		Required component (RC)	University component (UC)	Component of choice (CCH)	Total
GED	Cycle of general education disciplines	0	0	0	0
BD	Cycle of basic disciplines	0	6	9	15
PD	Cycle of profile disciplines	0	19	30	49
Total for theoretical training:		0	25	39	64
RWMS	Research Work of Master's Student				0
ERWMS	Experimental Research Work of Master's Student				18
FA	Final attestation				8
TOTAL:					90

Decision of the Educational and Methodological Council of KazNRTU named after K.Satpayev. Minutes № 3 dated 20.12.2024

Decision of the Academic Council of the Institute. Minutes № 3 dated 28.11.2024

Signed:

Governing Board member - Vice-Rector for Academic Affairs

Uskenbayeva R. K.

Approved:

Vice Provost on academic development

Kalpeyeva Z. B.

Head of Department - Department of Educational Program
Management and Academic-Methodological Work

Zhumagaliyeva A. S.

Director - Geology and Oil-gas Business Institute named after
K. Turyssov

Auyelkhan Y. .

Department Chair - Geological survey, search and exploration
of mineral deposits

Baisalova A. .

Representative of the Academic Committee from Employers
____Acknowledged____

Mendygaliyev A.

