Ф.7.02-10

MINISTRY OF SCIENCES AND HIGHER EDUCATION OF THE REPUBLIC OF KAZAKHSTAN
M.O. AUEZOV SOUTH KAZAKHSTAN UNIVERSITY

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

EDUCATIONAL PROGRAM

8D05210 - Ecology

Registration number	8D05200001
Code and classification of the field of education	8D05 Natural sciences, mathematics and statistics
Code and classification of areas of study	8D052 Environment
Group of educational programs (EP)	D 087 - Environmental Technology
EP type	Operating
ISCED level	8
NQF level	8
ORC level	8
Language of instruction	Russian, Kazakh, English
Labor intensity of EP	180 credits
Distinctive features of the OP	-
Partner university (SOP)	-
Partner university (DDOP)	-

Shymkent , 2025

Developers:

FULL NAME.	Job title	Signature
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Sagitova G.F.	Candidate of Technical Sciences, Professor of the Department «Ecology»	
Zhorabaeva N.K.	master, senior lecturer of the department "Ecology"	
Ashitova N.A.	doctoral student gr. DhT- 24 - 2nк	
Kozybaev E.T.	Head of RSU " Department of Ecology for the city of Shymkent of the Committee for Environmental Regulation and Control of the Ministry of Ecology, Geoecology and Natural Resources of the Republic of Kazakhstan"	

The EP was considered at a meeting of the academic committee in the field of study "Chemical engineering and biotechnology", protocol No. 7 dated " 13 " 03 2025.

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 «18» 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

University mission _	Generation of new competencies, preparation of 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 in choice, development and action. • Partnership - creates trust and support in relationships where everyone wins. • Social responsibility - ready to fulfill obligations, make decisions and be responsible for their results.
Model graduate	– 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
The uniqueness of the EP	**EP** 8 D 05210 - "Ecology" PhD training is based on the integration of educational, methodological and research training and is aimed at developing analytical thinking and entrepreneurial spirit that will allow us to be competitive in the domestic and international labor market in the field of environmental protection. The EP provides graduates with the acquisition of PhD competencies , the ability to think creatively and make decisions. For the effective implementation of the educational program, improvement of educational and methodological work Department "Ecology" successfully cooperates with the following leading foreign universities: Hamburg Higher School of Applied Sciences, Belarusian State University and Moscow State Institute of Power Engineering named after A.D. Sakharov (Minsk), Moscow State Technical University named after. Bauman, Tomsk State University , SPbGTI (TU), Moscow State University, RKhTU im. Mendeleev , A. Mickiewicz University (Poznan)
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)
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/қ
Organization of the educational process	• Implementation principles Bologna process • Student- centered education • Availability _ • And inclusiveness _
Quality assurance of EP	• In the interior system ensure quality • Attraction _ stakeholders to the development of the EP and its evaluation • With systematic monitoring • And actualization content (update)
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	Training of demanded scientific and scientific-pedagogical personnel in the field of ecology with fundamental scientific knowledge - PhD doctors, ready for research, pedagogical, professional, managerial and design and production activities.
Tasks of the EP	- providing conditions for acquiring a high intellectual level of development, mastering logical and critical thinking and the skills of scientific organization of labor in scientific and pedagogical activities ; - development of the ability to use acquired knowledge in professional activities to solve scientific, managerial and technological problems, prompt decision-making in problem situations ; - development of self-study skills and continuous professional development throughout their professional activities, which will allow doctoral students to successfully adapt to changing conditions; - expansion of knowledge in applied and theoretical areas of environmental science ; - development of research and experimental methods of observation and analysis of environmental processes and phenomena . - 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	• 8 level _ National framework RK qualifications ; • Dublin descriptors 8 skill level ; • 3cycle qualifying frame _ European space in higher about education (A Framework for Qualification of the European Higher Education Area); • Level 8 _ European qualifying framework For education V throughout _ _ life (The European Qualification Framework for life long learning).
Connection EP With professional sphere	The educational program is focused on professional and social order through the formation of professional competencies related to the necessary types of research, practical and entrepreneurial activities, adjusted to the requirements of stakeholders. 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: " Doctor of Philosophy PhD on the Educational Program 8D05210 - Ecology"
Scroll qualifications and positions	Doctors of Philosophy PhD in EP 8D05210 - "Ecology" can hold leadership positions in research and design institutions, government environmental protection agencies, as teachers of educational institutions, as well as leading researchers in the field of hydrometeorology and ecology.
List of qualifications and positions	- production; - managerial; - research and educational; - environmental monitoring and control service; - environmental Safety -Researcher
Field of professional activity	- natural, anthropogenic, natural and economic; - environmental, economic, industrial, social; - public territorial systems and structures at the global, national, regional and local levels; - state planning, control, monitoring; - examination of environmental components of all forms of economic activity; - education, ecological and demographic processes;

	- national parks, reserves, reserves, biosphere reserves ; - industrial enterprises; - agro-industrial complexes; - energy facilities, nuclear power plants, landfills;
Objects of professional activity	- otka developer environmental protection measures and innovative solutions for industries in various sectors of the national economy; - management of technological processes of purification and processing of liquid , solid and gaseous wastes ; - conducting a patent search and technologies for filing applications for an invention; - assessment of environmental safety of chemical production; - teaching specialized disciplines in ecology ; - natural and urban ecosystems and their components; - compilation of predictive models; - compliance with environmental requirements in technological processes and in the design of new enterprises, settlements, planning and implementation of environmental measures in various sectors of the economy, development of EIA and environmental audit.
Types of professional activity	- research activities; - management activities; - pedagogical activity
Learning Outcomes	**PO1** Solve scientific problems related to the theoretical and methodological foundations of environmental protection, scientific research aimed at ensuring environmental safety using modern theories and methods of analysis. Ensure the integration of psychological and pedagogical knowledge and knowledge in the subject area when conducting training sessions.
	PO2 Develop innovative environmental and resource-saving technologies and production and processing of mineral resources , the creation of low-waste and waste-free industries, as well as the reuse of waste .
	PO3 Integrate new directions of development and achievements of science and technology, modern technologies in the field of hydrometeorology and forecasting, including methods of mathematical forecasting and process modeling, digital technologies.
	PO4 Realize organizational and managerial , production and technological , pedagogical and entrepreneurial activities in the field protection environmental environment .
	PO5 Conduct scientific research relevant requirements expert estimates reviewing scientific publications and contribute to the development of the scientific industry in the field of ecology.
	PO6 To teach systematic and scientific approaches to solving complex environmental problems, processing information from various sources, using artificial intelligence to analyze big data, predict changes and optimize solutions.
	PO7 Apply the principles and culture of academic integrity, integrity in research and publication, and avoidance of plagiarism.

3. Competencies of a graduate of the EP

GENERAL COMPETENCES (SOFTSKILLS). Behavioral skills and personality traits	
GC 1. Competence in managing one's literacy	GC 1.1 . Ability self-learning , self-development and constant update their knowledge within selected trajectory and under conditions interdisciplinarity . EC 1.2. Ability to express thoughts , feelings , facts and opinions in professional sphere , with the ability to mobility in modern world and critical thinking .
GC 2. Language competence	GC 2 Ability line up programs communications on state , Russian and foreign languages .
GC 3. Mathematical competence and competence in the field of science	GC 3 Oh limit ways monitoring and evaluating the solution of professional problems, the development of mathematical and natural science thinking;
GC 4. Digital competence, technological literacy	GC 4 With the ability confident and critical use modern information and digital technologies For work , leisure and communications , ownership skills use , recovery , evaluation , storage , production , presentation and exchange information through computer , communication and participation in collaborating networks through _ Internet in the field professional activities .
GC 5. Personal, social and educational competencies	GC 5 Ability to build personal educational trajectory during _ all life For self-development , career growth and professional success a .
GC 6. Entrepreneurialcompetence	GC 6 With the ability know and understand goals and methods state regulation economy , role state sectors in the economy ; own basics economic knowledge ; own skills critical thinking , interpretation , creativity analysis , derivation conclusions , evaluation ; demonstrate entrepreneurial skills .
GC 7. Cultural awareness and self-expression	GC 7 Ability to show ideological , civil and moral positions , with the ability be tolerant of traditions and culture others peoples peace , possess high spiritual qualities .
PROFESSIONAL COMPETENCES (HARDSKILLS).	
Theoretical knowledge and practical skills specific to this field	PC 1 - The ability to apply new directions of development and achievements of science and technology in the field of environmental protection, as well as to summarize the results of scientific work using AI for data analysis, modeling environmental processes and optimizing solutions in the field of ecology.
	PC 2 - with the ability to assess the environmental impact of industrial emissions from enterprises in the region and report the results to the public . Ability to use state and international standards in the field of ecology.
	PC 3 - the ability to classify and evaluate the natural resources of the world and the republic and propose methods for their rational use; the ability to collectively solve problems related to environmental problems when using biological and raw materials.

3.1 Matrix of correlation of the learning outcomes of the educational program as a whole with the competences formed

	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
GC 1	+			+	+	+	
GC 2				+			
GC 3			+				
GC 4			+	+		+	
GC 5	+	+					+
GC 6		+	+		+		
GC 7				+			+
PC 1	+	+	+	+	+	+	
PC 2	+	+		+		+	
PC 3	+		+			+	

4.Matrix of influence of modules and disciplines on the formation of learning outcomes and information on labor intensity

Module name	Cycle	component	Name of the discipline	**Brief description of the discipline (30-50 words)**	Number of credits	Formed ROs (codes)						
						RO1	**PO2**	**PO3**	**PO4**	**RO5**	**RO6**	**RO7**
Modern methods of solving environmental problems	DB	VC	academic writing	**The goal is** to form knowledge about the methods, technologies of research in Geoecology, environmental management, trends in the development of science; ways of organizing, managing research and development. **Content:** features of academic genres; goals and methods of analytical processing of texts; publications related to the search for information in the scientific databases SCOPUS , rating journals , genres of academic writing, scientific ethics , the specifics of the English-language scientific style.	3					v	v	v
	DB	VC	Scientific research methods	**The goal is** to form knowledge about the methods and technologies of research in geoecology and environmental management, trends in the development of science; ways of organizing, managing scientific research and development. Contents**:** Methods _ research _ environmental monitoring, registration of applications for participation in programs of fundamental, applied and innovative research , scientific grants ; rules for registration of scientific documentation, patents, licenses; preparation of abstracts of reports, presentations, scientific papers, research projects. Application of artificial intelligence in scientific research: methods of data analysis, modeling and optimization	4					v	v	
	PD	HF	Chemical and physico-chemical methods of analysis of	**Purpose:** Study of the fundamental theoretical and experimental foundations of physico-chemical methods for analyzing the qualitative and quantitative composition of air, natural and wastewater, soils, soils, bottom sediments and biological objects, including	6		v		v			

Module name	Cycle	component	Name of the discipline	**Brief description of the discipline (30-50 words)**	Number of credits	Formed ROs (codes)						
						RO1	**PO2**	**PO3**	**PO4**	**RO5**	**RO6**	**RO7**
			environmental objects	hydrometeorological observations and scientific support for environmental monitoring. **Content**: features of the device and operation of equipment for the preparation of samples of natural objects and measurements by electrochemical, chromatographic, spectral analysis methods; specialized programs for processing analysis results. Conducting scientific research related to environmental monitoring, meteorological, hydrological monitoring. Preparation and release of operational and production products.								
	PD	HF	Environmental Problems natural - technical systems	**Purpose:** Considers various aspects of the emergence of environmental problems of natural and technical systems and forms technogenesis . **Contents:** Mechanisms of formation and restoration of natural and man-made objects. Assessment of the natural and technical system as a structural and functional unit of the biotechnosphere . PTS optimization principles . Main natural and technical systems: urban and rural settlements, agricultural, energy systems, industrial zones, transport and communications, mining enterprises, recreational systems	6	v	v					
			Teaching practice	**Purpose:** Formation of practical skills of scientific and pedagogical activity of a teacher of higher education, mastering the basics of pedagogical skills, independent conduct of educational and teaching work. **Content:** Formation of pedagogical competencies for the development of educational and methodological documentation to ensure the educational process, conducting classes using innovative teaching methods. Organization of educational work in groups, showing tact and tolerance towards students, scientific and	10				v			

Module name	Cycle	component	Name of the discipline	**Brief description of the discipline (30-50 words)**	Number of credits	Formed ROs (codes)						
						RO1	**PO2**	**PO3**	**PO4**	**RO5**	**RO6**	**RO7**
				pedagogical activities.								
	PD	HF	Comprehensive assessment of the natural and production potentials of the territories	**Target:** Considers ideas about resource science , patterns of placement of natural resource potential, resource support for the production potentials of territories. **Contents:** The relationship between the development of society and the consumption of natural resources. Geoecological assessment of territories. Resource support for the production potentials of the territories. Methodology for a comprehensive assessment of natural resource potential for the formation of a strategy for environmentally oriented socio-economic development of the region . The role of the modern climate in solving the problem of food security.	6		v				v	
Environmentally friendly technologies	PD	HF	Ecological Clean Innovative Technologies of Production and Processing of Mineral Resources	**Purpose:** Considers environmentally friendly and modern environmental protection technologies **Contents**: Ecologically clean and modern technologies for environmental protection, low-waste technologies, the principles of the formation of low-waste and waste-free production, the complexity of the use of resources, the rational use of raw materials. Modern directions and developments of non-waste and low-waste technologies in certain industries, modern technologies for the processing of municipal solid waste.			v				v	

Module name	Cycle	component	Name of the discipline	**Brief description of the discipline (30-50 words)**	Number of credits	Formed ROs (codes)						
						RO1	**PO2**	**PO3**	**PO4**	**RO5**	**RO6**	**RO7**
	PD	HF	Environmental aspects of green technologies	**Purpose**: and studying the role of "green" technologies in solving the most important problems of mankind. **Content** : Studied the classification of "green" technologies , the main types of renewable energy sources , geothermal energy and heat pumps , the problems of measuring the efficiency of renewable energy sources , and the analysis of trends in the development of "green" technologies and the risks of introducing "green technologies , but analysis of measures of international regulation of anthropogenic impact and stimulation of "green" technologies .	6	v		v				
	PD	HF	Innovative technologies for the processing and reuse of liquid, solid and gaseous wastes	**Purpose:** Consideration of the relevance and importance of low-waste and waste-free technologies, their roles and places in the concept of sustainable development of the biosphere, waste-free and low-waste production processes. **Contents**: Study of methods for cleaning and neutralizing waste gases, industrial waters, recycling and solid waste. Innovative technologies for processing waste from the chemical, metallurgical, mining, construction, and industry.			v	v				
			Research practice	**Purpose:** Acquaintance with modern theoretical, methodological and technological achievements of domestic and foreign science. **Contents:** Analysis of the state of development of environmental protection in the world and Kazakhstan; the role of science and innovation in the improvement and modernization of technologies. An examination of theoretical, methodological and technological advances in the field of research. Application of modern methods of scientific research, collection, analysis, processing of	10				v			

Module name	Cycle	component	Name of the discipline	**Brief description of the discipline (30-50 words)**	Number of credits	Formed ROs (codes)						
						RO1	**PO2**	**PO3**	**PO4**	**RO5**	**RO6**	**RO7**
				experimental data in the dissertation research.								
Research work and final assessment module			Research work of a doctoral student, including an internship and a doctoral dissertation	**Purpose:** Preparation of a PhD doctor , who owns the methodology of scientific knowledge, is able to apply scientific methods in the study of problems of modern science and technology. **Contents:** Analysis of modern achievements in science and technology, ways to ensure environmental safety using information technology. Planning, implementation of experimental research work based on the methodology of scientific research. Development of skills to evaluate, apply the results of research and the possibility of publication in scientific journals.	123	v	v	v			v	
			Writing And protection doctoral dissertations	**Purpose:** Evaluation of the scientific-theoretical and research -analytical level of a doctoral student, professional, managerial competencies, readiness to independently solve professional problems and compliance of training with the requirements of a professional standard, an educational program. **Content:** Formation of skills to generalize the results of an independent study of topical problems in the field of environmental protection, interpret and justify the results of scientific research and present them in the form of a doctoral dissertation and defense to a wide audience.	12	v	v	v			v	v
Total					1 80							

5.Summary table reflecting the volume of credits mastered by modules of the educational program

Course of training	Semester	Amount of the mastered modules	Amount of the studied disciplines		Amount of KZ credits					Total in hours	Total KZ credits	Amount	
			University component	Optional component	Theoretical training	RWDI	Pedagogical practice	Research practice	Final attestation			Exam	Diferedit
1	1	2	2	3	25	5	-	-	-	900	30	5	1
	2	2				20	10			900	30		2
2	3	2				20		10		900	30		2
	4	1				30				900	30		1
3	5	1				30				900	30		1
	6	1				18			12	900	30		1
total			2	3	25	123	10	10	12	5400	180	5	8

4. Strategies, teaching methods and artificial intelligence, monitoring and assessment

Learning strategies	Student–centered learning: The student is the center of teaching/learning and an active participant in the learning and decision-making process. Practice-oriented training: orientation to the development of practical skills.
Teaching methods	Conducting lectures, seminars, various types of practices with: • the use of innovative technologies: • problem-based learning; • case study; • work in a group and creative groups; • discussions and dialogues, intellectual games, olympiads, quizzes; • reflection methods, projects, benchmarking; • Bloom's taxonomies; • presentations; • * rational and creative use of information sources: • * multimedia training programs; • * electronic textbooks; • * digital resources. • * machine learning methods 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*). Evaluation forms : • survey on classes ; • testing by topics educational disciplines ; • control work ; • protection independent creative works ; • discussions ; • trainings ; • colloquia ; • essay and others . **R intermediate control** at least two times 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; • NIRD. **Doctoral dissertation defense** .

7.EDUCATIONAL AND RESOURCE SUPPORT OF THE 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 video conferencing system, 3 A-4 scanners, JIC software - AIBS "IRBIS-64" under MSWindows (basic set of 6 modules), stand-alone server for uninterrupted operation in the IRBIS system. - The library fund is reflected in the electronic catalog available to users on the site http://lib.ukgu.kz on -line 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 link http://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". - The JIC provides its users with 3 options for accessing its own electronic information resources: from the “Electronic Catalog” terminals in the catalog hall and the JIC subdivisions; through the information network of the university for faculties and departments; remotely on the website of the library http://lib.ukgu.kz/ . -Open access to international and republican 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 in the JIC adapted the library website to work with visually impaired users .
Material and technical base	Aerocon aerosol th . Analyzer " Fluorat 02-3M". Laboratory ionomer 0.001rX-150MI., Microscope Biomed . Exhaust cabinet. 4pcs Tubular oven SUOL. Distiller DE-10, Stereo microscope X40 and X80 YJ-T101G, Set of laboratory bench installation (7 pieces), Digital microscope 2 pcs , Concentrator KN-3, Analytical balance 2 pcs. Dispersion calculation UPRZA-"Ecolog" Software, Moisture analyzer, Table for scales 2 pcs , Sterilization TP-20, Cabinet for reagents , Island table, Table for instruments , KFK photocolorimeter, Scales VLTE 150, Thermostat TS 1/80 , Microscope studies, Gas analyzer PGA, Aspirator 822, Com / t sieve about d / soil, Scales MK, Distiller DEK, Electrochamber . Furnace, Gas analyzer Elan SO, Radiometer - dosometer , Pneumometric tube . NIIOGAZ 2 pcs , Set of hydrometers 2 pcs , Laboratory furniture , Centrifuge , Pump RK t 60 , Lockers met . , Lab tables , Table for scales, Color printer, Interactive whiteboard HJ-89 complete with mounting system projector, laptop 2 pcs , Interactive whiteboard included, Interactive whiteboard, Computer 2, Printer, Printer 3 in 1, MFP 3v 1-3pcs, Computer 3pcs, Computer 5pcs, LASER printer 2018, Computer included 2 t, Computer, office (universal) .

APPROVAL SHEET

according to the Educational program 8D05210 "Ecology"

Director of DAA _____ Naukenova A.S.

Director of DASc _____ Nazarbek U.B.