

KARAGANDA ECONOMIC UNIVERSITY OF KAZPOTREBSOYUZ

<p>"Agreed" Director RSU of the Department of Ecology in the Karaganda region of the Committee for Environmental Regulation and Control of the Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan Musaparbekov K.Zh.</p> <p>_____ 2020 G.</p>	<p>"I approve" Rector of Karaganda Economic University of Kazpotrebsoyuz, Doctor of Economics, Professor Aimagambetov E.B.</p> <p>_____ 2020 G.</p> <p>Approved at the meeting Academic Council of KEUK Protocol No. 9 of May 26, 2020</p>
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EDUCATIONAL PROGRAM

6B05201 - "Ecology"

Level: Bachelor's Degree (BA)

KARAGANDA 2020

The educational program 6B05201 - "Ecology" is compiled on the basis of the State mandatory standard of higher/ postgraduate education, approved by the Order of the Ministry of Education of the Republic of Kazakhstan dated 31.10. 2018 No. 604 with amendments and additions dated 05.20 No. 182, the Rules for organizing the educational process on credit technology of education, approved by the Order of the Ministry of Education of the Republic of Kazakhstan dated April 20, 2011 No. 152 with amendments and additions dated 12.10.2018 No. 563.

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The educational program was discussed and approved at the meeting of the academic committee " 16 " April 2020, Protocol No. 2

The educational program was reviewed and recommended at a meeting of the Faculty's Educational and Methodological Council. Protocol No. 4 of April 24, 2020

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1. Passport of the educational program

№	Field name	Note
1.	Registration number	This field should be displayed after the initial saving of the application form. The field is blocked for editing
2.	Code and classification of the field of education	6B05 Natural Sciences, Mathematics and Statistics
3.	Code and classification of training areas	6B052 Environment
4.	Group of educational programs	In 051 Environment
5.	Name of the educational program	6B05201 ECOLOGY
6.	Type of educational program	Values (by default - no value is selected): a) Current EP; + b) New EP; c) Innovative EP.
7.	The purpose of the educational program	High-quality training of bachelors in the field of ecology with fundamental knowledge in basic and core disciplines adapted to the requirements of labor and new technologies, capable of creative solution of theoretical and practical tasks of professional activity in modern conditions.
8.	Level according to the International standard classification of education	6
9.	Level according to the national qualifications framework	6
10.	Level by industry qualification standards	6
11.	Distinctive features of the educational program	a) No; + b) Joint EP (SOP) c) Double-degree EP (DOP)
	Partner University (SOP)	This field should be displayed if the value "Joint EP (SOP)" is selected in the "Distinctive features of the OP" field
	Partner University (two-degree educational programs)	This field should be displayed if the value "Double-degree EP (two-degree educational programs)" is selected in the "Distinctive features of the EP" field
12.	List of competencies	A matrix of correlation of learning outcomes according to the educational program with the competencies being formed is being formed (Appendix 2.1)
13.	Learning outcomes	
14.	Form of training	The field value must be obtained from the IS of the specified university.

15.	Language of instruction	The values should refer to the central reference book "Languages of Learning/teaching". By default, no value is selected.
16.	Volume of loans	full-time department - 240 abbreviated form after college - 180 The corresponding value for the training form should be displayed
17.	Academic degree awarded	Bachelor's degree + academic degree Bachelor of Natural Sciences in EP 6B05201 "Ecology"
18.	Availability of an appendix to the license for the direction of training	Number KZ06LAA00017359 dated 11.11.2019
19.	Availability of EP accreditation	There is +
	Name of the accreditation body	Independent Kazakhstan Agency for Quality Assurance in Education
	Validity period of accreditation	16.01.2017 – 14.01.2022
20.	Information about disciplines	Information about UCdisciplines/CC GED, BD, PD (Appendix 2.2)
21.	Uniqueness of the program	The distinctive features of the EP are that the emphasis is given to environmental management

2. Qualification characteristics of the graduate of the educational program 6B05201 "Ecology"

2.1 Degree awarded: Bachelor of Natural Sciences in EP 6B05201 "Ecology"2.2

List of specialist positions:

- organizational and managerial;
- production and technological;
- service and operational;
- experimental research;
- educational (pedagogical);
- project.

3. Content of the educational program

3.1 Curriculum of the educational program

The cycle of discipline	Discipline code	UC/C C/RC	Name of the discipline	Labor intensity		Form of control	Types of educational work l/pr/ SIWT /SIW/ PA	Distribution by semester								The result of training
				Credits KAZ/ECTS	akadem. Watch			1	2	3	4	5	6	7	8	
1. MSPK Module of socio-political knowledge																
GED	SPKP	RC	Sociology, Political Science, Cultural Studies, Psychology	8	240	ex	30/30/ 60/90/ 30	4	4							LR 1, LR 2
BD	UP	UC	Educational practice	1	30	report		1								
2. SHM Social and Humanitarian Module																
GED	EBzh	CC	Ecology and life safety	5	150	ex	30/15/ 15/75/ 15	5								LR 1, LR 2
	Rel		Religious studies													
	MK CME		Interdisciplinary course "Mangilik El Values"													
GED	SIK	RC	Modern history of Kazakhstan	5	150	Stat ex	30/15/ 15/75/ 15	5								
GED	Fil	RC	Philosophy	5	150	ex	30/15/ 15/75/ 15			5						
3. MPCS Module of physical culture and sports																
GED	FK	RC	Physical Culture	8	240	dif/ zach		2	2	2	2					LR 1, LR 2
4. ЯМ Языковой модуль																
GED	IYa	RC	Foreign language	10	300	ex	0/90/3 0/150/ 30	5	5							LR 1, LR 2
GED	K(R) Ya	RC	Kazakh (Russian) language	10	300	ex	0/90/3 0/150/ 30	5	5							
BD	MK POYa	UC	Interdisciplinary course "Professionally oriented language"	6	180	ex	0/60/3 0/60/3 0			3	3					
5. NSM Natural Science Module																
BD	EAE	UC	Ecological aspects of natural science	5	150	ex	30/15/ 15/75/ 15			5						LR 4, LR 5
BD	Bio	CC	Biology	5	150	ex	15/30/ 15/75/ 15	5								
	MB		Microbiology													
6. DTMM Digital technologies and mathematical methods																
BD	ME	CC	Mathematics in Economics	5	150	ex	30/15/ 15/75/ 15	5								LR 3
	VM		Higher Mathematics													
GED	ИКТ (ICT)	RC	Information and communication technologies (Information and communication technologies)	5	150	ex	15/30/ 15/75/ 15			5						
7. GBM Geobiological Module																
BD	EH	UC	Environmental chemistry	5	150	ex	15/30/ 15/75/ 15				5					LR 6, LR 7
PD	Geo	UC	Geoecology	5	150	ex	15/30/ 15/75/ 15					5				
BD	EZhR	UC	Ecology of animals and plants	5	150	ex	30/15/ 15/75/ 15			5						
BD	EB	UC	Ecological biogeography	5	150	ex	30/15/ 15/75/ 15					5				
8. EEM Ecological and economic module																
BD	ST	CC	Statistics	5	150	ex	15/30/ 15/75/ 15	5					5			LR 4, LR 5
	SS		Social statistics													
PD	EEA	UC	Ecological and economic analysis	5	150	ex	15/30/ 15/75/ 15					5				
9 MM. Module Minor 20 credits (1) -Business Informatics / Legal Foundations of Business/ Basic Legal 1/ Basic Legal 2/Economic Foundations of Entrepreneurship /																

Entrepreneurial Projects /Finance																		
BD	Min	CC	Майнор	20	600	ex					5	5	5	5	LR 10, LR11			
10. ELM Environmental and Legal Module																		
BD	PP	CC	Environmental management law	5	150	ex	30/15/15/75/15											
	EPRK		Environmental law of the Republic of Kazakhstan															
BD	GOS	CC	Environmental hygiene	5	150	ex	30/15/15/75/15											
	GE		Global ecology															
BD	EK	CC	Ecology of Kazakhstan	5	150	ex	30/15/15/75/15						5		LR 1, LR 2, LR 4, LR 5			
	RE		Regional ecology															
BD	BE	CC	Biogeochemistry and ecotoxicology	5	150	ex	15/30/15/75/15							5				
	TRSD		Technology for the development of standards and regulatory documentation															
BD	PP	UC	Production practice	5	150	report								5				
11. EM Environmental Module																		
BD	Posh	CC	Soil science	5	150	ex	15/30/15/75/15							5				
	Zem		Land management															
BD	ER	CC	Environmental resource studies	5	150	ex	30/15/15/75/15								5			
	PEB		Origin and evolution of the biosphere															
BD	Gid	CC	Hydrology (in the state language)	5	150	ex	30/15/15/75/15						5					
	VRK		Water resources of Kazakhstan															
PD	EM	UC	Environmental management	5	150	ex	30/15/15/75/15							5				
PD	EM	UC	Environmental monitoring	5	150	ex	15/30/15/75/15							5				
BD	EA	CC	Environmental audit	5	150	ex	30/15/15/75/15								5			
	UOS		Teaching about the environment															
PD	PP	UC	Production practice	5	150	report								5				
12. REM Regulatory and Environmental Module																		
PD	ORE	CC	Fundamentals of radiation ecology	5	150	ex	30/15/15/75/15								5			
	OSE		Fundamentals of system ecology															
PD	OSOS	CC	Environmental assessment	5	150	ex	15/30/15/75/15								5			
	OPR		Assessment of natural resources															
PD	PE	CC	Industrial ecology	5	150	ex	30/15/15/75/15								5			
	OPR		Protection of natural resources															
PD	OENE	CC	Fundamentals of environmental regulation and expertise	5	150	ex	15/30/15/75/15								5			
	EB		Environmental safety															
BD	STZB (MTG B)	CC	Modern technologies of green business	5	150	ex	15/30/15/75/15							5				
	EP		Economics of environmental management															
PD	PP	UC	Production practice	10	300	report									10			
PD	PreP	UC	Pre-graduate practice	5	150	protection									5			
				228														
MFSC13. Module of the final state certification																		
			Writing and defending a thesis or preparing and passing a comprehensive exam	12	360	GOS. ind.								12				
The total labor intensity of the educational program				240								31	32	30	30	30	30	30
SOFT SKILLS															X			

3.2 Information about disciplines

№	Name of the discipline	Brief description of the discipline (30-50 words)	Number of credits	Formed competencies (codes)
Цикл общеобразовательных дисциплин Обязательный компонент				
1	Module of socio-political knowledge (Sociology, Political Science, Cultural Studies, Psychology)	Sociology studies society, its constituent systems (institutions, processes) and the patterns of their functioning and development. Political science studies the theory of political power and political systems, political relations and processes, world politics and international relations Culturology studies the patterns and factors of sociocultural development of society, theoretical and methodological problems of culturology and the history of world culture Psychology studies the main psychological processes, states, properties, the inner world of a person in the process of reflecting this world.	8	CC 1.
2	Modern history of Kazakhstan	The discipline studies the main stages of the formation of modern Kazakhstan: the socio-economic situation in Kazakhstan at the beginning of the twentieth century, the historical origins of the formation of Soviet Kazakhstan, the consequences of Soviet reforms in Kazakhstan, state strategies and socio-economic development of Independent Kazakhstan, the Kazakh model of economic development, democratic and spiritual renewal of Independent Kazakhstan.	5	CC1
3	Philosophy	The discipline studies the main philosophical directions such as: Philosophy of the Ancient World, Ancient East, ancient philosophy. Philosophy of the Middle Ages of the East and West. Philosophy of the Renaissance. Philosophy of the New Age. Russian philosophy. Philosophy of the late XX- early XXI century. Kazakh philosophy. He also studies ontology and epistemology, social philosophy and anthropology.	5	CC1
4	Physical Culture	Physical culture is a set of values, norms and knowledge created and used by society for the purpose of physical and intellectual development of human abilities, improvement of his motor activity and formation of a healthy lifestyle, social adaptation through physical education, physical training and physical development.	8	CC1
5	Kazakh (Russian) language	The discipline studies lexical and grammatical topics aimed at the development of all types of speech activity and vocabulary work, the development of everyday conversation in various situations and the terminology of the Kazakh language.	10	CC1
6	Foreign language	The discipline studies lexical and grammatical topics aimed at the development of all types of speech activity (listening, speaking, reading, writing) and vocabulary work, allowing the use of a foreign language in interpersonal communication and in professional activities.	10	CC1
7	Information And Communication Technologies	The discipline studies the role of information and communication technologies in key sectors of society development, ICT standards, computer systems, computer system architecture, software and user interface, database systems and data analysis, cloud	5	CC2

		and mobile technologies, multimedia technologies, Smart technologies, E-technologies, e-business, e-learning, e-government.		
Cycle of general education disciplines				
Component of choice				
8	Ecology and life safety	The discipline studies the interactions of living organisms with the environment, the laws of the development of the biosphere, the functioning of ecological systems and the biosphere as a whole, as well as methods of first aid and human protection in the technosphere from negative impacts of anthropogenic and natural origin	5	CC1
9	Religious studies	The discipline studies the essence, history of the origin, development, role and place of the religions of Judaism, Taoism, Confucianism, Buddhism, Christianity, Catholicism, Orthodoxy, Protestantism, Islam in modern society, the main religious trends, the culture of interfaith communication, tolerance.	5	CC1
10	Price Mangilik El	The discipline studies the essence of national identity, national upbringing, ethnic socialization and identification, the culture of interethnic communication to preserve the stability, independence, security of our state, in the context of the National Idea "Mangilik el".	5	CC1
Cycle of basic disciplines				
University component				
11	Educational practice	Familiarization with educational programs in the specialty being trained with the functions and tasks of future professional activity	1	CC1
12	Interdisciplinary course "Professionally oriented language"	The discipline studies vocabulary, grammatical structure, characteristics of the basic categorical and conceptual apparatus used in evaluation activities, the main types of communicative activities in the state language and a foreign language, taking into account the specifics of professional activity. After studying this discipline, the student should know: 1. functional features of oral and written professionally-oriented texts, understand oral speech within professional topics; participate in the discussion of topics related to the specialty; independently prepare and make oral messages on professional topics; extract the necessary information from English-language sources created in various sign systems, select information sources and critically evaluate information necessary to perform communicative tasks in professional activities.	5	CC 1.
13	Ecological aspects of natural science	The discipline studies theoretical and methodological problems of ecological aspects of biology, chemistry and physics and forms students' basic ecological thinking, providing a systematic approach to the study of biological, chemical, physical ecology	5	CC 3.
14	Environmental chemistry	The discipline studies the chemical aspects of the influence of human activity on natural objects, on the processes occurring in the air, water and soil when pollutants enter and the possibility of preventing environmental pollution; studies the transformation of chemical compounds in the environment, predicts	5	CC 3.

		the possible consequences of such changes, forms decision-making skills taking into account environmental requirements		
15	Ecology of animals and plants	The discipline studies the relationship of animals and plants with the environment, the role of plant and animal organisms in the natural balance, the characteristic behavior of individual species depending on environmental conditions and patterns of adaptation of organisms. Forms knowledge of the main characteristics of the plant and animal world, patterns of interspecific and intra-species relationships of living organisms in nature and their role in the ecosystem.	5	CC 3.
16	Ecological biogeography	Studies the patterns of geographical distribution of animals, plants and microorganisms and the dynamics of organisms and their communities, populations, biota, depending on the conditions of the geographical environment. Forms students' general ideas about the basics of the evolution of flora and fauna, biological diversity and its protection in various geographical regions and the main patterns of biota formation.	5	CC 3.
17	Production practice	They study the conditions of production, the accounting procedure for the work performed, the structure and management system of the production organization, its material and technical base.	5	CC1, CC3
18	Minor "Business Informatics" / Minor "Legal foundations of business" / Minor "Basic Legal 1" / Minor "Basic Legal 2" / Minor "Economic fundamentals of entrepreneurship" / Minor "Entrepreneurial projects" / Minor "Finance"	Electronic business, Computer design technologies, IT solutions and industry, Information systems security/ Business law of the Republic of Kazakhstan, Civil law of the Republic of Kazakhstan, Legal and customs tariff regulation of foreign economic activity, Labor law of the Republic of Kazakhstan Constitutional Law, Administrative Law of the Republic of Kazakhstan, Labor law, Public Service and Management. / Constitutional law, Administrative Law of the Republic of Kazakhstan, Labor law, Environmental law Economic Theory, Management, Entrepreneurship, Firm Economics Entrepreneurship, Business planning, Risk management, Entrepreneurial projects: management and implementation Finance, Taxes and taxation, Banking, Organization of interaction between banks and enterprises	20	CC6
Cycle of basic disciplines Component of choice				
19	Biology	Studies physiological processes in plant organisms, in humans and animals, and the influence of environmental factors on these processes., introduces students to the patterns of inheritance of traits, the structural and functional organization of genetic material and its variability.	5	CC 3
20	Microbiology	Studies the main morphological, physiological and ecological characteristics of microorganisms and their classifications, as well as the mechanisms of action of the microbial community in the global cycles of the biosphere and the influence of	5	CC 3

		environmental factors on the vital activity of microorganisms. Introduces students to the laws of interaction of components of the biosphere with microorganisms in the development of modern purification systems and low-waste technologies in environmental management.		
21	Mathematics in Economics	The discipline studies the following sections of mathematics: Linear Algebra. Vector algebra. Analytical geometry. Elements of mathematical analysis. Differential calculus of functions of one variable. Integral calculus of functions of one variable. Functions of many variables. Ordinary differential equations. Numerical series. Power series.	5	CC 2
22	Higher Mathematics	Mastering the mathematical apparatus, helps to model, analyze and solve economic problems with the application, if necessary, using computer technology; mastering mathematical methods by students, which make it possible to study and predict processes and phenomena in the field of future activities of students as specialists.	5	CC 2
23	Statistics	The discipline studies the essence of the statistical method and the features of its application to the study of socio-economic phenomena and processes. The purpose and methods of constructing the main statistical indicators that describe the state and development of the economy, national wealth, reproduction of the population, the standard of living of the population are revealed. Forms the ability to apply a system of statistical indicators when analyzing the information received.	5	CC 3
24	Social statistics	The discipline studies methods of data collection, processing of digital material, analysis of the received information and application of the acquired knowledge in practice	5	CC 3
25	Право природопользования	The discipline studies the main legal institutions in the field of environmental management: environmental rights of citizens, natural resources and environmental management law, ownership of environmental management, legal responsibility for environmental offenses, economic mechanism of environmental protection and environmental management, environmental safety; state regulation of land relations, the legal regime of lands in the Republic of Kazakhstan, which will allow to form knowledge in the field of legal regulation of environmental protection and practice of its application.	5	CC 1, 3.
26	Environmental law of the Republic of Kazakhstan	Studies the sphere of legal regulation of the ecological and legal regime of use, reproduction and protection of individual natural objects, natural and territorial complexes, international legal protection of the natural environment	5	CC 1, 3.
27	Environmental hygiene	Studies the general laws of the relationship of the human body with environmental factors, principles	5	CC 3.

		and approaches to improving living conditions, protecting and strengthening the health of the population in continuously changing environmental conditions. Forms students' ability to give a sanitary and hygienic assessment of environmental factors and to carry out sanitary and hygienic measures to preserve and strengthen the health of the population.		
28	Global ecology	Studies the problems of global ecology, develops the ability to solve problems, foster a responsible attitude to nature.	5	CC 3.
29	Ecology of Kazakhstan	Ecology of Kazakhstan studies the peculiarities of Kazakhstan's ecosystems, considers the negative impact of anthropogenic impact on the emergence of regional and local environmental problems. Features of the ecology of the atmosphere, hydrosphere, soil cover, flora and fauna, radioecological situation of the Republic of Kazakhstan.	5	CC 3.
30	Regional ecology	The discipline studies on the basis of acquired ecological knowledge the natural and climatic conditions and the diversity of ecosystems in the region. Forms the ability to assess the consequences of human influence on the natural environment of the region and make optimal decisions that exclude the deterioration of the environmental situation.	5	CC 4.
31	Biogeochemistry and ecotoxicology	Studies the patterns of distribution and movement of chemical elements and toxicants in the biosphere, shows quantitative and qualitative characteristics of biogeochemical elements. Forms knowledge about the laws of functioning and development of processes occurring in the natural environment and the processes of migration of chemical elements between living organisms and the environment.	5	CC 4.
32	Technology for the development of standards and regulatory documentation	Studies uniform norms, rules and requirements for products and spheres of activity of members of the society, determines the relationship between the requirements of production and the conditions of its operation, achieving universal savings, accelerating scientific and technological progress, increasing labor productivity, improving product quality. Develops the ability to apply theoretical knowledge in practice when developing standards and other regulatory documents.	5	CC 4.
33	Soil science	Studies the origin and development of the soil and its main fertility properties, examines the features of the structure, composition and properties of all types of soils on the globe and their spatial distribution, measures for their protection and rational use. Forms knowledge of the laws of functioning and development of natural and natural systems, their interrelation, the idea of soil-forming rocks.	5	CC 3.
34	Land management	Studies the system of measures for the implementation of land legislation, the organization of full and rational use and protection of land, the description of the location of production, considers the establishment on the ground of the boundaries of land use objects, the organization of the use of land for agricultural production. Forms knowledge on the basic laws of the functioning of land registration; as well as with the types and forms of land	5	CC 3.

		management.		
35	Environmental resource studies	The discipline studies various types of natural, socio-economic resources and their classification. Forms knowledge about the main provisions of the strategy and tactics of assessing the compliance of natural resources with the current level of consumption and rational use, taking into account environmental consequences.	5	CC 3.
36	Origin and evolution of the biosphere	The discipline studies the biosphere as an integral part of the geographical envelope of the Earth and the global role of living matter in the evolution of the biosphere and its functions. Forms knowledge about the laws and driving force of the evolution of the biosphere, the origin of life on Earth and the stages of development of the biosphere as the scientific foundation of modern ecology.	5	CC 3.
37	Гидрология	The discipline studies water bodies and water resources. Provides an assessment of the current state of water resources, forecast and justification of their rational use, forms knowledge about the impact of adverse changes in the amount of water and its quality in river basins and reservoirs, under the influence of anthropogenic influences, taking into account natural changes in water systems.	5	CC 4.
38	Water resources of Kazakhstan	The discipline studies methods of water resources management in the prevailing trends of changes in the quantity and quality of water in river basins and reservoirs. Forms knowledge of the mechanism of the use of water resources of the Republic of Kazakhstan in cooperation with neighboring countries on the basis of their fair and reasonable use.	5	CC 4.
39	Environmental audit	Studies the activity of an economic entity in determining its environmental policy, in forming priorities for the implementation of measures, including preventive ones, aimed at compliance with the established requirements of environmental legislation.	5	CC 5.
40	Teaching about the environment	The discipline studies the environment and conditions of human existence and its relationship with the environment, reveals the features of a complex multicomponent system "man-environment" Forms knowledge about the objects of the human environment, the components of biotic, abiotic and social environments and their interaction.	55	CC 3.
41	Modern technologies of «green business»	Studies modern technologies of economic and ecological direction at different levels of management and management. Forms knowledge on managing the process of greening the economy of business entities.	5	CC 5.
42	Economics of environmental management	Studies methods of rational nature management, economic support of environmental protection measures and state regulation of nature management. * Forms knowledge of the relationship between the natural resource base and the socio-economic development of society, the search for management methods that ensure the maintenance of natural balance	5	CC 5.

Cycle of profile disciplines				
University component/Component of choice				
43	Environmental management	The discipline studies information, legal and methodological foundations for the development of plans and implementation of environmental management systems, rational use of natural resources, promotion of resource- and energy-saving environmental technologies. Develops practical skills and application of standards and regulatory documents in professional activity	5	CC 5
44	Geocology	The discipline studies geographical systems in order to develop scientific and practical recommendations for the rational use of natural resources and ecological stabilization of the human environment. Forms knowledge about the functioning of the ecosphere as an interconnected system of geospheres in the process of its integration with society, allowing them to find strategic solutions to interrelated global problems of a crisis nature.	5	CC4
45	Ecological and economic analysis	Ecological and economic analysis studies the processes of interaction between human life and the state of the environment under the influence of objective and subjective factors reflected through a system of ecological and economic indicators, causal relationships are established along the chain: "interaction - change - consequences". As a result of studying the discipline, individual trends and ecological and economic patterns are identified, systems of forms of property realization are developed, specific ways of resolving ecological and economic contradictions are determined.	5	CC3
46	Environmental monitoring	Studies priority controlled pollutants of the natural environment; means of monitoring implementation; methods of monitoring environmental parameters depending on physical and geographical conditions and emissions of pollutants; forms students' ability to consider at a deeper research level the main approaches in the field of environmental control, including those affected by anthropogenic load	5	CC 5
47	Fundamentals of radiation ecology	Studies the natural and anthropogenic radiation background of the Earth, the mechanism of ionizing radiation effects on living organisms, sources and ways of radionuclides entering the biosphere. Forms fundamental knowledge about the essence of radioecology, its tasks, the effects of radioactive radiation on all living organisms, as well as about environmental activities and ways to overcome modern radioecological problems.	5	CC 5.
48	Fundamentals of system ecology	Studies environmental laws based on a systematic approach and analysis to solve environmental problems, gives a unified description of all the main components of ecosystems, describes their interrelationships with each other and with the external environment. Forms students' knowledge by using a systematic approach to analyze the natural environment as a complex, differentiated system, the components of which are in dynamic equilibrium.	5	CC 5.

49	Environmental assessment	Studies the basic laws of sustainable development of nature and society, modern principles and methods of environmental assessment. Forms knowledge about the principles and systems of assessment and normalization of the state of ecosystems and their components, assessment of the impact of economic activity on the environment and human health.	5	CC 5.
50	Assessment of natural resources	Studies theoretical and practical skills of approaches and methods for assessing natural resources and the effectiveness of their use at the current stage of the country's development. Forms students' system of theoretical and practical foundations for the assessment of natural resources based on established methodologies and methods of assessment.	5	CC 5.
51	Industrial ecology Industrial ecology	Studies the influence of industry, both individual enterprises and the technosphere and the environment, on the biosphere, its evolution into the technosphere and further into the noosphere in the least painful way for humans. Interaction of living beings with the environment in conditions of anthropogenic impact. Forms knowledge of interrelations in the "environment - enterprise" system, ways and means of ensuring the conditions of survival of nature and man in the conditions of functioning of the natural-industrial complex.	5	CC 5.
52	Protection of natural resources	The protection of natural resources studies the main environmental problems, the state of natural resources and issues of their rational use, the nature of the impact of production activities and other anthropogenic factors on the natural environment, a system of measures that ensures the possibility of nature preserving resource-reproducing and environment-reproducing functions, as well as the conservation of non-renewable natural resources.	5	CC 5.
53	Fundamentals of environmental regulation and expertise	Studies the norms and rules of regulatory documentation on design, environmental protection, rational use of natural resources, environmental safety, as well as with environmental expertise, audit and EIA. Develops theoretical and practical skills in environmental quality control using norms and rules, regulatory documentation, environmental quality standards, tools for instrumental control.	5	CC 5.
54	Environmental safety of Kazakhstan	Studies the mechanism of formation of an effective state environmental policy in Kazakhstan and assessment of the current state of environmental safety, problems and contradictions in the environmental sphere and the main conditions for their solution in the light of the implementation of long-term strategic priorities in the Republic of Kazakhstan. Forms knowledge on ensuring the protection of natural systems, vital interests of society and individual rights from threats arising as a result of anthropogenic and natural impacts on the environment.	5	CC 5.
55	Production practice	studies the conditions of production, the accounting procedure for the work performed, the structure and management system of the production organization,	5	CC 4

		its material and technical base.		
56	Production practice	Consolidation of key competencies, acquisition of practical skills and experience of professional activity in the trained specialty	10	CC 5
57	Pre-graduate practice	Collect factual material about the production activities of an enterprise, institution, organization and use it when writing a thesis	5	CC 5

4 Competencies and learning outcomes of the educational program

4.1 List of competencies and learning outcomes

The cipher of the computer	Content of competence	The cipher is the result of learning	The content of the learning result according to the educational program
CC 1.	The ability of a person to socio-cultural and physical development based on the principles of multiculturalism, multilingualism and ecological thinking	LR 1.	Demonstrate personal and professional competitiveness, civic position, physical and environmental culture, culture of academic integrity, critical thinking, creativity and willingness to collaborate
		LR 2.	To carry out interpersonal, intercultural and professional communications using grammatical knowledge and speech means and academic presentation skills in oral and written forms in the state, Russian and foreign languages, to analyze information in accordance with the communication situation
CC 2.	Willingness to use digital technologies for the development of production, business, science, social sphere	LR 3.	Use various types of ICT: Internet resources, cloud and mobile services for the search, storage, processing, protection and dissemination of information
CC 3.	The ability to analyze the objects of economic activity from the point of view of the ecological and economic state, to develop recommendations and make eco-forecasts.	LR 4.	Be able to generalize, analyze, perceive information, set goals and choose ways to achieve it: can formulate arguments and solve problems in the field of ecology, collect, analyze and summarize environmental information in the form of environmental documents, calculate permissible environmental loads on ecosystems, carry out procedures for the examination of economic projects, make recommendations and develop an environmental forecast
		LR 5.	Possess the methods of conducting technical and economic analysis, is able to substantiate the decisions taken and implemented in the field of ecology: he is able to apply the results in practice, develop arguments and solve problems of an ecological and economic nature, use the acquired knowledge in professional activities
CC 4.	The ability to apply theoretical knowledge in practical activities for the provision of services in the field of environmental resource efficiency	LR 6.	Be able to critically rethink the accumulated experience, change the profile of your professional activity if necessary, be aware of the social significance of your future profession, have high motivation to perform professional activities
		LR 7.	Know the classification, layout, methods, principles, concepts in the field of sustainable development and be able to analyze the efficiency of the use of natural resources, fixed assets of industrial value and summarize environmental research materials
CC 5.	The ability to make informed and competent decisions in the field of ecological modeling and forecasting of the state of natural and anthropogenic ecosystems	LR 8.	Possess knowledge about the sources, causes and consequences of environmental pollution, ecological, economic and other methods of assessing the ecological and resource potential of natural and anthropogenic ecosystems, measures to prevent environmental destabilization of the environment
		LR 9.	Possess the skills of environmental management, methods of system analysis, environmental modeling and forecasting of the state of natural and anthropogenic ecosystems

CC 6.	Minor "Business Informatics" / Uses new methods and technologies of computer design, design and data analysis to solve professional tasks based on Internet technologies, ensuring information security of systems.	LR 10	Develops a business plan for the introduction of electronic business, integrates various IT solutions to I tasks in the conditions of digital Kazakhstan, uses computer graphics skills, assesses the level of security and protects information resources.
	Minor "Legal foundations of business"/ The ability to carry out professional activities on the basis of a developed legal awareness, legal thinking and legal culture, to make decisions and perform actions in the business and management spheres in strict accordance with the law	LR 10	Knows the legal acts regulating entrepreneurial activity, both within Kazakhstan and with the participation of foreign partners, demonstrates the ability to comment on their content and use for the organization of various business entities, the development of texts of business contracts, the ability to protect their rights by legal means, is capable of leading activities in strict accordance with the law
	Minor "Basic Legal 1"/ The ability to carry out professional activities on the basis of developed legal awareness, legal thinking and legal culture, to make decisions and perform actions in the management sphere in strict accordance with the law	LR 10	Understanding of the essence of fundamental rights and obligations by legal entities, measures of responsibility, requirements of laws, the meaning of legally significant documents and legal actions, the ability to protect their rights by legal means, the ability to comment on the content of a legal act and accurately apply a legal act in professional activity
	Minor "Basic Legal 2"/ The ability to carry out professional activities on the basis of developed legal awareness, legal thinking and legal culture, to make decisions and perform actions in the professional sphere in strict accordance with the law	LR 10	Understanding of the essence of fundamental rights and obligations by legal entities, measures of responsibility, requirements of laws, the meaning of legally significant documents and legal actions, the ability to protect their rights by legal means, the ability to comment on the content of a legal act and accurately apply a legal act in professional activity
	Minor "Economic fundamentals of entrepreneurship"/ The ability to understand the essence of economic relations for the functioning of a successful business in the professional field	LR 10	Demonstrate an understanding of the nature of economic processes and use the knowledge gained to achieve effective results and make optimal decisions in their professional field
		LR 11	Demonstrate the ability to create your own business in a professional field and develop the conditions for its successful functioning
Minor "Entrepreneurial projects"/ The ability to understand the essence of economic relations for the functioning of a successful business in the professional field	LR 10	Demonstrate the ability to formulate a bank of entrepreneurial ideas, draw up a business plan, create an entrepreneurial structure and organize its activities.	
	LR 11	Demonstrate knowledge of risk classification, identify, analyze and manage risks in the process of project implementation and the functioning of the organization's business processes.	
Minor "Finance / The ability to understand the essence of financial relations, apply them for the successful implementation of their own business and interaction with other subjects of economic activity	LR 10	Demonstrate an understanding of the essence of finance, navigate the basic principles of the functioning of the tax and banking systems, apply the acquired skills for effective interaction with various subjects of the country's financial system	

4.2 Matrix of correlation of learning outcomes according to the educational program as a whole with the competencies being formed

	LR 1	LR 2	LR 3	LR 4	LR 5	LR 6	LR 7	LR 8	LR 9	LR 10	LR 11
CC 1	+	+									
CC 2			+								
CC 3				+	+						
CC 4						+	+				
CC 5								+	+		
CC 6										+	+

4.3 Competence formation map

The cipher of competence	Discipline code	Name of disciplines forming competencies	RC/UC/CC	Volume in loans	Number of hours	The form of evaluation of the achievement of the result
CC 1.	SPKP	Sociology, Political Science, Cultural Studies, Psychology	RC	8	240	exam (test)
	UP	Educational practice	UC	1	30	report
	EBzh/Rel/ME	Ecology and life safety/Religious Studies/Mangilik El	CC	5	150	exam (test)
	SIK	Modern history of Kazakhstan	RC	5	150	GOS. ind.
	Fil	Philosophy	RC	5		(oral)
	FK	Physical Culture	RC	8	240	exam (test)
	IYa	Foreign language	RC	10	300	dif/Zach
	K(R)Ya	Kazakh (Russian) language	RC	10	300	exam (oral)
CC 2.	MKPOYa	Interdisciplinary course "Professionally oriented language"	UC	6	180	exam (oral)
	ME	Mathematics in Economics	CC	5	150	exam (oral)
	VM	Higher Mathematics	CC	5	150	exam (test)
	ИКТ (ICT)	Information and communication technologies	RC	5	150	exam (test)
	ST	Statistics	CC	5	150	exam (test)
	SS	Social statistics	CC	5	150	copy (letter)
CC 3.	EEA	Ecological and economic analysis	UC	5	150	copy (letter)
	EAE	Ecological aspects of natural science	UC	5	150	copy (letter)
	Bio	Biology	CC	5	150	exam (test)
	MB	Microbiology	CC	5	150	exam (test)
CC 4.	PP	Production practice	UC	5	150	exam (test)
	EH	Environmental chemistry	UC	5	150	report
	Geo	Geocology	UC	5	150	exam (test)
	EzhR	Ecology of animals and plants	UC	5	150	copy (letter)
	EB	Ecological biogeography	UC	5	150	exam (test)
	PP	Environmental management law	CC	5	150	copy (letter)
	EPRK	Environmental law of the Republic of Kazakhstan	CC	5	150	exam (test)
	GOS	Environmental hygiene	CC	5	150	exam (test)
GE	Global ecology	CC	5	150	exam (test)	

	EK	Ecology of Kazakhstan	CC	5	150	exam (test)/K/p
	RE	Regional ecology	CC	5	150	exam (test)/K/p
	BE	Biogeochemistry and ecotoxicology	CC	5	150	exam (test)
	TRSND	Technology for the development of standards and regulatory documentation	CC	5	150	exam (test)
	Posh	Soil science	CC	5	150	copy (letter)
	Zem	Land management	CC	5	150	exam (test)
	ER	Environmental resource studies	CC	5	150	exam (test)
	PEB	Origin and evolution of the biosphere	CC	5	150	exam (test)
	Gid	Hydrology (in the state language)	CC	5	150	exam (test)
	VRK	Water resources of Kazakhstan	CC	5	150	exam (test)
	EM	Environmental management	UC	5	150	exam (test)
	EM	Environmental monitoring	UC	5	150	project
	EA	Environmental audit	CC	5	150	copy (letter)
	UOS	Teaching about the environment	CC	5	150	exam (test)
	PP	Production practice	UC	5	150	report
CC 5.	ORE	Fundamentals of radiation ecology	CC	5	150	exam (test)
	OSE	Fundamentals of system ecology	CC	5	150	exam (test)
	OSOS	Environmental assessment	CC	5	150	exam (test)
	OPR	Assessment of natural resources	CC	5	150	exam (test)
	PE	Industrial ecology	CC	5	150	ind., (test)K/p
	OPR	Protection of natural resources	CC	5	150	ekz, (test)k/r
	OENE	Fundamentals of environmental regulation and expertise	CC	5	150	ekz (letter)
	EB	Environmental safety	CC	5	150	ekz (test)
	STZB (MTGB)	Modern technologies of «green business»	CC	5	150	ekz (test)
	EP	Economics of environmental management	CC	5	150	ekz (test)
	PP	Production practice	UC	10	150	report
	PreP	Pre-graduate practice	UC	5	150	protection
CC 6	Min	Minor	CC	20	600	ekz(test)

4. The concept of the development of the educational program

3. Target indicators for the development of EP 6B05201 "Ecology"

Goal 1: Improving educational activities in accordance with the requirements of the external environment	Target indicator: functioning of the university in accordance with the main parameters of the Bologna process	Units of measurement.	In the planned period				
			Plan 2020-2021	Plan 2021-2022	Plan 2022-2023	Plan 2023-2024	Plan 2024-2025
1	2	3	4	5	6	7	8
	high-quality	%	60	61	62	62	62

	academic performance of students (the proportion of students studying at "good and excellent")						
	the number of holders of grants from the rector, social partners, personal scholarships	human	-	-	-	-	-
	for students, undergraduates who got a job in their specialty in the first year after graduation	%	79	79	80	80	80
	number of subjects taught in foreign languages	pieces	1	1	2	2	2
Task 1.2 Creation and development of information infrastructure	number of MOOCs	pieces	1	1	1	1	1
	number of media courses developed	pieces	-	-	-	-	-
	the number of developed electronic textbooks with the presence of an author's certificate of the Ministry of Justice of the Republic of Kazakhstan	pieces	2	3	3	3	3
Task 1.3 Professional development of the TEACHING STAFF	percentage of full-time TEACHERS with academic degrees and titles	%	54	55	55,5	55,5	55,5
	number of full-time PhD doctors	human	-	-	-	-	-
	the number of teachers who implement core disciplines in foreign languages	human	-	-	-	-	-
	number of teaching staff, holders of state awards, prizes, grants	human	-	-	-	-	-
	number of teaching staff who have passed advanced training	human	7	8	8	8	8
	number of teaching staff who have completed international internships	human	1	1	1	1	1
	number of teaching staff participating in academic mobility	human	1	1	1	1	1
Task 1.4 Improving the qualitative composition of the contingent of students	the number of graduates of secondary schools, holders of the "Altyn Belgi" badge, certificate with honors, winners of	human	1	1	1	1	1

	competitions and Olympiads						
	the number of graduates of KEU who continued their studies in the master's degree	human	2	3	3	3	3
	the number of applicants with a high level of the average score of the school certificate	human	2	3	3	3	3
	for students who speak a foreign language at the intermediate level	%	7,5	8	8,5	8,5	8,5
Task 1.5 Introduction of modern forms of practice-oriented training in priority areas of the SE FIIR RK	the number of practitioners involved in conducting training sessions, reading elective subjects	human	2	2	3	3	3
	number of diploma projects commissioned by enterprises	human	2	2	2	2	2
	Field classes of students at the practice bases to potential employers		8	8	8	8	8
	the number of memoranda concluded annually with leading enterprises and organizations	pieces	2	2	2	2	2
	number of operating branches of the department	pieces	1	1	1	1	1
	number of MOOCs	pieces	1				
Goal 2: Sustainable development of the University's research activities by ensuring effective integration of education and science	Target indicator: increase in the amount of funding for scientific and innovative activities of departments and research institutes of the University due to external sources of funding						
Task 2.1 Increasing the research potential of the university	number of scientific publications of teachers of the department	pieces	32	33	34	34	34
	the share of the teaching staff of the department involved in the implementation of research topics	%	73	73	74	74	74
	number of scientific publications in journals with non-zero impact factor (Thomson Reuters, SCOPUS, RSCI)	pieces	3	4	4	4	4
	number of textbooks published under the stamp of the Ministry	pieces	1	-	-	-	-

	of Education and Science of the Republic of Kazakhstan						
	number of inventions, patents, licenses	pieces	-	-	-	-	-
Task 2.2 Creation of a multi-channel system for financing scientific research	the number of scientific topics carried out according to the results of budget competitions of research projects	pieces	1	1	1	1	1
Task 2.3 Integration of scientific activity and educational process	number of members of the student scientific society	human	35	36	37	37	37
	number of scientific publications of PhD students, undergraduates and doctoral students	pieces	17	18	19	19	19
	the number of scientific and innovative projects of students, undergraduates and PhD students	pieces	1	1	1	1	1
	the number of research papers of students who have received diplomas and awards for participation in international competitions, conferences	pieces	3	3	4	4	4
	the number of research works of students who have received diplomas and awards for participation in republican competitions	pieces	4	4	4	4	4
	number of joint publications of teaching staff and students, undergraduates, PhD students	pieces	9	10	10	10	10
Goal 3: Training graduates with higher education at the level of international requirements, increasing the authority of KEU among business structures, students, international partners	Target indicator: achievement of international quality standards, harmonization of KEU curricula with the curricula of the world's leading universities, provision, implementation of joint degree programs, participation in international research activities, development of language training of teachers, staff, students						

Task 3.2 Ensuring student mobility in accordance with the requirements of the Bologna Process	Number of students participating in academic mobility programs	human	2	2	3	3	3
Goal 6: Formation of active citizenship, social responsibility, a sense of patriotism, high moral and leadership qualities among young people	Target indicator: the proportion of young people taking an active part in the implementation of measures in the field of youth policy and patriotic education from the total number of young people						
Task 6.1 Implementation a set of measures for patriotic education and the formation of civic activity of young people	percentage of students involved in public events of a patriotic nature	%	86	86	87	87	87
	number of patriotic education events (curatorial hours, conferences, thematic lectures, etc.)	pieces	12	13	14	14	14
Task 6.2 Implementation of a set of measures for the formation of socially significant and individual qualities, personality traits	the proportion of young people participating in various forms of student self-government	%	100	100	100	100	100
	participation of students in construction and labor groups "Zhasyl el", etc.	human	18,5	19	19,5	19,5	19,5
	number of students-members of the Alliance of Students of Kazakhstan	human	3	4	4	4	4
Task 6.3 Implementation of a set of measures for the formation and development of a system of spiritual and moral knowledge and values	the proportion of young people participating in the public life of the university	%	56	58	59	59	59

5. Educational Program Approval Sheet

Position	Signature	Full name
Vice-Rector for Academic Affairs and New Technologies, Candidate of Economic Sciences, Professor		Bub'baeva R.O.
Director of the Department of Academic Development, Candidate of Economic Sciences, Professor		Daniyarova M.T.
Dean of the Faculty of Economics, Management and Entrepreneurship, Candidate of Economic Sciences, Professor		Gimranova G.I.
Director of the Strategic Planning Department, Doctor of Pedagogical Sciences, Professor		Mulikova S.A.

* if the person is not an employee of KEUK, the signature is stamped