Ф.7.02-10

MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE REPUBLIC OF KAZAKHSTAN

M.O. AUEZOV SOUTH KAZAKHSTAN UNIVERSITY

«APPROVED»
Chairman of the Board-Rector
D.Zh.Ahmed-Zaki
«27» 03 2025г.

EDUCATIONAL PROGRAM

7M05209 - Environmental impact assessment and sustainable development

Registration Number	-
Code and Classification of Education	7M05-Natural sciences, mathematics and statistics
Code and Classification of Areas of Training	7M052- Environment
Group of educational programs (EP)	M 087-Technology of environmental protection
Type of EP	innovative
ISCE level	7
NQF level	7
IQF level	7
Language learning	Russian
The complexity of EP	120 credits
Distinctive features of EP	Double diploma EP
Partner University (JEP) -	-
University partner (DDEP) -	Peoples' Friendship University of Russia

Shymkent, 2025

Developers:

FULL NAME.	Position	Signature
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Pernebaev Zh.D.	Head of the Research and Development Department of «Centre for Scientific Research and Ecological Expertise «KazEcoHolding»» LLP	
Orman A. O.	Head: LLP "Water resources-Marketing"	
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Bukharbay Z.A.	Master student, MHT-24-4nk	

The EP was considered at a meeting of the Academic Quality Committee of the of the Higher School «Chemical Engineering and Biotechnology»
7 «15» 03 2025 y.

Chairman of the Committee _____ Daurenbek N. M.

The EP was considered and recommended for approval at Educational-methodical meeting of M. Auezov SKU
Minutes #4-1 «28» 03 2025 y.

Chairman of the EMM _____ E.Imangaliyev

The EP was approved by the decision of the Academic Council of the University
Minutes # 10 «27» 03 2025 y.

CONTENT

1 CONCEPT OF THE EDUCATIONAL PROGRAM

Mission of the University	Generating new competencies, training a leader who translates research thinking and culture.
University Values	– Openness - open to change, innovation and cooperation. – Creativity - generates ideas, develops them and turns them into values – Academic freedom - free to choose, develop and act. – Partnership - creates trust and support in a relationship where everyone wins. – Social responsibility - ready to fulfill obligations, make decisions and be responsible for their results.
Graduate Model	– Deep subject knowledge, their application and continuous expansion in professional activity – Information and digital literacy and mobility – Research skills, creativity and emotional intelligence – Entrepreneurship, independence and responsibility for their activities and well-being – Global and national citizenship, tolerance to cultures and languages
Uniqueness of the EP	The program is aimed at training competent specialists for transport, logistics, scientific and pedagogical structures who are able to organize and manage the activities of a structural enterprise, independently determine the goals of professional activity, choose and justify methods and means to achieve them.
Academic Integrity and Ethics Policy	The university has taken measures to maintain academic integrity and academic freedom, protection from any type of intolerance and discrimination: • Rules of academic integrity (order No. 212 of October 10, 2022); • Anti-corruption standard (order No. 8 n/a dated 08/01/2025). • • Code of Ethics (Order No. 212 of October 10, 2022)
Regulatory and legal framework for the development of EP	1.Law of the Republic of Kazakhstan “On Education”; 2. «Model Rules for the Activities of Organisations of Higher and Postgraduate Education», approved by order of the Ministry of Education and Science of the Republic of Kazakhstan dated October 30, 2018 No. 595 as reworded by order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated June 24, 2024. No. 307; 3. Standard rules for admission to training in educational organizations implementing educational programs of higher and postgraduate education, approved by order of the Ministry of Education and Science of the Republic of Kazakhstan dated October 31, 2018 No. 600 as reworded by order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated July 26, 2024. No. 372; 4. State mandatory standards for higher and postgraduate education, approved by order of the Ministry of Education and Science of July 20, 2022 No. 2 as reworded by order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated March 04, 2025. No. 90; 5. Rules for organizing the educational process in credit technology of education, approved by order of the Ministry of Education and Science of the Republic of Kazakhstan dated April 20, 2011 No. 152 as reworded by order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated April 29, 2024. No. 203; 6. Qualification reference book for positions of managers, specialists and

	other employees, approved by order of the Minister of Labor and Social Protection of the Population of the Republic of Kazakhstan dated December 30, 2020 No. 553 as reworded by order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated June 20, 2024. No. 207; 7. Methodological recommendations for introducing ECTS principles into the educational process and expanding academic freedom. Appendix to the order of the Minister of Science and Higher Education. of the Republic of Kazakhstan dated February 12, 2024 No. 57 8. Guidelines for the development of educational programs for higher and postgraduate education, Appendix 1 to the order of the Director of the National Center for the Development of Higher Education of the Ministry of Education and Science of the Republic of Kazakhstan dated May 4, 2023 No. 601 н/к
Organization of the educational process	– Implementation of the principles of the Bologna Process – Student-centered learning – Availability – Inclusivity
Quality assurance of EP	– Internal quality assurance system – Involvement of stakeholders in the development of the EP and its evaluation – Systematic monitoring – Updating the content (updating)
Requirements for applicants	They are established in accordance with the Standard Rules for admission to training in educational organizations implementing educational programs of higher and postgraduate education by order of the Ministry of Education and Science of the Republic of Kazakhstan No. 600 as reworded by order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated July 26, 2024. No. 372
Conditions for the implementation of educational programs (EP) for persons with disabilities and special educational needs(SSN)	For students with SEN (special educational needs) and persons with disabilities (PSI), tactile PVC tiles, specially equipped toilets, a mnemonic diagram, and shower bars have been installed in educational buildings and student dormitories. Special parking spaces have been created. Crawler lift installed. There are desks for people with limited mobility (PLM), signs indicating the direction of movement, ramps. In the educational buildings (main building, building No. 8) there are 2 rooms with six working places adapted for users with disorders of the musculoskeletal system (DMS).For visually impaired users, the SARA™ CE Machine (2 pcs.) is available for scanning and reading books. The library website is adapted for the visually impaired. There is a special NVDA audio program with a service. The JIC website http://lib.ukgu.kz/ is open 24/7. An individual differentiated approach is provided for all types of classes and in the organization of the educational process.

2 PASSPORT OF THE EDUCATIONAL PROGRAM

Purpose of the EP	Traininghighly professional masters in the framework of double-diploma education, possessing the skills of conducting research, pedagogical, expert and analytical activities, as well as methods of processing and storing scientific information in the fieldecological expertise and sustainable development.
Tasks of the EP	– formation of skills for independent research and expert-analytical activities; – formation of skills for collecting, analyzing, synthesizing, storing information and using them in activities; – formation of skills in the application of state and international regulatory and legal requirements in the field of environmental protection; – formation of competence in the field of sustainable development, expert assessment of target indicators. – Creating conditions for the formation of in-demand knowledge and skills, a conscious attitude towards improving the well-being of the population and protecting the planet in the context of the SDGs
Harmonization of EP	– Level 7 of the National Qualifications Framework of the Republic of Kazakhstan; – Dublin descriptors; – 2 cycle Qualification Framework of the European Higher Education Area (A Framework for Qualification of the European Higher Education Area) – Level 7 of the European Qualification Framework for Lifelong Learning.
Communication of the EP with the professional sphere	The educational program is focused on training professional managers and specialists for the branches of environmental engineering, teachers in the field of environmental engineering; provides graduates with the competencies of a Master of natural Sciences, the ability to think outside the box and bold original solutions. The educational program is developed on the basis of: - The Sectoral Qualifications Framework "Education" (Approved by Protocol No. 2 of the meeting of the sectoral Tripartite Commission on Social Partnership and Regulation of social and Labor relations in the field of environmental protection dated August 17, 2016). – Environmental Code of the Republic of Kazakhstan Environmental Code of the Republic of Kazakhstan dated February 28, 2024 No. 400-VI ZRK - Legislation of the Republic of Kazakhstan Kakhastan 2024. - International standard ISO 14000 – Environmental management, ISO Professional standard "Teacher (teaching staff of OVPO)" Order of the Ministry of Internal Affairs No. 591 dated 11/20/2023
Name of the degree awarded	After successful completion of this educational program, the graduate is awarded the degree: “Master of Natural Sciences in the educational program 7M05209- "Environmental Expertise and Sustainable Development code and name of the educational program
List of qualifications and positions	Masters in OP 7M05209- "Environmental expertise and sustainable development" may hold positions: A teacher, an assistant in the field of education, a senior lecturer/ senior lecturer in the field of education, an OVPO, the head of the relevant specialization of the department at the

	enterprise, a specialist, a senior specialist, the head of the department of government agencies in this field, a researcher in design and survey, research institutes, research institutions, design and design organizations, without presenting seniority requirements in accordance with the qualification requirements of the Qualification Directory of positions of managers, specialists and other employees. Order of the Minister of Labor and Social Protection of the Population of the Republic of Kazakhstan dated December 30, 2020 No. 553. Registered with the Ministry of Justice of the Republic of Kazakhstan on December 31, 2020 No. 22003.
Sphere of professional activity	Sphere of professional activityaccording to OP7M05209- "Environmental expertise and sustainable development"is an educational, industrial, managerial, research area, environmental monitoring service, quality control of the natural environment and human health,geoecological research, production technology.
Objects of professional activity	The objects of professional activity of graduates in the EP7M05209- "Environmental expertise and sustainable development"are: – natural, anthropogenic, natural-economic, ecological-economic, production, social, public territorial systems and structures at the global, national, regional and local levels, as well as state planning, control, monitoring, examination of environmental components of all forms of economic activity; education, enlightenment and public health, demographic processes, sustainable development programs at all levels; – definition of problems, tasks and methods of scientific research; – formulating conclusions and practical recommendations based on representative and original research results; – conducting comprehensive studies of sectoral, regional, national and global environmental problems, developing recommendations for their resolution; – assessment of the state, stability and forecast of the development of natural complexes; implementation of environmental monitoring; – conducting an environmental review of various types of design assignments; – control and revision activities, environmental audit; – management of the activities of the department, sector, working group; – determination of the procedure for achieving the set goals and specification of tasks; – educational and methodological activities for planning environmental education and education for sustainable development.
Subjects of professional activity	The subjects of professional activity of a master student in EP 7M05209- "Environmental Expertise and Sustainable Development" are the following systems: – Pplanning and implementation of environmental measuresin state and non-state organizations; – environmental education and upbringingat universities, colleges, schools, gymnasiums, etc.; – natural and urban ecosystems and their components; biosphere and its components; environmental monitoring and marketing; – analysis, inspection and control of the state of the environment; compilation of predictive models; management and consulting functions in the field of environmental protection;

	– the process of creating regulatory and organizational documentation in the field of environmental management, environmental safety, carrying out measures to protect the environment from negative impacts, environmental management, production technology; – geoecological research; – reforestation and afforestation.
Types of professional activity	Master in EP 7M05209 - "Environmental Expertise and Sustainable Development" can perform the following types of professional activities: – environmental; – pedagogical; – research; – design and production; – control and revision; – organizational and managerial.
Learning Outcomes	**LO 1**– Analyze the main worldview and methodological problems, various facts and phenomena that arise in science at the present stage of its development, based on the provisions and categories of the philosophy of science;
	LO 2 - Develop educational and methodological documentation using interactive methods and modern pedagogical learning technologies, pedagogical analysis and synthesis of solving pedagogical problems of different levels and degrees of complexity;
	LO 3– Apply modern communication technologies, including in a foreign language in the professional field, reading special literature in the original and presenting your own ideas to the scientific community, taking into account the standards of academic writing and the principles of academic honesty, culture and ethics.
	LO 4 -Possess the skills of leadership and team management, taking into account the psychological factors of the effectiveness of management activities;
	LO 5 -Solve problems in the fieldenvironmental protection and sustainable development, applying green technologies based on environmental expertise and audit;
	LO 6-Independently choose the most effective solutions for the use of natural resources, applying the trends in the development of low-waste and waste-free industries and modern achievements in digital technology;
	LO 7-To analyze the effectiveness of the environmental facilities of the enterprise and its divisions for compliance with the requirements of environmental safety, regulatory and legal documentation using computer technology;
	LO 8 - To create effective control systems for compliance with the established standards of MPD, MPD and MPC of pollutants into the environment, to process remote sensing data using GIS technology tools and medical and environmental sections of programs on the strategy of society's transition to sustainable development;
	LO 9 - To apply in professional activity the skills of assessing environmental consequences with the development of measures to reduce and prevent them.

3. COMPETENCES OF THE GRADUATE

GENERAL COMPETENCES(SOFTSKILLS). Behavioral skills and personal qualities)	
GC 1. Competence in managing one's own literacy	OK1.1. Aim forprofessional and personal growth throughout life. OK 1.2. Constantly update your knowledge within the chosen trajectory and in an interdisciplinary environment,carry out further learning with a high degree of autonomy and self-regulation. OK 1.3. Bbe capable of reflection, objective assessment of their achievements, awareness of the need to form new competencies and continue education in doctoral studies.
OK 2. Language competence	OK2.1. The ability to possess a sufficient level of communication in the professional field in the state, Russian and foreign languages for negotiating and business correspondence. OK2.2. Possession Abilitymediation and intercultural understanding skills.
OK 3. Mathematical and scientific competence	OK3.1. The ability to interpret the methods of mathematical analysis and modeling for solving applied problems in the field of study. OK3.2. Ability to plan scientific experiments, integrate and implement the results of scientific research in the professional field. OK3.3. The ability to analyze and comprehend modern methods of pedagogical and psychological science and apply them in pedagogical activity.
OK 4. Digital competence, technological literacy	OK4.1. The ability to confidently use modern information and digital technologies, artificial intelligence systems for work, leisure and communications. OK4.2. Proficiency in the use, recovery, evaluation, storage, production, presentation and exchange of information in a wide range of digital devices. OK4.3. Ability to confidently use global information resources and apply technological literacy in research and computational and analytical activities.
GC 5. Personal, social and academic competencies	OK5.1. Possession of the norms of business ethics, social and ethical values and focus on them in professional activities. OK5.2. Formation of a personality capable of mobility in the modern world, critical thinking and physical self-improvement. OK5.3. Ability to work well in a teamclearly and reasonably defend their position during discussions and make decisions of a professional nature. OK5.4. Atthe ability to adequately navigate in various social spheres of activity and in conditions of uncertainty. OK5.5. Atthe ability to find compromises, to correlate your opinion with the opinion of the team.
GC 6. Entrepreneurial competence	OK6.1. The manifestation of leadership qualities and the ability to have a positive impact on others, to lead a team. OK6.2. The ability to create conditions for the development of creative and entrepreneurial skills of the team. OK6.3. FROMthe ability to work in a mode of uncertainty and rapidly changing task conditions, make decisions, respond to changing working conditions, allocate resources and manage your time. OK 6.4. Atability to work with consumer requests.

GC 7: Cultural Awareness and Expressiveness	7.1. The ability to show worldview, civil and moral positions. 7.2. The ability to be tolerant of the traditions and culture of the peoples of the world, to have high spiritual qualities.
PROFESSIONAL COMPETENCES (HARDSKILLS).	
Theoretical knowledge and practical skills specific to this area	PC1 - Ability to applyprofessional competencies in the field of environmental safety expertise of projects, territories and industries;
	PC2 -Abilityto conduct inventories of sources of emissions of pollutants into the atmosphere;
	PC3 - Ability to conductdevelopment of design documentation for sanitary protection zones;
	PC4- Ability to manage indevelopment of the "Environmental Protection" section as part of project documentation for the construction, expansion, reconstruction, technical re-equipment of objects of any economic and industrial purpose;
	PC5 -Abilitycarry out work on the collection, processing, analysis and assessment of the environmental impact of designed, under construction and operating enterprises and residential buildings, etc.

3.1 Matrix for correlating learning outcomes in the EP as a whole with the competencies being developed

	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9
GC 1	+		+						
GC 2	+			+	+	+	+	+	
GC 3			+						
GC 4					+				
GC 5	+	+							
GC 6					+				+
GC 7							+		
PC1	+	+		+		+	+	+	
PC2		+	+		+				+
PC3					+		+		+
PC4			+	+		+		+	
PC5			+	+		+		+	

4 MATRIX OF THE IMPACT OF MODULES AND DISCIPLINES ON THE FORMATION OF LEARNING OUTCOMES AND INFORMATION ON LABOR INTENSITY

Name module	Cycle	Component	Name of the discipline	Brief description of the discipline	Quan-ty loans	Formed LO (codes)								
						LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9
Specialty modules														
Module of Scientific and Pedagogical Training	BD	HSC	History and Philosophy of Science	Target: Formation of ideas about the laws of scientific knowledge, scientific rationalism, its forms, historical types and ways of development of science. Content: The subject is the philosophy of science. Science in culture, civilization. General patterns and trends of scientific knowledge. The emergence, development of science. scientific revolutions. scientific rationality. philosophical methods. Science as a social institution. Natural Sciences. History of social sciences and humanities. Organization of scientific activity. The evolution of knowledge. Ethical aspects of modern science. Computerization of science. Actual problems of natural and social sciences and humanities.	4	V								
	BD	HSC	Foreign Language (Professional)	Target: Practical knowledge of a foreign language for its use both in everyday communication and in the field of professional, business and scientific communication in solving various problems. Content: Preparation of written reports on scientific topics in the specialty: a scientific report, abstracts on the topic of scientific research, abstracting of original sources in a foreign language at the B2-C1 level, annotation of a scientific text, summary. Understanding the general content of authentic records. Listening to lectures, messages containing professional information. Development of oral communication skills in the specialty: presentation of a scientific report, presentation of a scientific research, scientific discussion, scientific debate, use of situational games.	6			V						

Name	Cy.	Comp	Name of th	Brief description of the discipline	Qu	Formed LO (codes)								
	BD	HSC	Psychology of Management	*Target:* Formation of systemic knowledge, skills and abilities of effective personnel management *Content:* Introduction to the psychology of management. Psychological factors of the effectiveness of managerial activity. Personality in the control system. Motivation and performance of the organization. Leadership in the organization. Stress in the organization and emotional burnout. Psychology of conflict management. personality of the subordinate. Psychological features of the leader's personality. Psychological influence in managerial activity. Psychological foundations for making managerial decisions. Interpersonal communication in management.	4				V					
Methodical Basis of Teaching	BD	PHS	Pedagogy and Psychology of Higher School	Target: Formation of systemic knowledge, skills and abilities of effective personnel management Content:Introduction to the psychology of management. Psychological factors of the effectiveness of managerial activity. Personality in the control system. Motivation and performance of the organization. Leadership in the organization. Stress in the organization and emotional burnout. Psychology of conflict management. personality of the subordinate. Psychological features of the leader's personality. Psychological influence in managerial activity. Psychological foundations for making managerial decisions. Interpersonal communication in management.	4	V	V	V						

ChD	EC	Teaching Methods of Special Disciplines	*Target:* Acquaintance with modern methods and features of teaching specialized disciplines, development of creativity and creative thinking. *Content:*Competence-based and creative approaches in education. Technology of individual learning, integrated, block and para-centric learning. Multimedia learning technology. Teaching specialized disciplines by analyzing and solving problem situations and cases. Logical methods and techniques. Digital education. On-line education. Organization of creative work and development of creative thinking. Development and updating of educational and methodological documentation	4	V	V	V						
ChD	HSC	Computer Technologies and Statistical Methods in Ecology and Nature Management	*Target:*Mastering modern scientific knowledge and developing skills in solving a range of problems related to the processing and analysis of observational data, assessing the reliability and reliability of research results, testing statistical hypotheses, analyzing the relationships of natural processes, setting and using numerical methods of probability theory, mathematical statistics and the theory of random functions. *Content:*Internet resources containing legal and statistical information. Science citation databases and science social networks. Specialized programs for complex calculations for environmental impact assessment, risk analysis. Software tools for processing text and graphic images Application of computer programs of a standard office suite for solving standard and non-standard practical problems, carrying out economic and environmental calculations. Primary processing of statistical data in Excel. Assessment of the characteristics of the general population in Excel. Testing hypotheses about the type and characteristics of distribution in Excel and specialized programs. Problems of dispersion analysis. Problems of correlation analysis. Time series analysis and forecasting.	2						V	V		

	BD	HSC	Pedagogical Practice	*Target:* Mastering active teaching methods and practical skills of scientific and pedagogical activity in the system of higher education. *Content:* The structure of the educational process in higher education. Studying the management system of a higher educational institution, the structure and functions of the main services and divisions of the university; Basic theories, concepts and technologies of teaching in the system of higher education. The study of scientific and methodological literature.Attending lectures by leading teachers. Development of new active forms of conducting classes.Preparation and holdingpractical and seminar classes in special disciplines, SIWT	2		V	V							
Geoecology and Research Creative Activity	ChD	EC	Research Practice	*Target*: Formation of research, methodological and practical skills and abilities of independent research work and preparation for a master's thesis. *Content:*Practical study of the latest theoretical, methodological and technological achievements of domestic and foreign science in the field of environmental protection; modern methodology of scientific research; analysis of the state of development of ecology and science in the world and Kazakhstan. Technologies for the separation of petroleum feedstock into fractions of various boiling point ranges. Modern trends in the development of low-waste and non-waste industries. Performing theoretical and experimental research on the topic of the dissertation.	9		V	V							V
	BD	EC	Medical and Ecological Aspects of Sustainable Development	*Target:* Formation of knowledge of the methodology of medical and environmental assessment of the impact of the negative consequences of environmental pollution on human health and life, the ability to justify risk as an integral criterion for the sustainable development of society, the skills of applying in practice the preparation of medical and environmental sections of programs on the strategy of society's transition to sustainable development. *Content:* Man in the system of medical and ecological relations with the environment. Philosophical and methodological aspects of the relationship between medical and environmental foundations for the sustainable development of society. Philosophical and methodological problems of interaction between medicine and ecology. Medico-environmental aspects of environmentally safe sustainable development management. Medical and environmental parameters of sustainable development. Formation of risk	7								V	

			culture as a condition for environmentally safe sustainable development. Human health in ecological and demographic culture. Health as a social value.											
BD	EC	Ecosystem Studies of Biological Resources	*Target:*Mastering the methodological aspects of ecosystem studies of biological resources, applying the skills of an ecosystem approach in developing a strategy for the development of biological resources. *Content:* Structural and functional organizations of ecosystems and their diversity. Stability and dynamics of natural systems. Sustainability of different ecosystems. Dynamics of ecosystems (successions and fluctuations). Cyclical changes in ecosystems. Conservation and sustainable use of biodiversity. National Strategy for the Balanced use of Biological Diversity. Legislative bases of biodiversity conservation. Improving the legislative framework for the conservation and rational use of biodiversity. International cooperation for the conservation of biodiversity. Prospects for the development of biosphere and environmental research. Prospects for the development of biospheric and environmental studies of energy and mass transfer in the biosphere, research of biological systems. Monitoring of the biosphere and its components.	*7*								V	
BD	EC	Ecological Safety Tehnology in Industry*	*Target:* To present technical and environmental safety, protection of human life, legal norms and economic problems, development of regulatory documents, including in the state language for declaring the level of safety of chemical production components and their hazard class as a whole *Content:* Basic concepts and methodological principles of the formation of waste-free production. The basic concepts and methods of organizing low-waste production, the requirements for waste-free technological processes and devices, the problems of developing highly efficient technological processes, environmental protection processes and technologies. Mathematical modeling of technological processes taking into account the criteria of chemical-technological and environmental factors on performance indicators.	*6*									
BD	EC	Environmental Mapping and GIS*	*Target:* obtaining new skills in processing and creating spatial data, including remote sensing data using GIS technology tools and using them to solve environmental problems. *Content:* Monitoring and forecasting of the dynamics of changes in the state of observed objects and territories in space and time; Construction of	*6*										

				thematic maps of specified territories; Modeling of natural and anthropogenic processes; Early detection of adverse factors. The formation of ecological cartography, methodological developments and approaches, the basic principles of drawing up ecological maps, as well as modern cartographic methods. An example of ecological maps created in a country using GIS, An analysis of the features of compiling ecological maps using modern geoinformation technologies, the type of a computer geodata database, Environmental indicators of the study region Static object and their development in dynamics.									
Environmental Management and Control	ChD	EC	Green Technologies in Production and Transport*	*Target:*Formation of knowledge and inculcation of practical skills on reducing environmental pollution and increasing resource efficiency in production and transport and mitigating adverse climate change through the transition to green technologies. *Content:*Environmental activities in the Republic of Kazakhstan. Monitoring and control of the environment in transport. Study of the organization of state environmental control over emissions of pollutants into the atmosphere at transport enterprises. Management of environmental activities in the system of transport and transportation in the Republic of Kazakhstan. International cooperation in the field of environmental protection in transport, the introduction of green technologies. Principles of sustainable development, features of green information systems and technologies, greening of information systems and technologies.	6					V				
	ChD	EC	Ecological control and monitoring of natural technogenic ecosystems*	*Target:*Formation of creative thinking, integration of fundamental knowledge of the main methods of monitoring with subsequent processing and analysis of research results for making organizational and managerial decisions. *Content:*Types of environmental monitoring and ways of its implementation. Environmental monitoring. Definition. Main tasks and goals. FeeBDack and control. Classification. The main tasks of GEMS. National monitoring. Organization and tasks. EGSEM. Regional environmental monitoring. Monitoring of Moscow. Local environmental monitoring. Monitoring the source of pollution. Background monitoring. Main goals. Organization of background monitoring.System of methods of observation and ground support.Ecological and analytical monitoring of the state of environmental components. Mathematical modeling and	2					V			V	V

			forecasting of dynamic processes in ecosystems. Mathematical modeling and forecasting of dynamic processes in ecosystems. Topics for self-study.											
BD	HSC	Integrated Environmental Management System	*Target:*Formation of an understanding of the legal framework and the basic principles of international cooperation, international conventions and agreements in the field of environmental protection and natural resources. *Content*:The biosphere as a human habitat that does not have state borders. International conferences and protocols within the framework of international cooperation in the field of environmental protection and nature management. International organizations and programs for environmental protection and nature management.Participation of the Russian Federation in international conventions and organizations. Legislation of the Russian Federation regarding international cooperation in the field of environmental protection and rational nature management.	2						V		V	
ChD	HSC	Environmental Regulation	*Target:*Andinforming about current trends in the development of the environmental regulatory framework and its implementation, the role of environmental regulation as a basis for effective environmental management and the formation of a sustainable economy, developing skills in developing environmental standards and assessing the sustainability of natural complexes. *Content:*Environmental regulation in the system of nature management. Theoretical foundations of environmental regulation. International cooperation in the field of environmental regulation. Harmonization of environmental standards in the field of impact on the atmosphere. Harmonization of environmental standards in the field of impacts on surface waters. Harmonization of environmental standards in the field of impacts on groundwater. Harmonization of environmental standards in the field of impacts on soil and land resources. Harmonization of environmental standards in the field of waste management. Understanding the best available technologies. Rationing of specific pollutants. Ecological regulation and economics. Ecological regulation and ecological design.	3								V	V
ChD	HSC	Environmental Toxicants	*Target* To form a systematic understanding of the main patterns of interaction between living organisms and toxicants, aimed at the rational use of fertilizers and pesticides to reduce and prevent pollution of	3									

			agroecosystems by toxicants and obtain environmentally friendly agricultural products.Physico-chemical properties of industrial poisons affecting toxicity. *Content:*Fundamentals of toxicants in the environment. General information about the toxicity of substances. Classification of toxicants. Maximum permissible concentrations. Classification of harmful substances according to the degree of danger. KOVOIO. Chemical disease. Poisoning. First aid for various poisonings. Toxic lesions of individual organs and systems of the body. Toxicological impact of modern production.											
ChD	HSC	Environmental Damage Assessment*	*Target:*Mastering research and production and technological work in the field of environmental protection and obtaining new methods for assessing, analyzing and studying environmental parameters. *Content:*The concept of OS harm. Ecological and legal responsibility Legal bases and mechanism of compensation of ecological harm. Features of compensation for environmental damage caused to individual components of the environment: soils, water bodies, biological resources.Calculation of damage caused to the environment due to violation of water legislation. Calculation of damage caused to environmental protection due to violation of land legislation Calculation of damage caused to environmental protection due to violation of forest legislation. Features of reclamation of disturbed landscapes depending on the type of pollution (mechanical, chemical, physical, biological).	4								V	V
ChD	HSC	Methods for Eliminating the Accumulated Harm to the Environment	Target: Formation of research, interpretive and creative skills of the method of designing modern technological systems that ensure efficient and environmentally friendly waste disposal. Contents: Classification of technological solutions for the rehabilitation of objects of accumulated harm. Works on recultivation and arrangement of disturbed lands. Examples of obtaining secondary products during the processing of accumulated waste (not biotechnologically). Biotechnological processing of accumulated organic waste. Thermal methods of eliminating the damage to the OS during the accumulation of waste.	3								V	V
ChD	HSC	Food Security	*Target:*Acquisition of theoretical and practical knowledge on the safety of food raw materials and food products, development of skills necessary for research, design and production activities in the field of food technology.	3								V	

			*Content:*Introduction. The quality of food products and ensuring its control. Terms and concepts ISO. Contamination of food raw materials and food products with xenobiotics of chemical and biological origin. The main ways of contamination of food and food raw materials. Measures of toxicity of substances. Contamination by microorganisms and their metabolites. Prevention measures. Mycotoxins. Patulin and some other mycotoxins Methods for the determination of mycotoxins and the control of food contamination. Methods of pollution. Types of pollution. Pollution by substances and compounds used in crop production. Nitrates, nitrites, nitrosamines. Fertilizers. Pollution from substances used in animal husbandry. Pollution with dioxins and polycyclic aromatic hydrocarbons. Polycyclic aromatic hydrocarbons. Radioactive contamination of food raw materials and food products. Metabolism of foreign compounds. Antialimentary nutritional factors. Types of falsification. Methods of falsification.										
ChD	HSC	Regional and Municipal Waste Management Systems	*Target:*Formirovdevelopment of systemic knowledge, skills and abilities in the development of a system of regional and municipal waste management systems. *Content:*World experience in the waste management system. Possible control scenarios. Waste as a source of secondary resources and energy. Mechanisms for improving the waste management system in the regions of the Russian Federation. Legal basis for waste management. Extended Producer Responsibility Institute, environmental fee. Territorial (regional) waste management schemes. The role of municipal government. The best available technologies for the treatment, disposal and storage of waste. Integrated schemes for the processing of municipal solid waste. Principles of economic regulation and incentives in the field of waste management.	2						V			V
ChD	HSC	Forensic Examination of Environmental Objects	*Target:*The study of the subject, tasks, objects, methods and types of forensic environmental expertise, as well as the acquisition of skills in the use of special knowledge in legal proceedings to establish and assess the actual circumstances of the negative anthropogenic impact on the environment. *Content:*Fundamentals of the use of special environmental knowledge in legal proceedings.The concept, stages and participants of criminal, civil and arbitration processes, proceedings in cases of administrative offenses. The concept of special knowledge, their types and forms of use in the	4					V				V

			process of legal proceedings.Methodological bases for the production of forensic environmental expertise.Subject, objects and tasks of SE. Methodology of forensic research.Organizational bases of forensic environmental expertise. Subjects of forensic environmental expert activities. Appointment of SE. The process of forensic research, its stages. The structure and content of the expert's opinion.											
ChD	HSC	Radioecological Examination	*Target*: Formation of special natural science knowledge in the field of radioecology, as well as research of case files on the facts of negative radiation exposure, instilling skills in statistical planning, collection and analysis of experimental data obtained during radioecological studies. *Content:*Monitoring the content of radionuclides in environmental objects, products and materials. Radiation safety standards NRB99/2010. Determination of the specific activity of radionuclides in food products. Radiation control of wood, scrap metal. Radiation control of building materials. Radiation-hygienic inspection of residential and public buildings. Radiation monitoring of building sites. Radiation control of x-ray technology.	4					V				
ChD	EC	Ecological insurance	*Target:*Formation of knowledge of the basic provisions of the socio-economic essence and goals of insurance, and development of skills in applying risk management methods, as well as the principles of concluding environmental insurance contracts. *Content:*Fundamentals of environmental insurance. Eco-insurance methodology in Russia and abroad. Legal bases of eco-insurance in the Russian Federation and abroad. actuarial calculations. Insurance premiums and insurance rates. Methodological approaches to the calculation of tariff rates in environmental insurance. Assessment of the possibility of developing an emergency environmental situation. Pre-insurance assessment of the environmental hazard of the object. analysis of the development of an emergency environmental situation. Development scenarios. Selection of incidents. Event tree. Methodology and tools for environmental insurance. The practice of implementation and prospects for the development of theoretical and methodological aspects of environmental insurance in Russia.	3								V	
ChD	EC	Environmental audit	*Target:*Formationspecialknowledge on the creation and implementation of an environmental audit procedure, taking into account the peculiarities of environmental and legal regulation of this area in the Russian Federation	3					V				

				and abroad. *Content:*Introduction. Basic terms and definitions. Stages of formation and development of the environmental audit system. International standards of environmental management system. Environmental Auditing Standards. Types, forms, objects and subjects of environmental audit. General rules, procedure and procedures for environmental auditing. Eco-auditors and eco-audit organizations, groups. Information support of ecological audit. The procedure for accreditation and certification of eco-auditors. General methods of environmental auditing. The concept and essence of pre-insurance environmental audit.											
	BD	EC	Legal Basis of Environmental Protection	*Target:*Mastering the norms of environmental law, analyze, draw conclusions and justify your point of view on environmental legal relations and apply legal norms to solve practical situations. *Content:*Environmental law as an independent branch of law. Environmental and legal protection of individual OS components. Ecological and legal regime of land use. Ecological and legal regime of subsoil use, water use and forest use. Ecological and legal regime for the use of wildlife. Ecological and legal protection of atmospheric air. Ecological rights and obligations of citizens of the Russian Federation. Ecological and legal responsibility.	2									V	
	BD	EC	Fundamentals of Environmental Law	*Target:*The study of the concept, subject, method, principles and system of environmental law of the Russian Federation, the main types of its sources, environmental rights and obligations of citizens, types of liability for causing harm to the environment, as well as the acquisition of skills for using the acquired knowledge in the practical activities of business entities and protecting environmental rights. *Content:*The concept and principles of environmental, environmental and natural resource law.Sources of environmental law. The structure of the legislation of the Russian Federation in the field of environmental protection. Ecological and legal regime of land use. Ecological and legal regime of subsoil use, water use and forest use. Ecological and legal regime for the use of wildlife. Ecological and legal protection of atmospheric air.Environmental rights and obligations. Protection mechanisms. The concept of legal liability for environmental offenses. Types of environmental and legal responsibility.	2									V	
Mod			Research work	*Target:*The transition from the assimilation of ready-made knowledge to	24			V			V		V	

			of a master student, including passing an internship and completing a master`s thesis	mastering the methods of obtaining new knowledge, the acquisition of skills for independent analysis of various kinds of phenomena using scientific methods and techniques. *Content:*Evaluates the analytical review of known methods for obtaining inorganic compounds in accordance with the purpose and objectives of the dissertation research, experimental research workaccording to the plan of the academic period using the instrumental base of the cathedral laboratory. Conducts the selection and justification of the technological scheme of production in accordance with the topic of the master's thesis. Determines the economic efficiency of the developed technology.											
			Execution and Defense of Master`s Thesis	*Target:*Deepening, systematization and integration of theoretical knowledge and practical skills in the master's program. *Content:*The final qualifying work of a graduate of the master's program, confirming the competencies acquired in the learning process in accordance with the chosen specialization of study. Defense of a master's thesis at an open meeting of the Attestation Commission with the participation of the chairman of the commission and at least half of its members. The procedure and regulations for defending a master's thesis are established by the chairman.	8			V			V		V	
					120										

5 SUMMARY TABLE ON THE VOLUME OF DISCOVERED LOANS BY EDUCATIONAL PROGRAM MODULES

Course of Study	Semester	Amount of the mastered modules	Amount of the studied disciplines		Amount of KZ credits					Total hours	Total loans KZ	Amount	
			HSC	ChD	Theoretical training	Teaching practice	Research practice	NIRM	final examination			exam	diff. offset
1	1	5	7	1	32	2		1		1050	35	7	2
	2	4	4	2	22			3		750	25	5	2
2	3	4	6	2	23			8		930	31	5	3
	4	2			-		9	12	8	870	29		1
total			17	5	77	2	9	24	8	3600	120	17	8

6.STRATEGIES, TEACHING METHODS AND ARTIFICIAL INTELLIGENCE, MONITORING AND ASSESSMENT

Learning Strategies	**Student-centered learning**: the learner is the center of teaching/learning and an active participant in the process of learning and decision-making. **Practice-oriented learning**: orientation to the development of practical skills.
Teaching methods	Conducting lectures, seminars, various types of practices: • application of innovative technologies: • problem learning; • case study; • group work and creative groups; • discussions and dialogues, intellectual games, olympiads, quizzes; • methods of reflection, projects, benchmarking; • Bloom's taxonomy; • presentations; • rational and creative use of information sources: • multimedia educational programs; • electronic textbooks; • digital resources. Organization of independent work of students, individual consultations.
Monitoring and assessing the achievability of learning outcomes	**current control**on each topic of the discipline, control of knowledge in classroom and extracurricular activities (*according to the syllabus*). Fassessment forms: • survey in the classroom; • testing on the topics of the academic discipline; • test papers; • protection of independent creative works; • discussions; • trainings; • colloquia; • essay, etc. **Frontier control**at least twice during one academic period within the same academic discipline. **Intermediate certification**is carried out in accordance with the working curriculum, academic calendar. Conduct forms: • examination in the form of testing; • oral exam; • a written exam; • combined exam; • protection of projects; • protection of practice reports. **Final state certification**.

7 Educational and resource support for EP

Information Resource Center	- In the structure of the OIC there are 6 subscriptions, 16 reading rooms, 2 electronic resource centers (ERC).The network infrastructure of the JIC is based on 180 computers with Internet access, 110 workstations, 6 interactive whiteboards, 2 video doubles, 1 videoconferencing system, 3 A-4 scanners, 3. JIC software - AIBS "IRBIS-64" under MSWindows (basic set of 6 modules), a stand-alone server for uninterrupted operation in the IRBIS system. -The library fund is reflected in the electronic catalog available to users on the websitehttp://lib.ukgu.kzonline 24 hours 7 days a week. -Created thematic databases of their own generation: "Almamater", "Proceedings of SKSU scientists", "Electronic archive". Online access from any device 24/7 via external linkhttp://articles.ukgu.kz/ru/pps. - Work with catalogs in electronic form. EC consists of 9 databases: "Books", "Articles", "Periodicals", "Proceedings of the teaching staff of SKSU", "Rare Books", "Electronic Fund", "SKSU in Print", "Readers" "SKU". -OIC provides its users with 3 options for access to its own electronic information resources: from the terminals "Electronic catalog" in the directory hall and subdivisions of the OIC; through the information network of the university for faculties and departments; remotely on the library websitehttp://lib.ukgu.kz/. -Open access to international and national resources: "SpringerLink", "Polpred", "Web of Science", "EBSCO", "Epigraph", to electronic versions of scientific journals in open access, "Zan", "RMEB", "Adebiet ", Digital library "Aknurpress", "Smart-kitar", "Kitar.kz" and others. - For persons with special needs and disabilities, the library website has been adapted to the work of visually impaired users in the JIC.
Material and technical base	Aerocon aerosol . The analyzer is "Fluorate 02-3M". Laboratory ionomer 0.001rH-150MI., Biomed microscope. The furnace is tubular SUOL. Distiller DE-10, A set of laboratory bench equipment (7 pieces), Digital microscope 2 pieces, Concentration meter KN-3, Analytical scales 2 pieces, Humidity analyzer, Sterilizer TP-20, Photocolorimeter KFC, Scales VLTE 150, Thermostat TS 1/80, Microscope ucheb, Gas analyzer PHA, Aspirator 822, Scales MK, Electric chamber furnace, Elan CO gas analyzer, Radiometer-dosimeter, Pneumatic tube. constr. Set of hydrometers 2 pcs, Centrifuge, Color printer, Interactive whiteboard HJ-89 complete with mounting system, projector, laptop 2 pcs, Interactive whiteboard included, The material and technical base of the Department of Ecology includes 4 laboratories for undergraduates: 1. Scientific laboratory of undergraduates and doctoral students -

	426A, 424A, 422A, 420A. 2. Classrooms equipped with an interactive whiteboard - 421A, 420A, 424A 3. Regional Testing laboratory of engineering profile "Structural and Biochemical materials" (IRLIP "KBM")

audience number	**Audience names**	**Cabinet characteristics**		
		m2	**^{0}C,**	**humidity**
414A	Department head	28m2	20±2	65
416A	Lecture	18m2	20±2	65
418A	Lecture	74m2	20±2	65
419A	Lecture	58m2	20±2	65
420A	Laboratory "Microbiology and biological ecology, soil protection"	72m2	20±2	65
421A	Course and diploma design audience	72m2	20±2	65
422A	Cabinet-"environmental monitoring"	38m2	20±2	65
423A	Teaching	68m2	20±2	65
424A	Laboratory "Protection of water resources of the water basin	72m2	20±2	65
425A	Teaching	42m2	20±2	65
426A	Laboratory for undergraduates and doctoral students	72m2	20±2	65

APPROVAL SHEET

on the Educational program 7M05209- "Environmental expertise and sustainable development"

Director of DAV _____ Naukenova A.S.

Director of DAN _____ U.B. Nazarbek