

**NJSC “Kazakh National Research Technical University named after K.I. Satbaev”
Institute of Geology and Oil and Gas Business named after K. Turysov
Department of "Geological survey, prospecting and exploration of mineral
deposits"**

EDUCATIONAL PROGRAM

**"GEOLOGY AND EXPLORATION OF SOLID MINERAL DEPOSITS "
scientific and pedagogical direction (2 years)**

**Master of Technical Sciences in the educational program “ 7M07206
Geology and exploration of solid minerals deposits”**

1st edition
in accordance with the State Educational Standard of Higher Education 2018

Almaty 2022

Designed by:	Considered: meeting of the Board of the Institute	Approved by: UMS KazNITU	Page 1 of 52
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The program is drawn up and signed by the parties:

From KazNITU named after K. Satpaev :

- 1 .Head of the Department of the GSPaEMD
2. Director of IGaOG them. K.Turysova
3. Chairman of the UMG department, professor


 _____ А.А. Бекботаева
 _____ А.Х. СЫЗДЫКОВ
 _____ А.Б. Байбатша

From employers:

1. Chief researcher of the Institute of Geological Sciences named after K.I. Satpaev , Candidate of Geological and Mineralogical Sciences Zhunusov A.A.
2. Director of ICC GEO LLP, full member of PONEN - Kabaziyev B.M.
3. Head of the exploration site Pustynnoye JSC "AK Altynalmas ", Candidate of Geological and Mineralogical Sciences Rassadkin V.V.

From the partner university:

Professor of the Department of Geology of the Engineering School of Natural Resources of the Tomsk Polytechnic University, Doctor of Geological and Mineralogical Sciences Yazikov E.G.

Approved at a meeting of the Academic Council of the Kazakh National Research Technical University named after K.I. Satpaeva . Minutes No. 3 dated 06/25/2021

Qualification:

Level 7 of the National Qualifications Framework:

7M07 Engineering, manufacturing and construction industries

7M072 Manufacturing and processing industries (master):

Geology and exploration of solid mineral deposits

Professional competence: Management of the geological industry, organization, conduct and control of geological exploration at all stages and stages of geological research, be competent in matters of geology and exploration of the subsoil, the state and prospects for the development of the industry, the legal framework for subsoil use, as well as the requirements for the quality of mineral raw materials and market conditions global, regional and local markets; expert of research works in the field of prospecting, exploration, exploitation of deposits of solid minerals; pedagogical skills for work in universities and colleges.

Brief description of the program:

Designed for the implementation of scientific and pedagogical training of masters in the educational program "Geology and exploration of solid mineral deposits" in Satbayev University and developed within the framework of the direction " Industrial and manufacturing industries ".

1. *The purpose of the educational program of the master's program "Geology and exploration of deposits of solid minerals"* is to prepare, taking into account the prospects for the development of the country, competitive highly qualified personnel with high spiritual and moral qualities, capable of independent thinking and ensuring progressive scientific, technical, socio-economic and cultural development of society .

At the master's level, training in the specialty "Geology and Exploration of Solid Mineral Deposits" is carried out along trajectories that involve the implementation of educational programs for the training of personnel in the geological sector with in-depth technical-analytical, scientific-pedagogical and forecasting training.

Types of labor activity:

- research;
- research and production;
- design;
- organizational and managerial;
- scientific and pedagogical.

Master in Geology and Exploration of Solid Mineral Deposits, depending on the type of professional activity, is prepared to solve the following professional tasks:

a. research activities:

– independent choice and justification of the goals and objectives of scientific research;

– independent choice and development of methods for solving the tasks set when conducting field, laboratory, interpretation studies using modern equipment, instruments and information technologies (in accordance with the direction (profile) of the master's program);

– analysis and generalization of the results of research work using modern achievements of science and technology, advanced Kazakhstani and foreign experience;

– evaluation of the results of scientific research, preparation of scientific reports, publications, reports, preparation of applications for inventions and discoveries;

б. research and production activities:

– independent preparation and conduct of production and research and production field, laboratory and interpretation studies in solving practical problems (in accordance with the direction (profile) of the master's program);

– independent choice, preparation and professional operation of modern field and laboratory equipment and devices (in accordance with the direction (profile) of the

master's program);

- collection, analysis and systematization of available specialized information using modern information technologies;
- complex processing and interpretation of field and laboratory information in order to solve scientific and production problems;
- determination of the economic efficiency of scientific and production work;

6. project activity:

- design and implementation of scientific and technical projects;
- participation in the examination of projects of research and scientific and production work;
- participation in the development of regulatory methodological documents in the field of geological work;

2. organizational and managerial activities:

- planning and organization of research and development field, laboratory and interpretation work;
- planning and organization of scientific and research-and-production seminars and conferences;

3. scientific and pedagogical activity:

- participation in the preparation and conduct of seminars, laboratory and practical classes and practices;
- participation in the management of scientific and educational work of students in the field of geology.

Objects of professional activity of the graduate:

- earth, earth's crust, lithosphere, rocks, deposits of solid minerals;
- physical properties of rocks;
- minerals, crystals, geochemical fields and processes;
- geological environment, natural and man-made geological processes; ecological functions of the lithosphere.

PASPORT OF THE EDUCATIONAL PROGRAM

Scope and content of the program

The term of study in the magistracy is determined by the amount of mastered academic credits. Upon mastering the established amount of academic credits and achieving the expected learning outcomes for obtaining a master's degree, the educational program of the master's program is considered to be fully mastered. In the scientific and pedagogical magistracy, at least 120 academic credits for the entire period of study, including all types of educational and scientific activities of the undergraduate.

Planning the content of education, the method of organizing and conducting the educational process is carried out by the university and the scientific organization independently on the basis of credit technology of education.

The master's program in the scientific and pedagogical direction implements educational programs of postgraduate education for the training of scientific and scientific-pedagogical personnel for universities and scientific organizations with in-depth scientific, pedagogical and research training.

The content of the educational program of the master's program consists of:

- 1) theoretical education, including the study of cycles of basic and major disciplines;
- 2) practical training of undergraduates: various types of practices, scientific or professional internships;
- 3) research work, including the implementation of a master's thesis, - for a scientific and pedagogical master's program
- 4) final certification.

The content of the EP " Geology and exploration of deposits of solid minerals " on the basis of the development of a multi-level system of training, the fundamentality and quality of education, the continuity and succession of education and science, the unity of education, upbringing, research and innovation, aimed at maximum satisfaction of consumer needs, should ensure:

- obtaining a full-fledged and high-quality professional and scientific-pedagogical education in the field of geology of solid mineral deposits (SMI), confirmed by the level of knowledge and skills, skills and competencies, their assessment, both in content and in volume

- ensuring the training of masters for the geological industry, who know the technology, organization and economics of the geological industry, methods and principles of its improvement and design.

- training of professional and competitive specialists in the field of geology, prospecting and exploration of mineral resources;

- a high level of theoretical training in the field of socio-cultural, economic, legal and professional disciplines, taking into account the trends of modern scientific, pedagogical and professional social development, the inclusion of leading domestic and foreign specialists in the service sector in geology in the educational process;

- high level of language training;
- development of design and research skills, implementation of projects aimed at the practical application of modern professional digital methods and technologies for organizing the activities of geological production enterprises, research and educational organizations;
- the optimal ratio in the educational process of theoretical and practical training (due to the purposeful organization of research and production practices);
- personality-oriented approach to the educational process, focused on developing a responsible attitude to the results of their professional activities;
- aspect of self-development, where the emphasis is on the organization of professional activities, within which the undergraduate is focused on continuous professional self-improvement.

Objectives of the educational program:

- The readiness of specialists for research and design work in the field of prospecting, exploration, and exploitation of solid mineral deposits.
- The readiness of specialists for production and technological activities that ensure the introduction and operation of new geological technologies at the local level.
- The readiness of specialists to search for and receive new information necessary to solve professional problems in the field of knowledge integration in relation to their field of activity, to actively participate in the activities of an enterprise or organization.
- The readiness of specialists for scientific-informational, ideological and problematic communications in a professional environment and in an audience of non-specialists with a clear and deep justification of their position, to engage in organizational, managerial and service activities, to be aware of the responsibility for making their professional decisions.
- The readiness of specialists for self-learning and continuous professional development throughout the entire period of scientific or professional activity.

2 Entry requirements

The previous level of education of applicants is higher professional education (bachelor's degree). The applicant must have a diploma of the established form and confirm the level of knowledge of the English language with a certificate or diplomas of the established form.

The procedure for admission of citizens to the magistracy is established in accordance with the "Model Rules for Admission to Education in Educational Organizations Implementing Educational Programs of Postgraduate Education".

The formation of a contingent of undergraduates is carried out by placing a state educational order for the training of scientific and pedagogical personnel, as well as paying for education at the expense of citizens' own funds and other sources. The state provides citizens of the Republic of Kazakhstan with the right to receive free postgraduate education on a competitive basis in accordance with the state educational order, if they receive education at this level for the first time.

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

In the absence of the necessary prerequisites , the undergraduate is allowed to master them on a paid basis.

3 Requirements for completing studies and obtaining a diploma

Awarded degree / qualifications : The graduate of this educational program is awarded the academic degree "Master of Science" in the direction of " Industrial and Processing Industries " in the specialty - "Geology and Exploration of Solid Mineral Deposits".

A graduate who has mastered master's programs should have the following general professional competencies:

- the ability to independently acquire, comprehend, structure and use new knowledge and skills in professional activities, develop their innovative abilities;
- the ability to independently formulate research goals, establish a sequence for solving professional problems;
- the ability to put into practice the knowledge of fundamental and applied sections of the disciplines that determine the direction (profile) of the master's program;
- the ability to professionally choose and creatively use modern scientific and technical equipment to solve scientific and practical problems;
- the ability to critically analyze, present, defend, discuss and disseminate the results of their professional activities;
- possession of skills in the preparation and execution of scientific and technical documentation, scientific reports, reviews, reports and articles;

- willingness to lead a team in the field of their professional activity, tolerantly perceiving social, ethnic, confessional and cultural differences;
- readiness for communication in oral and written forms in a foreign language to solve the problems of professional activity.

A graduate who has mastered the master's program must have professional competencies corresponding to the types of professional activities that the master's program is focused on:

research activities:

- the ability to form diagnostic solutions to professional problems by integrating the fundamental sections of science and specialized knowledge obtained during the development of the master's program;
- the ability to independently conduct scientific experiments and research in the professional field, summarize and analyze experimental information, draw conclusions, formulate conclusions and recommendations;
- the ability to create and explore models of the objects under study based on the use of in-depth theoretical and practical knowledge in the field of geology and exploration of solid mineral deposits;

research and production activities:

- the ability to independently carry out production and research and production field, laboratory and interpretation work in solving practical problems;
- the ability to professionally operate modern field and laboratory equipment and instruments in the field of the mastered master's program;
- the ability to use modern methods of processing and interpreting complex information to solve production problems;

project activity:

- the ability to independently draw up and present projects of research and development work;
- readiness to design complex research and scientific and production works in solving professional problems;

organizational and managerial activities:

- readiness to use practical skills in organizing and managing research and development work in solving professional problems;
- readiness for the practical use of regulatory documents in the planning and organization of scientific and production work;

scientific and pedagogical activity:

- the ability to conduct seminars, laboratory and practical classes;
- the ability to participate in the management of the scientific and educational work of students in the field of geology and exploration of deposits of solid minerals;

When developing a master's program, all general cultural and general professional competencies, as well as professional competencies related to those types of professional

activities that the master's program is focused on, are included in the set of required results for mastering the master's program.

4 Working curriculum of the educational program

4.1. Term of study 2 years



MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF KAZAKHSTAN
KAZAKH NATIONAL RESEARCH TECHNICAL UNIVERSITY named after K.SATBAYEV



APPROVED
Chairman of the Management Board
Director of KazNRTU named after K.Satbayev
M.M. Begentaev
09.04.2022 y.

CURRICULUM

of Educational Program on enrollment for 2022-2023 academic year

Educational program 7M07206 - "Geology and exploration of solid mineral deposits"

Group of educational programs M121 - "Geology"

Form of study: full-time

Duration of study: 2 year

Academic degree: master of technical sciences

Academic degree: master of technical sciences											
Discipline code	Name of disciplines	Cycle	Total amount in credits	Total hours	Classroom amount (ecf/lab/pr)	SIS (including TSIS) in hours	Form of control	Allocation of face-to-face training based on courses and semesters			
								1 course		2 course	
								1 semester	2 semester	3 semester	4 semester
CYCLE OF BASIC DISCIPLINES (BD)											
M-1. Module of basic training (university component)											
LNG210	English (professional)	BD UC	5	150	0/0/3	105	E	5			
HUM214	Management Psychology	BD UC	3	90	1/0/1	60	E		3		
HUM212	History and philosophy of science	BD UC	3	90	1/0/1	60	E		3		
HUM213	Higher school pedagogy	BD UC	3	90	1/0/1	60	E	3			
M-2. Basic geological training module (component of choice)											
GEO209	Geological modeling of mineral deposits	BD CCH	5	150	2/0/1	105	E	5			
GEO218	Mineral deposits of Kazakhstan				2/0/1						
GEO484	Petrogenetic minerals	BD CCH	5	150	2/0/1	105	E	5			
GEO202	Actual problems of geology				2/0/1						
GEO485	Genesis of the main industrial deposits	BD CCH	5	150	2/0/1	105	E			5	
GEO224	Methods of stratigraphic studies				2/0/1						
CYCLE OF PROFILE DISCIPLINES (PD)											
M-3. Module of professional geological training (component of choice)											
GEO220	Metallogeny and ore formations of Kazakhstan	PD CCH	5	150	2/0/1	105	E	5			
GEO208	The geological structure of ore fields and deposits				2/0/1						
GEO285	Data Mining	PD CCH	5	150	2/0/1	105	E	5			
GEO211	Geology of the ore-bearing regions of Kazakhstan				2/0/1						
GEO214	Advanced well logging	PD CCH	5	150	1/0/2	105	E		5		
GPH211	GIS uranium deposits				2/1/0						
GEO231	Basics of petrology	PD CCH	5	150	2/0/1	105	E			5	
GEO306	Petrochemistry				2/0/1						
GEO240	Regional geology of the UIC	PD CCH	5	150	2/0/1	105	E			5	
GEO709	Geotectonics with geodynamics basics				2/0/1						
GEO483	Actual problems of modern subsurface	PD CCH	5	150	2/0/1	105	E		5		
GEO210	Geological support of subsoil use				2/0/1						
GEO233	Basics of ecological geology	PD CCH	5	150	2/0/1	105	E		5		
GEO227	Mineralogy of radioactive and rare earth elements				2/0/1						
GEO283	Actual problems of stratigraphy				2/0/1						

GEO305	Volumetric modeling and predictive evaluation of mineral deposits	PD CCH	5	150	2/1/0	105	E			5	
MNG705	Project Management				2/0/1						
GEO223	Methods of lithological research	PD CCH	5	150	2/0/1	105	E			5	
GEO212	Geochemistry of radioactive elements				2/0/1						
M-4. Practice-oriented module											
AAP229	Pedagogical practice	BD UC	6						6		
AAP256	Research practice	PD UC	4								4
M-5. Experimental research module											
AAP251	Research work of a master's student, including internship and completion of a master's thesis	RWMS UC	2					2			
AAP241	Research work of a master's student, including internship and completion of a master's thesis	RWMS UC	3						3		
AAP254	Research work of a master's student, including internship and completion of a master's thesis	RWMS UC	5							5	
AAP255	Research work of a master's student, including internship and completion of a master's thesis	RWMS UC	14								14
M-6. Module of final attestation											
ECA205	Preparation and defense of a master's thesis	FA	12								12
Total based on UNIVERSITY:								30	30	30	30
								60		60	

Number of credits for the entire period of study					
Cycle code	Cycles of disciplines	Credits			
		university component (UC)	component of choice (CCU)	Total	
BD	Cycle of basic disciplines	20	15	35	
PD	Cycle of profile disciplines	4	45	49	
	Total for theoretical training:	0	24	60	
	RWMS			24	
FA	Final attestation	12		12	
	TOTAL:	12	24	60	
				120	

Decision of the Academic Council of KazNRTU named after K.Satbayev. Protocol № 13 от "28" 04 2022 y.

Decision of the Educational and Methodological Council of KazNRTU named after K.Satbayev. Protocol № 7 от "26" 04 2022 y.

Decision of the Academic Council of the Institute. Protocol № 4 от "30" 12 2021 y.

Vice-Rector for Academic Affairs

B. Zhautikov

Institute Director

A. Syzdykov

Department Head

A. Bekbatayeva

Representative of the Council from employers

A. Zhunusov

5 Descriptors for the level and scope of knowledge, skills, abilities and competencies

The requirements for the level of preparation of a master's student are determined on the basis of the Dublin descriptors of the second level of higher education (master's) and reflect the acquired competencies, expressed in the achieved learning outcomes.

Learning outcomes are formulated both at the level of the entire educational program of the master's program, and at the level of individual modules or academic discipline.

Descriptors reflect the learning outcomes that characterize the student's abilities:

1) demonstrate evolving knowledge and understanding of the field of study of geology and exploration of solid minerals, based on advanced knowledge of this field, in the development and (or) application of ideas in the context of the study;

2) apply at a professional level their knowledge, understanding and abilities to solve problems in a new environment, in a broader interdisciplinary context;

3) to collect and interpret information for the formation of judgments, taking into account social, ethical and scientific considerations;

4) clearly and unambiguously communicate information, ideas, conclusions, problems and solutions, both to specialists and non-specialists;

5) learning skills necessary for independent continuation of further education in the studied field of geology and exploration of solid mineral deposits.

6 Competencies upon completion of training

6.1 Requirements for key competencies of graduates *of the scientific and pedagogical magistracy*, must:

1) *have an idea:*

- about the role of science and education in public life;
- about modern trends in the development of scientific knowledge;
- about actual methodological and philosophical problems of natural (social, humanitarian, economic) sciences;
- about the professional competence of a teacher of higher education;
- about the contradictions and socio-economic consequences of globalization processes;

2) *know:*

- methodology of scientific knowledge;
- principles and structure of organization of scientific activity;
- psychology of cognitive activity of students in the learning process;
- psychological methods and means of improving the efficiency and quality of education;

3) *be able to:*

- use the acquired knowledge for the original development and application of ideas in the context of scientific research;
- critically analyze existing concepts, theories and approaches to the analysis of processes and phenomena;
- integrate knowledge gained within different disciplines to solve research problems in new unfamiliar conditions;
- by integrating knowledge, make judgments and make decisions based on incomplete or limited information;
- apply the knowledge of pedagogy and psychology of higher education in their pedagogical activities;
- apply interactive teaching methods;
- carry out information-analytical and information-bibliographic work with the involvement of modern information technologies;
- think creatively and be creative in solving new problems and situations;
- be fluent in a foreign language at a professional level, which allows conducting scientific research and teaching special disciplines in universities;
- summarize the results of research and analytical work in the form of a dissertation, scientific article, report, analytical note, etc.;

4) have skills:

- research activities, solving standard scientific problems;
- implementation of educational and pedagogical activities on credit technology of education;
- methods of teaching professional disciplines;
- use of modern information technologies in the educational process;
- professional communication and intercultural communication;
- oratory, the correct and logical formulation of their thoughts in oral and written form;
- expanding and deepening the knowledge necessary for everyday professional activities and continuing education in doctoral studies.

5) be competent:

- in the field of scientific research methodology;
- in the field of scientific and scientific-pedagogical activity in higher educational institutions;
- in matters of modern educational technologies;
- in the implementation of scientific projects and research in the professional field;
- in ways to ensure constant updating of knowledge, expansion of professional skills and abilities.

Competencies acquired by students during the development of the educational program "Geology and exploration of solid mineral deposits"

Basic competencies (B)	
B1	Ability for abstract thinking, analysis, synthesis; willingness to act in non-standard situations, to bear social and ethical responsibility for the decisions made; readiness for self-development, self-realization, use of creative potential; the ability to use in-depth knowledge of legal and ethical standards in assessing the consequences of one's professional activities, developing and implementing socially significant projects, and to use in practice the skills and abilities in organizing research and development work, in managing a research team
B2	Possess knowledge of the philosophical concepts of natural science and the basics of the methodology of scientific knowledge in the study of various levels of organization of matter, space and time; ability to active social mobility; readiness to lead a team in the field of their professional activity, tolerantly perceiving social, ethnic, confessional and cultural differences
B3	The ability to apply modern computer technologies in the collection, storage, processing, analysis and transmission of geographic information and for solving research and production and technological problems of professional activity; own methods for assessing the representativeness of the material, sample size in quantitative studies, statistical methods for comparing the data obtained and determining patterns
B4	The ability to freely use the state language and a foreign language as a means of business communication; the ability to actively communicate in scientific, industrial and social-public spheres of activity; readiness for independent research work and work in a scientific team, the ability to generate new ideas (creativity)
Professional competencies (PC)	
PC1	The ability to formulate problems, tasks and methods of scientific research, to obtain new reliable facts based on observations, experiments, scientific analysis of empirical data, to abstract scientific works, to compile analytical reviews of accumulated information in world science and production activities, to generalize the results obtained in the context of previously accumulated in science knowledge and formulate conclusions and practical recommendations based on representative and original research results
PC2	The ability to creatively use the knowledge of fundamental and applied sections of special disciplines of the master's program in scientific and industrial-technological activities. Ability to use modern methods of processing and interpreting geological information in scientific and industrial research
PC3	Own the basics of design, expert-analytical activities and research using modern approaches, methods, equipment and computer systems. The ability to develop projects for geological exploration, geological prospecting, geological appraisal work and organize such work
PC4	They will understand the features of metallogeny, minerageny , industrial types of deposits in the regions of Kazakhstan. They will be able to analyze the structural scheme of formations of various ages; draw up a metallogenic map according to the type of mineral; analyze metallogenic maps. They will be aware of the patterns of formation and crystallization of magmatic melts, modern classification and nomenclature, chemical and mineral composition, structure and genesis of the main types and varieties of magmatites.
PC5	Will understand modern methods and materials of Earth remote sensing and photogrammetry; physical foundations of remote sensing of the Earth; technology and methods of image enhancement. They will be able to select and use remote sensing data in combination with other initial data for solving various applied problems; perform processing of aerospace images using special software; correctly choose and justify the required resolution of images; apply various ways to improve the image and extract the necessary information from it in geological mapping and prospecting; perform generalization and
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	analysis of the information received; own the main methods, ways and means of obtaining, storing, processing information; work with spatial data in geographic information systems
PC6	They will understand and know the regional structures of the earth's crust of the studied territory in four positions: the principle of tectonic zoning of regional structures; boundaries of each considered structure; know the features of the geological structure of the structure in terms of its stratigraphy and tectonics (development history); highlight minerals structure. Learn to analyze a tectonic map and a map of tectonic zoning. They will be able to independently conduct an analysis, compare the geological data of one territory with another, reproduce the history of the geological development of the region and highlight the structures and associated types of mineral deposits.

6.2 Requirements for the research work of a master student in the scientific and pedagogical master's program:

- 1) corresponds to the profile of the educational program of the master's program, according to which the master's thesis is being carried out and defended;
- 2) relevant and contains scientific novelty and practical significance;
- 3) is based on modern theoretical, methodological and technological achievements of science and practice;
- 4) is performed using modern methods of scientific research;
- 5) contains research (methodological, practical) sections on the main protected provisions;
- 6) is based on advanced international experience in the relevant field of knowledge.

6.3 Requirements for the organization of practices:

The educational program of the scientific and pedagogical magistracy includes two types of practices that are carried out in parallel with theoretical training or in a separate period:

- 1) pedagogical in the database cycle - at the university;
- 2) research in the PD cycle - at the place of dissertation completion.

Pedagogical practice is carried out in order to form practical skills in teaching and learning methods. At the same time, undergraduates are involved in conducting undergraduate studies at the discretion of the university.

The research practice of the undergraduate is carried out in order to familiarize with the latest theoretical, methodological and technological achievements of domestic and foreign science, modern methods of scientific research, processing and interpretation of experimental data.

ECTS Diploma Supplement

The application was developed according to the standards of the European Commission, the Council of Europe and UNESCO/SEPES. This document serves only for academic recognition and is not an official confirmation of a document of education.

Designed by:	Considered: meeting of the Board of the Institute	Approved by: UMS KazNITU	Page 15 of 52
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Not valid without a high school diploma. The purpose of completing the European Annex is to provide sufficient data on the holder of the diploma, the qualification obtained by him, the level of this qualification, the content of the training program, the results, the functional purpose of the qualification, as well as information on the national education system. The application model on which grades will be translated uses the European Credit Transfer or Transfer System (ECTS).

The European Diploma Supplement makes it possible to continue education at foreign universities, as well as confirm national higher education for foreign employers. When traveling abroad for professional recognition, additional legalization of a diploma of education will be required. The European Diploma Supplement is completed in English upon individual request and is issued free of charge.

English (professional)

CODE - LNG210

CREDIT - 5 (0/0/3/2)

PREREQUISITE – Academic English, Business English, IELTS 5.0-5.5

PURPOSE AND OBJECTIVES OF THE COURSE

The aim of the course is to develop students' English language proficiency for their current academic studies and to improve their performance in the field of project management.

BRIEF DESCRIPTION OF THE COURSE

The course aims to build vocabulary and grammar for effective project management communication and improve reading, writing, listening and speaking skills at the Intermediate level. Students are expected to develop their Business English vocabulary and learn grammatical structures that are often used in management contexts. The course consists of 6 modules. The 3rd module of the course ends with an intermediate test, and the 6th module is followed by a test at the end of the course. The course ends with a final exam. Undergraduates also need to study independently (MIS). MIS - independent work of undergraduates under the guidance of a teacher.

KNOWLEDGE, SKILLS AFTER COMPLETING THE COURSE

Upon successful completion of the course, students are expected to be able to recognize the main idea and the main message, as well as specific details when listening to monologues, dialogues and group discussions in the context of business and management; understand written and oral speech in English on topics related to management; write management texts (reports, letters, emails, minutes of meetings) following a common structure with a higher degree of grammatical accuracy and using business words and phrases, talk about various business situations using appropriate business vocabulary and grammatical structures - in pairs and groups discussions, meetings and negotiations.

Management psychology

CODE - HUM214

CREDIT - 3 (1/0/1/1)

PRE-REQUISITE - no

PURPOSE AND OBJECTIVES OF THE COURSE

teaching undergraduates the basics of higher education psychology, expanding their professional capabilities in terms of applying psychological knowledge in the field of pedagogical activity.

BRIEF DESCRIPTION OF THE COURSE

Psychological education at the university. The psychological structure of the learning process, the psychology of cognitive activity, psychological methods and means to improve the efficiency and quality of education in modern conditions, the psychology of the individual and the student team, the upbringing and development of professional self-awareness, psychodiagnostics in higher education, the psychological characteristics of the pedagogical activity of a higher school teacher who is studying as a subject educational activity, psychological and pedagogical communication, psychology of pedagogical influence, basic psychological problems in pedagogical activity.

KNOWLEDGE, SKILLS AFTER COMPLETING THE COURSE

At the end of the course, the undergraduate must master the basic knowledge, skills and abilities about the socio-psychological nature of pedagogical activity, about the properties of mental and cognitive processes included in cognitive activity, about the content and specifics of the psychological and pedagogical impact, about the individual characteristics of the objects of influence of the ability, be able to use the necessary psychological and methodological resources for the preparation and conduct of classes (lectures, seminars, SIWT and exams); be able to apply adequate psychodiagnostic methods for studying the personality of a student and a student group; manage the learning process, on various aspects of communication in the field of professional activity, professional reflection, mastery of the main methods of psychological influence.

History and philosophy of science

CODE - HUM212

CREDIT - 3 (1/0/1/1)

PREREQUISITE - No

PURPOSE AND OBJECTIVES OF THE COURSE

To reveal the connection between philosophy and science, highlight the philosophical problems of science and scientific knowledge, the main stages in the history of science, the leading concepts of the philosophy of science, modern problems in the development of scientific and technical reality.

BRIEF DESCRIPTION OF THE COURSE

The subject of the philosophy of science, the dynamics of science, the specifics of science, science and prescience, antiquity and the formation of theoretical science, the main stages of the historical development of science, the features of classical science, non-classical and post-non-classical science, the philosophy of mathematics, physics, engineering and technology, the specificity of engineering sciences, the ethics of science, social and moral responsibility of a scientist and engineer

KNOWLEDGE, SKILLS AFTER COMPLETING THE COURSE

Know and understand the philosophical issues of science, the main historical stages in the development of science, the leading concepts of the philosophy of science, be able to critically evaluate and analyze scientific and philosophical problems, understand the specifics of engineering science, possess the skills of analytical thinking and philosophical reflection, be able to substantiate and defend one's position, master the techniques conduct discussion and dialogue, master the skills of communication and creativity in their professional activities

Higher school pedagogy

CODE - HUM213

CREDIT - 3 (1/0/1/1)

PRE-REQUISITE - no

PURPOSE AND OBJECTIVES OF THE COURSE

The course is aimed at studying the psychological and pedagogical essence of the educational process of higher education; formation of ideas about the main trends in the development of higher education at the present stage, consideration of the methodological foundations of the learning process in higher education, as well as psychological mechanisms that affect the success of training, interaction, management of the subjects of the educational process. Development of psychological and pedagogical thinking of undergraduates.

BRIEF DESCRIPTION OF THE COURSE

In the course of studying the course, undergraduates get acquainted with the didactics of higher education, the forms and methods of organizing education in higher education, the psychological factors of successful learning, the characteristics of psychological influence, the mechanisms of educational influence, pedagogical technologies, the characteristics of pedagogical communication, the mechanisms for managing the learning process. They analyze organizational conflicts and ways to resolve them, psychological destruction and deformation of the teacher's personality.

KNOWLEDGE, SKILLS AFTER COMPLETING THE COURSE

At the end of the course, the undergraduate should know the features of the modern system of higher professional education, the organization of pedagogical research, the characteristics of the subjects of the educational process, the didactic foundations of the organization of the learning process in higher education, pedagogical technologies, the patterns of pedagogical communication, the features of educational influences on students, as well as the problems of pedagogical activity.

Geological modeling of mineral deposits

THE CODE - GEO209

CREDIT – 5 (2/1/0/2)

PRE-REQUISITE: No

PURPOSE AND OBJECTIVES OF THE COURSE

The purpose of studying this discipline is to gain knowledge, skills and abilities to work with software for three-dimensional geological modeling and assessment of mineral reserves. To give theoretical and practical knowledge in the field of computer modeling of deposits: in relation to the tasks of geology. Deepening technological education in the field of computer technology.

BRIEF DESCRIPTION OF THE COURSE

Introduction. The emergence of the need for computer programs for the visualization and interpretation of various geological exploration data in a 3D environment. Three-dimensional modeling of mineral deposits. Working with graphic applications. Field modeling and reserves estimation using Micromine software.

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

Know: methods and basic principles of geological modeling of mineral deposits in relation to the tasks solved in geology;

Be able to: on the basis of primary geological materials to interpret and create wireframe, block models of ore bodies; build digital surface models (DSM); visualize interpreted geological, geochemical, etc.

Have skills: apply GIS technologies to solve geological and appraisal works of minerals; estimate ore reserves using various methods of the Micromine program.

Mineral deposits of Kazakhstan

THE CODE - GEO218

CREDIT – 5 (2/1/0/2)

PRE-REQUISITE: No

PURPOSE AND OBJECTIVES OF THE COURSE

Formation in students of a holistic view of the geological structure and development of the earth's crust within the territory of Kazakhstan, acquaintance with the main types of mineral resources, the provision of the country with them in the future and priorities in the mineral resource complex.

The main task of studying the discipline is to develop students of this specialty of geological thinking based on an extensive base of factual material with the ability to competently structure it and use it in accordance with the logic of fundamental conceptual geological paradigms.

BRIEF DESCRIPTION OF THE COURSE

The discipline is a basic and obligatory discipline for students of the specialty "Geology and exploration of MPI". It is designed to give them a holistic view of the geological structure and development of the earth's crust within the territory of Kazakhstan, as well as to acquaint them with the main types of mineral resources, the provision of the country with them in the future and priorities in the mineral resource complex.

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

As a result of mastering the discipline, students should:

1) know: the principles of tectonic zoning in general and the territory of Kazakhstan in particular, the main structural elements of the earth's crust of this region, their stratigraphy, igneous complexes, as well as the patterns of development of the main tectonic structures and the placement of mineral deposits in them.

2) be able to: analyze the geological structure of any part of the earth's crust, compose its integral characteristics and interpret the conditions for its development in time and space.

3) master the skills:

- organizational skills;
- ability to find a common language and work in a team;
- The ability to make quick decisions and self-confidence.
- make independent decisions and critically evaluate their actions.

Petrogenic minerals

THE CODE – GEO484

CREDIT – 5 (2/0/1/2)

PRE-REQUISITE: GEO122 Petrography

PURPOSE AND OBJECTIVES OF THE COURSE

is to give undergraduates knowledge about the patterns of propagation of light waves in a crystalline medium and to teach the ability to identify rock-forming minerals using a polarizing microscope.

BRIEF DESCRIPTION OF THE COURSE

Refraction of light in minerals and associated optical effects observed with a microscope; birefringence and optical indicatrix of minerals of various syngonies and related optical properties of minerals; path 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; study and determination by optical properties of petrogenic minerals of igneous, sedimentary, metamorphic and metasomatic rocks using a polarizing microscope.

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

To know: as a result of studying this discipline, undergraduates will gain knowledge about the patterns of propagation, refraction, birefringence and interference of light waves in a crystalline medium and related optical constants of minerals

Be able to: use a polarizing microscope, Fedorov's table.

Have skills: research and determination of petrogenic minerals using a polarizing microscope.

Actual problems of geology

THE CODE - GEO202

CREDIT – 5 (2/0/1/2)

PRE-REQUISITE: No

PURPOSE AND OBJECTIVES OF THE COURSE

Familiarization of undergraduates in the geological specialty with the main problems of modern geological science so that they know these problems, try to solve them, or at least take into account and skillfully orient themselves in solving theoretical and practical issues of geology during their work.

BRIEF DESCRIPTION OF THE COURSE

C structure and composition of the Earth, a number of contradictions that arise when the metallic composition of the inner and outer core of the Earth is assumed; the main sources of internal heat of the Earth; basic provisions of lithospheric plate tectonics; the essence of thermal convection in the asthenosphere as the driving force of mobile lithospheric plates

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

Know: the basic terms and concepts of the course, master the basic patterns of development of the earth's lithosphere due to the energy and matter of the underlying layers of the planet, primarily the asthenosphere.

To be able to: determine the causes, manifestation features, directions of action of tectonic movements (stresses) in the section of the upper solid shells of the Earth - in the earth's crust and in the lithospheric mantle, identify the time and sequence of initiation, development and stabilization of tectonic structures of the earth's crust of various ranks (structural elements of the earth's crust) formed as a result of tectonic stresses and in various tectonic regimes.

Have skills: analysis of cause-and-effect relationships of the occurrence of endogenous activity of the Earth, features of the manifestation of tectonic stresses in the tectonosphere (in sections of the earth's crust, lithospheric mantle and asthenosphere as a whole), assumptions of their role in the formation of tectonic structures of various ranks.

Genesis of the main industrial deposits

THE CODE - GEO485

CREDIT – 5 (2/0/1/2)

PRE-REQUISITE: No

PURPOSE AND OBJECTIVES OF THE COURSE

The aim of the course is to study the theory of formation of deposits of various types of minerals and the proposed models of formation. Objectives of the discipline: acquaintance with the existing ideas about the conditions for the formation of minerals; study of individual atypical forms of ore deposits; mastering the main provisions of the theory of magmatism , metallogeny and ore formation; study of the mechanism of formation of magmatic deposits; study of the mechanism of formation of metamorphic deposits; theory of formation of groundwater and oil and gas fields.

BRIEF DESCRIPTION OF THE COURSE

Pyrite deposits of the world, pyrite-bearing provinces, ore regions and nodes, typical deposits. Classification of genetic types: Cypriot, Ural, Brazilian type, theory of their formation. Features of the formation of gold deposits in Kazakhstan. Spatial-temporal paragenetic connection of uranium and gold deposits, models of their formation. Deposits of uranium, iron ore, copper deposits of Kazakhstan, their world analogues and the theory of their formation.

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

Know: industrial types of mineral deposits: iron, copper, gold, silver, lead, zinc and others. The theory of the formation of sulfide, stratiform , hydrothermal, and other deposits.

Be able to: analyze the geological position of the deposit and ore occurrences, identify the structures of ore fields and bodies, draw up the order of mineral formation and recreate the tectonic - stratigraphic conditions for the formation of the deposit.

Have the skills to analyze the geological, tectonic map, stratigraphic column, on the basis of a comprehensive analysis, be able to recreate and describe the genesis of industrial types of deposits.

Methods of stratigraphic studies

THE CODE - GEO224

CREDIT – 5 (2/0/1/2)

PRE-REQUISITE: No

PURPOSE AND OBJECTIVES OF THE COURSE

Familiarization and assimilation by undergraduates of the stratigraphic units of development within the geological structures of Kazakhstan.

BRIEF DESCRIPTION OF THE COURSE

Stratigraphy is a special direction in a number of geological sciences, covering the issues of historical sequence, primary relationships and geographical distribution of sedimentary, volcanogenic, volcanogenic-sedimentary and metamorphic rocks that make up the earth's crust and reflect various stages of the development of the Earth. The discipline covers the stratigraphic structure, problems and correlations in the territory of Kazakhstan.

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

Familiarization of undergraduates with the most important stratigraphic units of Kazakhstan; mastering the technique of dismembering sections of rock strata and identifying stratigraphic units of different ranks; acquaintance with the principles of creating local, regional and interregional stratigraphic strata; carrying out regional and interregional stratigraphic correlation.

Metallogeny and ore formations of Kazakhstan

THE CODE - GEO220

CREDIT – 5 (2/0/1/2)

PRE-REQUISITE: No

PURPOSE AND OBJECTIVES OF THE COURSE

The purpose of the course is to study the main provisions of general metallogeny and familiarize with the content of regional, historical, special metallogeny for the development of the geological foundations of the mining business, as the fundamental principles for the development of the mineral industry.

The main tasks of studying the discipline are to master the terminology and conceptual base of metallogenic science and the doctrine of ore formations, the principles of metallogenic and ore-formational analysis; get acquainted with the most important types of ore formations and elements of the metallogeny of oceans, platforms and folded systems from the point of view of lithospheric plate tectonics; have an idea about the metallogenic zoning of the world, the CIS and Kazakhstan

BRIEF DESCRIPTION OF THE COURSE

The concept of metallogeny and minerageny. General metallogeny. The concept of ore-forming processes and systems. The concept of ore formation analysis. Formations are geological, ore, metasomatic and metallogenic. General principles of metallogenic research. Metallogeny of modern seas and oceans, folded geosynclinal belts. Fundamentals of metallogeny from the standpoint of modern geodynamics. Metallogeny of rift settings, subduction-orogenic settings, precious metals, non-metallic, ferrous, non-ferrous, radioactive, rare metals of Kazakhstan.

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

Know: features of metallogeny and minerageny in the regions of Kazakhstan.

To be able to: analyze the structural scheme of formations of different age; draw up a metallogenic map according to the type of mineral; analyze metallogenic maps.

Have Skills: Comparison of Typical Ore and Geological Formations of Kazakhstan compilation and analysis of geological and genetic models of typical ore formations of Kazakhstan: iron ore, gold ore, copper ore.

The geological structure of ore fields and deposits

THE CODE – GEO208

CREDIT – 5 (2/0/1/2)

PRE-REQUISITE: GEO115 General geology

PURPOSE AND OBJECTIVES OF THE COURSE

The aim of the course is to develop undergraduates' understanding of the most important types of ore-bearing geological structures and the possibilities of using structural analysis to improve the efficiency of predictive studies and prospecting and exploration.

Tasks - familiarization with the mechanisms of structure formation, mastering the methods of structural research in ore fields and deposits, developing analysis skills ore-bearing structures.

BRIEF DESCRIPTION OF THE COURSE

The course discusses the main types of pre-ore structures of ore fields and deposits, which are most widespread and identified on the basis of structural genetic classification. The role and main types of intraore and postore structures are analyzed, and the characteristics of ore columns are given. The necessary information is provided from the theory of deformation as applied to rocks. The physico-mechanical and other properties of rocks that affect the structural conditions for the localization of ore bodies and deposits are considered. The fundamentals of special methods of structural research on ore fields and deposits .

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

Know: The main types of ore-bearing structures of deposits and ore fields, as well as the conditions and mechanisms of their formation and development.

Be able to: carry out a comprehensive analysis of ore-bearing structures of deposits for the purposes of forecasting, prospecting and exploration of ore bodies and deposits; predict the position of ore bodies and deposits in structures of various types.

Own: field and laboratory research methods at ore deposits.

Data mining

THE CODE – GEO285

CREDIT – 5 (2/0/1/2)

PRE-REQUISITE: GEO115 General geology

PURPOSE AND OBJECTIVES OF THE COURSE

The main goal of the course is the concept of data mining as part of the information technology market, the main methodological issues of using various Data tools are considered. Mining . The tasks and methods of data mining are described in detail, as well as various aspects of the practical application of Data Mining .

BRIEF DESCRIPTION OF THE COURSE

Fundamentals of data mining. The concept of data mining . Data Mining as part of the information market technologies . A set of data and their attributes . Tasks of Data Mining . Fundamentals of Data Analysis . Data Mining Methods. Methods of Data Mining . Problems of classification and forecasting . Decision Trees . Support vector machine . Nearest neighbor method . Bayesian classification . Clustering problem . Algorithm k-means (k-means) . Search for association rules . Visualization challenge

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

Know: the basics of higher mathematics, physics, the basics of computer technology and Programming.

Be able to: solve standard professional problems using natural science and general engineering knowledge, methods of mathematical analysis and modeling.

Have skills: Possesses the skills of theoretical and experimental research of objects of professional activity.

Geology of ore-bearing regions of Kazakhstan

THE CODE – GEO211

CREDIT – 5 (2/0/1/2)

PRE-REQUISITE: GEO115 General geology

PURPOSE AND OBJECTIVES OF THE COURSE

The main goal of the course is to familiarize future geologists-surveyors and exploration geologists with the geological structure of Kazakhstan, the principles of zoning, the main material complexes of rocks that determine the "face" of the main structural elements of the earth's crust of Kazakhstan, the history of their development and metallogenic specialization.

BRIEF DESCRIPTION OF THE COURSE

Regional geological and geophysical surveys (RGS) and geological survey work at the present stage (content, tasks, scale, mandatory methods, etc.) . Elements of geological maps of various types. Types of zoning and tasks. Definitions of the most important mining regions of Kazakhstan. Geodynamic conditions of the most important mining regions of Kazakhstan and assessment of their prospects at the present stage of study.

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

A master student can master the marked amount of knowledge in the process:

- development of geological and metallogenic terminology, and basic definitions and concepts;
- in the process of learning to read and understand the content of various geological maps (geological, tectonic, metallogenic, geochemical, etc.);
- as a result of acquiring skills to build stratigraphic columns, sections, various geological schemes using geophysical materials;
- with the acquisition of skills in compiling metallogenograms in order to conduct a full-fledged metallogenic analysis and draw up diagrams of promising areas for predictive assessment of territories for certain types of minerals.

Advanced well logging

THE CODE – GEO214

CREDIT – 5 (2/0/1/2)

PRE-REQUISITE: No

PURPOSE AND OBJECTIVES OF THE COURSE

The purpose of the course is to acquaint undergraduates with the current state of well geophysics and modern methods of interpreting data from geophysical surveys of various types of wells.

Course objectives: to provide advanced definitions that characterize and classify modern GIS methods; to acquaint with the physical foundations and the corresponding limitations of modern geophysical methods of well research; consider the main aspects of metrological support and measurement accuracy of various geophysical methods; give a description of the features of the interpretation of well logs in various types geological sections

BRIEF DESCRIPTION OF THE COURSE

The course contains an information and educational lecture module and practical diagrams of various geophysical methods, both as hard copies for visual analysis, and in digital form to get acquainted with the methods of interpretation on examples demo programs. The course focuses on the practical application of well modifications geophysical methods, on the analysis of the conditions of their applicability and natural limitations. A number of typical problems are considered, both purely geophysical and geological, solved by borehole geophysics. The course is applied and serves to understand the opportunities for undergraduates application of methods, the tasks they solve and the possibilities of their application and development.

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

Know: theoretical foundations of geophysical methods; relationships between petrophysical parameters and observed geophysical fields in the well; methods of geological interpretation of logging data; rational integration of geophysical methods depending on the geological conditions and practical tasks.

Be able to: carry out well logging using various geophysical methods;

– interpret the results of processing the observed data.

Own: geophysical methods when performing well logging ; modern GIS technologies; the skills of collecting, analyzing and using information necessary for making various management decisions.

GIS uranium deposits

THE CODE – GEO211

CREDIT – 5 (1/0/2/2)

PRE-REQUISITE: GEO115 General geology

PURPOSE AND OBJECTIVES OF THE COURSE

The main goal of the course is to familiarize the undergraduate with the theoretical and geological foundations of methods for monitoring the development of reservoirs, the possibility of using geophysical research methods to solve geological and geophysical problems in the construction and operation of oil and gas fields, as well as for production, technological, experimental research, design activities.

BRIEF DESCRIPTION OF THE COURSE

Defining parameters – productive formations and wells by geophysical methods; the formation of the theoretical foundations of the methods of field geophysical surveys among students, the development of the students' ability to implement the acquired skills of conducting independent geophysical surveys of wells and reservoirs; planning, conducting and interpreting the results of geophysical surveys for further application.

KNOWLEDGE, SKILLS AFTER COMPLETING THE COURSE

The necessary conditions for mastering the discipline are:

Knowledge of: the main indicators of the development of hydrocarbon deposits; basic properties of rocks; basics of logging data interpretation; the main instruments and equipment used in geophysical research.

Ability to: apply instruments and equipment for geophysical surveys of wells and reservoirs; interpret the results of geophysical surveys of wells and reservoirs; determine the effectiveness of various GIS methods for solving specific operational and technical problems; give recommendations on adjusting the well operation mode based on well logging data.

Possession: methods for calculating the main technological indicators in the development of oil and gas fields; skills in conducting independent studies of wells and reservoirs; a technique for determining the composition of the fluid in the wellbore, the skills of scientific research.

Basics of petrology

THE CODE - GEO231

CREDIT – 5 (2/0/1/2)

PRE-REQUISITE: GEO122 Petrography

PURPOSE AND OBJECTIVES OF THE COURSE

Most of the endogenous deposits are closely associated with magmatites, and they themselves are often minerals. Therefore, for undergraduates in the specialty "Geology and Exploration of MPI", the main goal of studying this discipline is to gain knowledge about the composition, structure, conditions for the formation of magmatites and the relationship of mineral deposits with them.

BRIEF DESCRIPTION OF THE COURSE

Modern data on magmas and their origin: physical and chemical bases of crystallization of magmatic melts; the main reasons for the diversity of magmatites; chemical and mineral composition, structures of magmatites and their genetic significance; rocks of ultramafic, basic medium, acid, foid compositions and their types, varieties, conditions for the formation and connection with it of mineral deposits; examination of them using a polarizing microscope; igneous associations (formations) and series.

KNOWLEDGE, SKILLS AFTER COMPLETING THE COURSE

Know: about the patterns of formation and crystallization of igneous melts, modern classification and nomenclature, chemical and mineral composition, structure and genesis of the main types and varieties of magmatites.

Be able to: analyze the chemical composition of rock-forming minerals, restore the conditions for the formation of igneous rocks, make an assumption about the thermodynamic, chemical and physical conditions of rock crystallization.

Have skills: study of rock-forming minerals using a polarizing microscope.

Petrochemistry

THE CODE – GEO306

CREDIT – 5 (2/0/1/2)

PRE-REQUISITE: Petrography

PURPOSE AND OBJECTIVES OF THE COURSE

The aim of the course " Petrochemistry " is to acquire knowledge for petrogenetic interpretation of the chemical composition of igneous rocks. Assimilation by students of knowledge about the composition and systematics of igneous rocks. Development of practical skills in the application of modern methods of processing petrochemical data.

Tasks:

1. development of basic concepts in modern ideas about the formation of rocks of various chemical composition;
2. development of the ability to control the quality of the chemical analysis of the rock;
3. mastering the basic methods of processing petrochemical data;
4. mastering the main methods and approaches to the interpretation of petrochemical data for igneous rocks of various compositions.

BRIEF DESCRIPTION OF THE COURSE

The discipline "Petrochemistry" is aimed at mastering modern methods and approaches in interpretation of petrochemical data for igneous rocks. Methods of chemical analysis of rocks and control of its quality are considered, as well as error sources. Petrochemical modeling, Harker diagrams are considered and trends on them, petrochemical coefficients and modules, petrochemical conversions, as well as statistical methods. For each breed group (ultrabasic, basic, intermediate, granitoids) a set of discriminant diagrams and approaches to the interpretation of petrochemical data.

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

Know: basic concepts in modern ideas about the formation of rocks of various chemical composition, variations in the concentrations of rock-forming components in the chemical composition of the main groups of rocks and the main factors that determine these variations.

Be able to: evaluate the quality of chemical analyzes of rocks, competently prepare rock samples for analysis of the chemical composition.

Own: methods of petrochemical recalculations, statistical methods of processing petrochemical data, modern approaches to the interpretation of petrochemical data.

Regional geology of the UIC

THE CODE - GEO240

CREDIT – 5 (2/0/1/2)

PRE-REQUISITE: Geology of mineral deposits

PURPOSE AND OBJECTIVES OF THE COURSE

Acquaintance with the features of the geological structure, the history of geological development, the patterns of distribution of mineral deposits and their geological position in the earth's crust of a vast territory occupied by neighboring countries (CIS and Baltic).

BRIEF DESCRIPTION OF THE COURSE

Fundamentals of tectonic zoning of the territory of the CIS and Baltic countries. Ancient platforms: East European platform, Siberian platform. Folded areas of the Ural-Mongolian belt: Ural-Novaya Zemlya folded area, Southern Tien Shan. Kazakh-Kyrgyz folded region, Zaisan folded system, Altai-Sayan folded region, Sayano-Yenisei folded region. Baikal and Transbaikalia. Taimyr-Severozemelskaya region. Young epipaleozoic plates of Eurasia: Scythian and Turanian plates, West Siberian plate. Areas of the Mediterranean belt of Cenozoic (Alpine) folding within Europe: the Eastern Carpathians and the Crimean Mountains, the Caucasian mountain region. Areas of the Mediterranean belt of Cenozoic (Alpine) folding within Asia: Kopetdag and Pamir. Regions of the Pacific belt of Mesozoic and Cenozoic (Alpine) folding: Verkhoyansk-Chukotsak and Kamchatka-Koryak regions. Regions of the Pacific belt of Cenozoic (Alpine) folding: Mongolian-Okhotsk, Sikhote-Alin and Sakhalin folded regions of the Russian Far East. Kuril and Commander Islands.

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

Know: regional structures of the earth's crust of the studied territory in four positions: the principle of tectonic zoning of regional structures; boundaries of each considered structure; know the features of the geological structure of the structure in terms of its stratigraphy and tectonics (development history); highlight minerals structure.

Be able to: analyze the tectonic map and the map of tectonic zoning.

Have skills: analysis, comparison of geological data of one territory with another, reproduction of the history of the geological development of the region and identification of structures and associated types of mineral deposits.

Geotectonics with geodynamics basics

THE CODE – GEO709

CREDIT – 5 (2/0/1/2)

PRE-REQUISITE: Fundamentals of geotectonics

PURPOSE AND OBJECTIVES OF THE COURSE

The main goal of studying the discipline is to form a coherent system of knowledge among undergraduates, borrowed from almost all areas of geological sciences and combine them into a single consistent geotectonic concept based on strict physical and chemical laws, the basis of such a concept in us The current time is the doctrine of lithospheric plates.

BRIEF DESCRIPTION OF THE COURSE

geospheres (shells) as the most important structures of the Earth of a higher order; the main features of the structure, composition and development of the lithosphere, including the uppermost shells of the Earth; mechanisms of interaction of geospheres and their driving forces; methods for studying tectonic structures as the main components of the lithosphere; principles of tectonic zoning; the main tectonic structures of Kazakhstan and adjacent territories.

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

Be able to:

- conduct a joint analysis of geological and geophysical materials in order to determine the limitations in the subsequent determination of the type of geotectonic structure;
- present geological and geophysical data as a basis for geotectonic constructions;
- logically link geological and geophysical materials in determining type of geotectonic structure.

Own:

- methods of modern tectonic analysis;
- methods of tectonic zoning.

Actual problems of modern subsurface

THE CODE – GEO483

CREDIT – 5 (2/0/1/2)

PRE-REQUISITE: No

PURPOSE AND OBJECTIVES OF THE COURSE

Acquisition of the necessary knowledge, skills and abilities for qualified geological support, and support of the subsoil use process (all types of subsoil use operations: geological study of subsoil, exploration, production, use of subsoil space and prospecting).

BRIEF DESCRIPTION OF THE COURSE

Features of subsoil use in Kazakhstan. Analysis of modern subsoil use, taking into account the implementation plan of the nation (74 and 75 steps) and the transition of Kazakhstan to international standards and rules in the field of study and use of subsoil. Studying the legislation on subsoil and subsoil use of the Republic of Kazakhstan and regulatory legal acts to it, other laws of the Republic of Kazakhstan related to subsoil use and literature on the problems of subsoil use.

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

They will learn how to draft contracts and licenses for all types of subsoil use operations for all types of minerals, work programs, geological survey projects, prospecting, appraisal work, plans for exploration, production, use of subsoil space and prospecting. They will be able to draw up projects for sites for geological study, exploration and production, as well as sites for the use of subsoil and mining.

Geological support of subsoil use

THE CODE – GEO210

CREDIT – 5 (2/0/1/2)

PRE-REQUISITE: No

PURPOSE AND OBJECTIVES OF THE COURSE

The main goal of the course is to familiarize with the problems of interaction between man and the geological space, patterns and forecast of anthropogenic changes in the geological environment, rational subsoil use and nature protection, legislative and regulatory documents.

BRIEF DESCRIPTION OF THE COURSE

Technogenic processes at mining facilities are described that lead to pollution of rocks, air, water, disruption of the stability of the subsoil and landscape change, the methodology for choosing a rational mining technology, information on waste disposal during the extraction of minerals and life products. A qualitative and quantitative environmental and economic assessment of the development of deposits and the necessary environmental measures, an assessment of the impact of mining on the environment is presented. An environmental analysis of the development of new deposits is given.

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

must know:

- understand and have theoretical knowledge about the ecological functions of the lithosphere and the impact of man-made activities on the geological space

should be able to:

- assess the impact of mining on the elements of the geological environment;

must own:

- to foresee the causes influencing the consequences of the impact of technogenesis on natural geological environments.

Basics of ecological geology

THE CODE – GEO233

CREDIT – 5 (2/0/1/2)

PRE-REQUISITE: GEO115 General geology

PURPOSE AND OBJECTIVES OF THE COURSE

The main goal of the course is to solve morphological problems related to the study of the composition of the state, structure and properties of the analyzed system, its ecological and geological conditions as a whole. Retrospective tasks related to the study (more precisely, restoration) of the history of the formation of the object of study, the formation of its modern quality. Forecast tasks related to the study of conduction, development trends of the system under study in the future under the influence of various causes of natural and man-made origin.

BRIEF DESCRIPTION OF THE COURSE

Familiarization with the ecological functions of the lithosphere and the whole complex of ecological tasks. Morphological, retrospective, predictive tasks are solved. Theoretical basis of ecological geology. Criteria for assessing the current state of ecosystems. Ecological, resource, ecological, geodynamic, geochemical functions of the lithosphere.

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

Know: basic concepts, object, subject and tasks of ecological geology, correlation of ecological geology and geoecology, ecological functions of the lithosphere, types of lithological systems and their ecological functions, criteria for assessing the current state of ecosystems, methodological foundations of ecological geology, a system of ecological and geological monitoring and methods of ecological - geological mapping, the content of engineering and environmental surveys, the role of environmental geology in the rationale for managing environmental conditions.

Be able to: analyze the structure, historical development of ecological and geological systems, perform predictive constructions;

Have skills: construction of ecological and geological maps, skills in organizing and conducting ecological and geological monitoring, skills in engineering and environmental surveys.

Mineralogy of radioactive and rare earth elements

THE CODE – GEO227

CREDIT – 5 (2/0/1/2)

PRE-REQUISITE: Mineralogy

PURPOSE AND OBJECTIVES OF THE COURSE

Training of specialists in the field of uranium geology with in-depth knowledge of the mineralogy of radioactive elements and their diagnostics. Students will gain knowledge on the mineral forms of finding radioactive and rare earth elements, methods for their diagnosis. Learn to distinguish paragenetic mineral associations according to the conditions of formation of specific minerals, evaluate the prospecting and industrial significance of the corresponding associations with the analysis of ore types and their belonging to the genetic classification of deposits.

BRIEF DESCRIPTION OF THE COURSE

This discipline provides a detailed study of uranium and thorium minerals characterized by a complex and variable chemical composition, which causes the variability of their physical properties. Many of these minerals are similar external features and optical properties, metamict and X-ray amorphous, easily undergo transformations under the influence of superimposed processes (metastable), are in thin intergrowths with other minerals. Assessment of external properties and signs, even supplemented by an optical characteristic, for individual minerals can be insufficient. In such cases, the diagnosis and characterization of minerals are carried out on the basis of a complex of modern methods of analysis.

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

Know: history, subject, tasks and methods of studying crystalline matter; fundamentals of mineralogy and methods for determining uranium minerals (physical, morphological) and their classification; possession of fundamental knowledge in the field of uranium geology and related disciplines at a high level;

Upon completion of the course, students should be able to: interpret geochemical data of rare-metal and radioactive elements (uranium and thorium and REE) , determined by the optical, physico-chemical features of minerals ores of rare and radioactive elements , own methods of visual diagnostics of common minerals; generalize the parameters of elementary cells of minerals and diagnose them by their characteristic properties; conduct independent research in accordance with the developed program; use research results .

Actual problems of stratigraphy

THE CODE - GEO283

CREDIT – 5 (2/0/1/2)

PRE-REQUISITE: No

PURPOSE AND OBJECTIVES OF THE COURSE

Familiarization and assimilation by undergraduates of the stratigraphic units of development within the geological structures of Kazakhstan.

BRIEF DESCRIPTION OF THE COURSE

Stratigraphy is a special direction in a number of geological sciences, covering the issues of historical sequence, primary relationships and geographical distribution of sedimentary, volcanogenic, volcanogenic-sedimentary and metamorphic rocks that make up the earth's crust and reflect various stages of the development of the Earth. The discipline covers the stratigraphic structure, problems and correlations in the territory of Kazakhstan.

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

Familiarization of undergraduates with the most important stratigraphic units of Kazakhstan; mastering the technique of dismembering sections of rock strata and identifying stratigraphic units of different ranks; acquaintance with the principles of creating local, regional and interregional stratigraphic strata; carrying out regional and interregional stratigraphic correlation.

Volumetric modeling and predictive evaluation of mineral deposits

THE CODE – GEO305

CREDIT – 5 (2/0/1/2)

PRE-REQUISITE: No

PURPOSE AND OBJECTIVES OF THE COURSE

knowledge among students on the methods of correct assessment of mineral deposits, including the assessment of geological factors (quantity, quality, technological properties of minerals, mining and geological conditions of mining and the geographical and economic position of deposits).

Mastering by students the theory, methods and technology of geological support for the evaluation of mineral deposits at the selected stages of geological exploration (search and evaluation; exploration and development); the formation of the necessary practical skills for students in the geological and economic assessment of mineral deposits.

BRIEF DESCRIPTION OF THE COURSE

The course considers the possibility of using the acquired knowledge in theoretical and practical situations; analyze the economic performance of subsoil use operations, their financing and prospects for the development of the geological industry in the Republic of Kazakhstan.

Modeling is one of the leading methods in carrying out predictive metallogenic, prospecting and exploration work. The collection, analysis of stock materials and the ever-increasing amount of information that needs to be constantly supplemented by the database dictates the need to use model constructions at all stages of geological exploration using modern technologies. This requires a modern geologist to have knowledge not only of geology and metallogeny, but also in the field of GIS. Methods of three-dimensional wireframe and block modeling of ore bodies and geostatistical analysis provide knowledge of the visualization of the interpreted geological, geochemical data and predictive assessment of the reserves of the ore deposit.

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

After completing the course, the undergraduate **must** master methods and basic principles of geological modeling of mineral deposits in relation to problems solved in geology; **should be able to** : Work with a geological database, create and visualize field data ; Link bitmaps in Micromine software and perform reserve estimation.

should know : Creation of cuts from a string file ; compositing methods ; Geological interpretation of data; Frame modeling; Rapid estimation of reserves using wireframe models; Block modeling - reserve estimation.

Project management

THE CODE – MNG705

CREDIT - 5 (2/0/1 /2)

PRE-REQUISITE: No

PURPOSE AND OBJECTIVES OF THE COURSE

The purpose of teaching the discipline is to master the methodology of project management in various fields of activity, to cultivate a culture that is adequate to modern project management and information technology, to create conditions for the introduction of new information technologies in the field of project implementation. The course is based on international recommendations for project management (Project management Body of knowledge).

BRIEF DESCRIPTION OF THE COURSE

The content of the discipline is aimed at studying modern concepts, methods, tools of project management in order to apply them in the further practical activities of a specialist to solve the problems of planning and executing projects.

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

Know:

modern standards in the field of project management and their characteristics; PMI approach to project management; planning of investment activity; accounting for project risks; methods for optimizing the use of available resources; ways to resolve conflict situations; analysis of actual indicators for timely adjustment of the progress of work.

Be able to:

prepare documents of the project initialization stage , such as a feasibility study, project charter, develop and analyze documents related to the planning of project activities, apply various decision support methods; promptly control the execution of work and track deadlines; select personnel, resolve conflicts between team members; manage the risks arising from the implementation of projects.

Have skills:

Project software in the process of project management

Methods of lithological research

THE CODE - GEO223

CREDIT – 5 (2/0/1/2)

PRE-REQUISITE: petrography

PURPOSE AND OBJECTIVES OF THE COURSE

Familiarization of students with the systematics of sedimentary rocks; methods of petrographic studies of sedimentary rocks; processes of lithogenesis, diagenesis, catagenesis and metagenesis. The general tasks of studying the discipline are: the study of the petrography of sedimentary rocks, the processes of their accumulation and post-sedimentary changes; study of methods for studying sedimentary rocks; study of methods for describing sedimentary sections, constructing lithological columns and profiles, and methods for their interpretation; study of methods for constructing lithological and paleogeographic maps.

BRIEF DESCRIPTION OF THE COURSE

Fundamentals of the theory of lithogenesis: hypergenesis, its factors, features of weathering in various climatic zones. Sedimentogenesis: features of transport and accumulation of sediments, sedimentary differentiation. Sediment diagenesis. Catagenesis, compaction of sedimentary rocks and processes of neoformation of minerals. Sedimentary facies and their types; features of sedimentary rocks of various facies. Methods of facies analysis: lithological, study of organic remains, study of the form of occurrence and structure of sedimentary rocks and their relationship with surrounding formations, methods of facies mapping.

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

Know: the place of lithology in the cycle of geological sciences; classification of sedimentary rocks, main features of sedimentary rocks and the possibility of their interpretation, stages of sedimentogenesis, processes and results of diagenetic , catagenetic and metagenetic transformations of sedimentary rocks, minerals of sedimentary genesis.

Be able to: document sedimentary sequences, describe lithological thin sections, reconstruct the conditions of their formation and transformation based on the observations made.

Have skills: graphical representation and geological interpretation of lithological data.

Geochemistry of radioactive elements

THE CODE – GEO212

CREDIT – 5 (2/0/1/2)

PRE-REQUISITE: GE O 115 General geology

PURPOSE AND OBJECTIVES OF THE COURSE

The purpose of teaching the discipline is to train specialists in the field of uranium geology with in-depth knowledge of the geochemistry of radioactive elements.

The main tasks in the study of the discipline are:

- deep understanding of the conditions and factors of migration and concentration of radioactive elements in geological processes;
- gain knowledge about the mechanisms and forms of transfer and concentration of uranium and thorium in endogenous and exogenous processes;
- to acquire skills in the development of search geochemical criteria and signs of uranium mineralization .

BRIEF DESCRIPTION OF THE COURSE

This discipline provides a detailed study of the geochemistry of uranium and thorium minerals characterized by a complex and variable chemical composition, which causes the variability of their physical properties. Many of these minerals are similar external features and optical properties, metamict and X-ray amorphous, easily undergo transformations under the influence of superimposed processes (metastable), are in thin intergrowths with other minerals.

KNOWLEDGE , SKILLS AFTER COMPLETING THE COURSE

Know: the chemical composition of the Earth, its shells and patterns of migration, concentration and dispersion of radioactive chemical elements in various geological processes and environments.

Be able to: analyze geochemical information and identify regularities in the composition, structure and genesis of various geological formations.

Possess: the skills of thermodynamic assessment of the direction of geochemical processes and the environmental conditions necessary for their course.

Registration and defense of a master's thesis

CODE - ECA203

CREDIT -12

The purpose of the master's thesis is:

demonstration of the level of scientific/research qualifications of the undergraduate, the ability to conduct scientific research independently, testing the ability to solve specific scientific and practical problems, knowledge of the most common methods and techniques for solving them.

SHORT DESCRIPTION

Master's thesis is a final qualifying scientific work, which is a generalization of the results of independent research by a master student of one of the urgent problems of a particular specialty in the relevant branch of science, which has internal unity and reflects the course and results of the development of the chosen topic.

A master's thesis is the result of a research / experimental research work of a master student, carried out during the entire period of study of a master student.

The defense of a master's thesis is the final stage in the preparation of a master's degree.

The master's thesis must meet the following requirements:

- the work should carry out research or solve urgent problems in the field of geology and exploration of deposits of solid minerals
- work should be based on the identification of important scientific problems and their solution;
- decisions must be scientifically substantiated and reliable, have internal unity;
- the dissertation work must be written alone;

Content

1 Scope and content of the program	5
2 Entry requirements	7
3 Requirements for completing studies and obtaining a diploma	7
4 Working curriculum of the educational program	10
5 Descriptors for the level and scope of knowledge, skills, abilities and competencies	13
6 Competencies upon completion of training	15
ECTS Diploma Supplement	19

Рецензия

на образовательную программу магистратуры 7M07206 «Геология и разведка месторождений твердых полезных ископаемых»

Образовательная программа «Геология и разведка месторождений твердых полезных ископаемых» по направлению «Геология» разработана в соответствии с Законом РК «Об образовании» и является высшей ступенью системы непрерывного образования в Республике Казахстан согласно Государственного общеобязательного стандарта послевузовского образования «Магистратура» (в редакции постановления Правительства РК от 13.05.2016 № 292) в отношении объема дисциплин учебного плана, требования к уровню подготовки, содержания образовательной программы.

Целью данной образовательной программы является подготовка высококвалифицированных, конкурентоспособных и востребованных на рынке труда магистров для горно-металлургического сектора Республики Казахстан, способных выполнять производственно-технологическую, организационно-управленческую, экспериментально-исследовательскую, расчетно-проектную и аналитическую работу, а также принимать активное участие в разработке инвестиционных проектов с проявлением навыков менеджмента в геологоразведочном производстве. Одной из основных задач программы является разработка и внедрение инновационных технологий прогноза, поисков и разведки МПИ в соответствии с целями, задачами и системой программных мероприятий, предусмотренных в Постановлении Правительства Республики Казахстан от 13.08.12 г. №1042 «Об утверждении Концепции развития геологической отрасли до 2030 года». Программа основана на нормативных документах нового Государственного общеобязательного стандарта послевузовского образования и составлена в соответствии с ее целью.

Структура Программы составлена на базе требований, необходимых для многогранной подготовки высококачественного магистра, развития его профессиональных, личностных, а также логических и аналитических качеств будущего специалиста.

Учебная программа предусматривает рассмотрение обязательных и элективных дисциплин, отвечающих современному уровню подготовки специалиста, востребованного на рынке труда. В программе используются современные информационные технологии и программное обеспечение, новейшие технические средства и методы обучения, обмен между ВУЗами, в т.ч. с иностранными, направленные на повышение компетентности магистров для решения профессиональных задач, соответствующих новым требованиям в современной науке и на производстве. Разработчики программы предусматривают широкий спектр возможностей выпускника после получения им необходимых навыков. Программа учитывает возможность работы магистра на стыке нескольких дисциплин и приобретения дополнительных поливалентных знаний, что позволит выпускникам находить нетрадиционные решения для решения сложных часто обновляющихся и модернизирующихся планов государства и адаптироваться к новым условиям или непредвиденным ситуациям.

Программа предусматривает основательную подготовку в области современных информационных технологий, что является основой для саморазвития и постоянного совершенствования своих знаний в условиях частоизменяющихся условий рынка труда. Рабочий учебный план составлен по семестрам, в каталоге обязательных и элективных дисциплин указаны ожидаемые результаты обучения. В плане указаны объемы кредитов, семестры обучения, компоненты цикла дисциплин. В образовательной программе описаны дескрипторы уровня и объема знаний, умения, навыков и компетенций. Затем идет подробное описание всех дисциплин обязательных и элективных с указанием их кода, пре-реквизитов,

целей и задач, приводится краткое описание курса с описанием даваемых им знаний, умения, навыков по его завершению.

Многокомпонентная и диверсифицированная модель выпускника полностью отвечает целям образовательной программы, запросам работодателей и требованиям геологической отрасли республики. Актуальность и востребованность программы абсолютно бесспорна. Образовательная программа «Геология и разведка месторождений твердых полезных ископаемых» по направлению «Геология» заслуживает высокой оценки и рекомендуется к утверждению и принятию.

ГНС лаборатории благородных металлов Института геологических наук

им.К.И.Сатпаева

Жунусов А.А.



Рецензия

на образовательную программу магистратуры 7M07206 «Геология и разведка месторождений твердых полезных ископаемых»

Рассмотрев представленную на рецензию образовательную программу по направлению «Геология и разведка месторождений твердых полезных ископаемых» составлена для подготовки магистрантов рецензент пришел к следующим выводам:

Образовательная программа по направлению, подготовленная кафедрой «Геологическая съемка, поиски и разведка месторождений полезных ископаемых» структурирована и составлена логично. Содержит общие положения, характеристику направления подготовки, характеристику профессиональной деятельности, область профессиональной деятельности выпускника ОП, виды производственно-управленческой и прогностической подготовки трудовой деятельности:

- производственная;
- организационно-управленческая, производственная деятельность;
- проектная деятельность;
- организационно-управленческая деятельность.

Содержание образовательной программы магистратуры состоит из:

- 1) теоретического обучения, включающее изучение циклов базовых и профилирующих дисциплин;
- 2) практической подготовки магистрантов: различные виды практик, научных или профессиональных стажировок;
- 3) научно-исследовательской работы, включающую выполнение магистерского диссертации
- 4) итоговой аттестации;
- 5) исследовательской практики;

Обобщенные трудовые функции выпускников разработаны в соответствии с профессиональными стандартами специальностей и отраслевой рамкой профессий. Представленная образовательная программа содержательна, имеет теоретическую и практическую направленность, включает достаточное количество разнообразных циклов, направленных на развитие креативных способностей обучающихся, полностью соответствует государственным требованиям. На основании рецензирования можно сделать заключение, что характер, структура и содержание образовательной программы соответствует требованиям МОН РК и позволит при его реализации успешно обеспечить формирование заявленных компетенций.

Директор
ОО «ИКЦ «ГЕО»



Кабазиев Б.М.

РЕЦЕНЗИЯ

на образовательную программу научно-педагогической магистратуры
67M07206 «Геология и разведка месторождений твердых полезных ископаемых»
по направлению «Геология»

Рецензируемая образовательная программа «Геология и разведка месторождений твердых полезных ископаемых» по направлению «Геология» разработана в соответствии с Законом об образовании Республики Казахстан, Государственной программой индустриально-инновационного развития Республики Казахстан, ГОСО магистратуры Республики Казахстан, Национальной рамкой квалификации, профессиональными стандартами и согласована с Дублинскими дескрипторами и Европейской рамкой квалификации.

Образовательная программа магистратуры направлена на подготовку высококвалифицированных, конкурентоспособных специалистов в области геологии, поисков и разведки месторождений твердых полезных ископаемых, для геологических предприятий, осуществляющих недропользование на всех этапах геологоразведочного и добычного производства, научно-исследовательских и проектных учреждений, вузов и органов государственного надзора по рациональному использованию и охраны недр.

Рецензируемая программа включает: компетенции выпускника образовательной программы магистратуры, формируемые в результате освоения программы; документы, регламентирующие содержание и организацию образовательного процесса при реализации этой программы. Образовательная программа описывает цели, ожидаемые результаты, содержание образовательного процесса, оценку качества подготовки выпускника по данному направлению подготовки. В программу включены требования для поступающих, в том числе при поступлении после неродственной специальности бакалавриата.

Разработанная образовательная программа предусматривает практическую подготовку обучающихся в виде исследовательской практики (для научно-педагогического направления подготовки), которые помогут сформировать практические, исследовательские, преподавательские навыки магистрантов. Дисциплины учебного плана по рецензируемой образовательной программе формируют весь необходимый перечень общекультурных и профессиональных компетенций, предусмотренных Государственной программой индустриально-инновационного развития Республики Казахстан.

По окончании теоретического и практического курса обучения в программе описаны требования для завершения обучения и получения диплома. Выпускнику магистратуры данной образовательной программы присваивается академическая степень «магистр технических наук» (для 2 лет обучения).

Разработанная образовательная программа в полной мере соответствует заявленному уровню подготовки магистров. Предусмотренные дисциплины формируют высокий уровень компетенций. Структура учебного плана в целом логична и последовательна. Содержание дисциплин соответствует компетентностной модели выпускника.

Начальник геологоразведочного участка

Пустынное АО «АК Алтыналмас», к.г.-м.н.


Риссидин В. В.

Рецензия

на образовательную программу магистратуры «7М07206 – Геология и разведка месторождений полезных ископаемых»

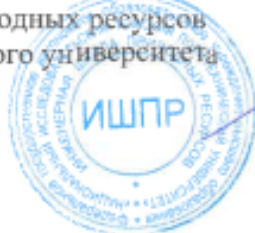
Рецензируемая образовательная программа магистратуры «Геология и разведка месторождений полезных ископаемых» разработана в соответствии с Законом об образовании Республики Казахстан, Государственной программой индустриально-инновационного развития Республики Казахстан, ГОСО магистратуры Республики Казахстан, Национальной рамкой квалификации, профессиональными стандартами и согласована с Дублинскими дескрипторами и Европейской рамкой квалификации.

Содержание образовательной программы направлена на подготовку высококвалифицированных, конкурентоспособных специалистов в области геологии, поисков и разведки месторождений полезных ископаемых для геологических предприятий, осуществляющих недропользование на всех этапах геологоразведочного и добычного производства научно-исследовательских и проектных учреждений, вузов и органов государственного надзора по рациональному использованию и охраны недр, отвечающих требованиям современного рынка и международным стандартам.

Программа отвечает основным требованиям стандарта. Ее структура включает цикл базовых дисциплин (10 кредитов), цикл профилирующих дисциплин (25 кредитов), что составляет по теоретическому обучению 35 кредитов. На долю экспериментально-исследовательской работы магистранта, включая прохождение стажировки и выполнение магистерского проекта приходится 13 кредитов.

Рецензируемая программа включает: компетенции выпускника образовательной программы магистратуры, формируемые в результате освоения магистерской программы; документы, регламентирующие содержание и организацию образовательного процесса при реализации магистерской программы. Образовательная программа регламентирует цели, ожидаемые результаты, содержание образовательного процесса, оценку качества подготовки выпускника по данному направлению подготовки. Дисциплины учебного плана по рецензируемой образовательной программе формируют весь необходимый перечень общекультурных и профессиональных компетенций, предусмотренных Государственной программой индустриально-инновационного развития Республики Казахстан. Структура учебного плана в целом логична и последовательна. Содержание дисциплин соответствует компетентностной модели выпускника.

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