

Non-commercial joint-stock company
«Kazakh National Agrarian Research University»

AGREED

LLP «Scientific and Technical Center
«Energo» Director

K. Kungambaev

«03» 2024

APPROVED

Chairman of the Board - Rector

A. Kurishbaev

«03» 2024

AGREED

LLP «Agrofirma TZHN and K» Director

B. Saikenov

«01» 2024

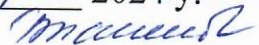
EDUCATIONAL PROGRAM

«6B05201 –Ecology»

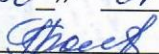
Awarded degree: Bachelor of Natural Science under the educational programme
«6B05201 –Ecology»

ALMATY 2024

Approved at the meeting of the Department «Soil science, agrochemistry and ecology»
Protocol № 6, «16» 01 2024 y.

Head of the department  Zh. Bakenova.

Considered at meetings Academic Committee of the Faculty
of «Agrobiology» Protocol № 6 «30» 01 2024 y.

Chairman of the AC of the faculty  G. Bayadilova

Reviewed by the Educational Methodological Council of the University and recommended
to the Academic Council Protocol № 4 «01» 02 2024 y.

Chairman of the EMC of the University  A. Abdyrov.

The educational program was approved at the meeting of the Academic Council of
KazNARU

Protocol № 9, «01» 03 2024 y.

Developers:

Dean of faculty

Head of department

PhD, Senior lecturer

Student 4 course, ЭК-20-06

Graduate of 2023



E. Abildaev

Zh. Bakenova.

Zh. Sagidoldina

S. Tynyshbay.

K. Arshabekova



Employers:

LLP «Scientific and Technical Center-
Energо» Director



K. Kumgambaev

LLP "Agrofirma TZHN and K" Director



B. Saykenov

Agreed:

Head of the educational program planning
office



Zh. Kussainova

Field of application

It is intended for realization of preparation of bachelors under the educational program «6B05201 –Ecology» in NCJSC "Kazakh National Agrarian University".

Regulations

«On Education» The Law of the Republic of Kazakhstan dated 27 July, 2007 No. 319-III;

Order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated July 20, 2022 №2;

Classifier of training programs for personnel with higher and post-graduate education. Order of the Minister of Education and Science of the Republic of Kazakhstan of October 13, 2018 No. 569;

Standard Rules for the activities of educational organizations implementing educational programs of higher and (or) postgraduate education. Order of the Minister of Education and Science of the Republic of Kazakhstan of October 30, 2018 No. 595;

Rules of the organization of the educational process on credit technology of training. Order of the Minister of Education and Science of the Republic of Kazakhstan dated October 12, 2018 No. 563;

Algorithm of inclusion and exclusion of educational programs in the Register of educational programs of higher and postgraduate education. Order of the Minister of Education and Science of the Republic of Kazakhstan No. 665 dated December 4, 2018;

Professional standard. Appendix No. 72 to the order of the Deputy Chairman of the Board of the National chamber of entrepreneurs of the Republic of Kazakhstan "Atameken" dated 11.12.2018 No. 339

Industry frame of qualifications in the field of environmental protection

1. [atameken.kz/https://atameken.kz/ru/services/16-professionalnyye-standarty-i-tsentry-sertifikatsii-nsk](https://atameken.kz/ru/services/16-professionalnyye-standarty-i-tsentry-sertifikatsii-nsk)
2. Hydrometeorology and ecology. (No. 79. to the order of the Acting Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken") dated 09.01.2023.№ 136
3. <https://www.enbek.kz/atlas/profession/212>

1. Passport of the educational program

Code and classification of the education field	6B05 –Natural science, mathematics and statics
Code and classification of training areas	6B052 -Environment
Code and name of educational program	6B05201 –Ecology
Type of educational program	Acting
The purpose of the educational program	Training of competitive specialists with knowledge in the field of environmental protection, able to understand the basic principles of the system of state regulation in the field of ecology; assess the levels of environmental hazards; to ensure the preservation of the stability of geographical patterns within the biosphere and to preserve environmental safety.
Level according to ISCED	6
Level according to NQF	6
Level according to SQF	6
The number of appendix to the licenses for the training direction	KZ89LAA00031870 05 августа 2021 года
Accreditation of EP The name of the accreditation body The period of accreditation validity	Agency № AB3132 IAAR 24.12.2020-23.12.2025 yaer
Degree awarded	Bachelor of Natural Science under the educational programme «6B05201 –Ecology»
Learning outcomes	Table 2
List of qualifications and positions	Environmental-engineer, meteorological-engineer, agrometeorologist-engineer, hydrologist-engineer, environmental-expert, environmental-researcher, soil - ecologist, environmental- chemist.
Field of professional activity	production, management, research and education, environmental monitoring service, development of planned activities, environmental monitoring service, quality control of the natural environment and human health.
Scope and object of professional activity	territorial environmental management departments, national parks, preachers, wildlife sanctuary, biosphere reserves, industrial enterprises, agro-industrial complexes, landfills, energy facilities, nuclear power plants, educational organizations, research institutes and centers.
Functions of professional activity	<ul style="list-style-type: none"> - to participate in the development of state programs for the development of economic sectors in the sections of environmental protection; - to take part in carrying out environmental impact assessment and environmental audit; - to collect material and conduct laboratory studies of the level of environmental pollution; - participate in environmental monitoring; to take part in conducting research in the field of ecology; - provide Advisory services to the population on environmental issues; - organize educational work among the population on environmental protection; - take part in the work on environmental expertise of

	<p>project and pre-project documentation in terms of its compliance with international standards;</p> <ul style="list-style-type: none"> - promote the implementation of the obligations of the Republic of Kazakhstan under the requirements of international conventions in the field of environmental protection, etc.; - promote the implementation of research results in production;
Types of professional activity	<p>1. Estimated:</p> <ul style="list-style-type: none"> - preparation of an environmental cadastre, study of biological diversity, analysis of the quality of the natural environment; - conducting environmental impact assessment and environmental audit. <p>2. Constructive:</p> <ul style="list-style-type: none"> - development of practical recommendations for regulating the quality of the natural environment in order to prevent negative consequences of economic activity; - participation in the organization and conduct of field and experimental work; - introduction of new ecological methods and technologies for restoration of disturbed ecosystems and rational use of natural resources; - development of recommendations for the introduction of environmentally friendly technologies in various industries in order to reduce the negative anthropogenic impact on the environment and preserve biological diversity <p>3. Information technology:</p> <ul style="list-style-type: none"> - provide advice on the rules of preparation of design and estimate documentation and technical and economic justification of eco-projects, on conducting audits, expertise and environmental impact assessment; - participation in the implementation of eco-projects, development of planned activities; - organization and implementation of the educational process in secondary and professional educational institutions on environmental education, education and awareness, promotion of environmental knowledge among various groups of the population.
Be competent	<ul style="list-style-type: none"> - environmental safety and sustainable development issues; - in the field of application of methods of implementation of low-waste production and assessment of environmental and man-made situations in agricultural activities, - methods for creating environmental models and using them in scientific research for monitoring and predicting the consequences; - assess the environmental and economic consequences of anthropogenic activities; - in matters of management and marketing in the environment on the basis of environmental legislation; - ensuring the environmental safety of cities and the natural environment; - use of new environmental and resource-saving technologies.

Learning outcomes of the educational program

Codes	Learning outcomes
LO1	Apply the basic foundations in the field of natural sciences, as well as the structure and functions of legal, anti-corruption, environmental and economic culture, labor protection standards, the importance of principles and culture of academic integrity.
LO 2	To know the concepts of the complex impact of environmental factors on plant organisms; their morphological and anatomical structure; with the basics of plant adaptations in the process of evolution.
LO 3	Apply methods and principles of rational use of limited resources, monitoring studies and analyses of physical and chemical parameters of atmospheric air and aquatic ecosystems.
LO 4	Be able to apply legislation in the field of labor protection; regulatory documents on labor protection and the environment; rules and norms of moral development.
LO 5	Compare environmental problems of individual industrial production sectors, the main system approaches to solving problems to reduce environmental risk in the field of hazardous waste management.
LO 6	Understand knowledge and understanding of phenomena, theories and measures of the legal foundations of the development of eco-tourism, the specifics of tourism organization in the Republic of Kazakhstan; the current state of the environment; ecological methods and calculations of bioclimatic indices.
LO 7	Understand the importance and measures to prevent depletion and pollution of soil resources, biogeochemical assessment of the state of natural and anthropogenic landscapes, requirements of regulatory legal acts and environmental safety.
LO 8	Demonstrate knowledge and understanding; in standard methods of environmental monitoring, in methods of phyto-indication studies, in processing data on the ecological state of soils, radioactive contamination.
LO 9	Apply the theories and training skills necessary in analyses and syntheses, field and laboratory work, as well as in the environmental parameters of the suitability of land for cultivation of agricultural crops.
LO10	Apply theoretical and practical knowledge to solve the problems of disturbed ecosystems, rational nature management, diagnostics of the main signs of the spread of erosion and the collection of reliable statistical information.

1. Content of the educational program

№	CC/UC/OC	Discipline code	The name of the discipline forming competencies	Academic loans	Volume in hours						Distribution of credits by courses and semesters								Department	Control form		
					In the academic hours	Classroom hours				Extracurricular		1 course		2 course		3 course		4 course				
						Lectures	Practical class	Laboratory lesson	Another (practice)	IWST	IWS	1	2	3	4	5	6	7			8	
	GES	Жалпы білім беретін пәндер циклі/ Цикл общеобразовательные дисциплины/ General education subjects cycle		56	1680	90	585			360	645											
		Модуль 1. Гуманитарлық және тілдік модулі/ Гуманитарный и языковой/ Humanities and language		30	900	30	240			240	390											
1	CC	KTM/IKG/ НОКС 1101	Қазақстан тарихы/ История Казахстана/ History of Kazakhstan	5	150	15	30			30	75		5								22	State exam
2	CC	Fil/ Phi 2102	Философия/ Philosophy	5	150	15	30			30	75			5							22	exam
3	CC	SHT/ IYa FL 1103	Шетел тілі/ Иностранний язык/ Foreign Language	10	300		90			90	120	5	5								24	exam
4	CC	KOT KRYa KRL 1104	Қазақ (Орыс) тілі/ Казахский (Русский) язык/ Kazakh (Russian) Language	10	300		90			90	120	5	5								23	exam
		Модуль 2. Кәсіби және коммуникативті модулі/Профессионально-коммуникативный/ Professional and communicative		10	300	30	60			60	150											
5	CC	АКТ/ ИКТ/ IACT 2105	Ақпараттық-коммуникациялық технологиялар/ Информационно-	5	150	15	30			30	75			5							21	exam

		statistics																					
15	OC	GE 3328	Ғаламдық экология/ Глобальная экология/ Global ecology	5	150	15	30			30	75							5		3	exam		
		TE/EP/ SE 3328	Топырақ экологиясы/ Экология почв/ Soil ecology																				
16	UC	TRTD/ PRUR/ NRASD 2220	Табиғи ресурстар және тұрақты даму/ Природные ресурсы и устойчивое развитие/ Natural resources and sustainable development	6	180	15	45			30	90									6	3	exam	
17	UC	AKE/ EChG/ EOMAC 2223	Адам және қала экологиясы Экология человека и городов /Ecology of man and cities	6	180	15	45			30	90									6	3	exam	
18	UC	KOAB/ OVOS/ EIA 3216	Қоршаған ортаға әсерді бағалау/ Оценка воздействия на окружающую среду/ Enviromental impact assessment	5	150	15	30			30	75									5		3	exam
19	UC	ААК/OAV /AAP 4338	Атмосфералық ауаны қорғау /Охрана атмосферного воздуха/ Atmospheric air protection	6	180	15	45			30	90										6	3	exam
		АЕ/ ЕА/ЕОА 4338	Агроландшафтар экологиясы /Экология агроландшафтов/ Ecology of agrolandscapes																				
		Модуль 6. Экономика және тұрақты даму/ Экономика и устойчивое развитие/ Economy and sustainable development		16	480	30	75			50	60	265											
20	UC	AN/ OA/ BOA 2222	Агроэкология негіздері/ Основы агроэкологии/ Basics of agroecology	6	180	15	45			30	90									6		3	exam
	OC	ETS/ EAS/EAAS 4229	Экономиялық талдау және статистика/ Экономический анализ и статистика/ Economic analysis and statistics	5	150	15	30			30	75										5	13	exam

		ИКТ/IFA 4229	Инновациялық қаржылық талдау/ Инновационный финансовый анализ/ Innovative financial analysis																	
21	UC	OP/PP/ 2219	Өндірістік практика/ Производственная практика/ Production practice	5	150			50	100				5					3	diff. credit	
		Модуль 7. Химия және қоршаған орта/ Химия и окружающая среда/Chemistry and environment		17	510	45	120		90	255										
22	UC	OE/PE/IE 3224	Өндірістік экология/ Промышленная экология/ Industrial ecology	5	150	15	30		30	75				5				3	exam	
23	UC	KZhZhT/ NTUO/ NWT 3225	Қалдықтарды жоюдың жаңа технологиялары/ Новые технологии утилизации отходов/ New waste disposal technologies	6	180	15	45		30	90				6				3	exam	
24	UC	BE/BAE 3226	Биогеохимия және экоотоксикология/ Биогеохимия и экоотоксикология/ Biogeochemistry and Ecotoxicology	6	180	15	45		30	90				6				3	exam	
		Модуль 8. Экотуризмнің дамуы/ Развитие экотуризма/ Ecotourism development		18	540	45	135		90	270										
25	UC	ET 3227	Экологиялық туризм/ Экологический туризм/ Ecological tourism	6	180	15	45		30	90				6				3	exam	
26	UC	SEK/ OVE/ POAE 2217	Су экосүйесін қорғау/ Охрана водных экосистем/ Protection of aquatic ecosystems	6	180	15	45		30	90			6					3	Exam	

27	UC	EB 4230	Экологиялық биоклиматология /Экологическая биоклиматология/ Ecological bioclimatology	6	180	15	45			30	90						6		3	exam
		Модуль 9. Қоршаған орта мониторинг объектісі/ Мониторинг объектов окружающей среды/Monitoring of environmental objects		17	510	45	120			90	255									
28	UC	Geo 3317	Геоэкология/ Geocology	5	150	15	30			30	75					5			3	exam
29	UC	EM 3318	Экологиялық мониторинг/ Экологический мониторинг/ Ecological monitoring	6	180	15	45			30	90					6			3	exam
30	UC	BZA/ BMI/ BRM 4334	Биоиндикациялық зерттеулердің әдістері/ Биоиндикационные методы исследований/ Bioindicative research methods	6	180	15	45			30	90						6		3	exam
		Модуль 10. Экологиялық нормалау және химияландыру/ Экологическое нормирование и химизация/ Environmental regulation and the use of chemicals		24	720	60	180			120	360									
31	UC	ENNS OENE / BESE 4331	Экологиялық нормалау негіздері және сараптама/ Основы экологического нормирования и экспертизы Basic ecological standardization and examination	6	180	15	45			30	90						6		3	exam
32	OC	ZhEN/ OSE/ BOSE 4232	Жүйелі экология негіздері / Основы системной экологии / Basics of system ecology																	
		KREZ/ EZRK/ ELOTROK 4232	Қазақстан Республикасының экологиялық заңнамасы/ Экологическое законодательство Республики Казахстан/	6	180	15	45			30	90						6		3	exam

		3336	окружающей среды и технология восстановления /Environmental Pollution and Recovery Technolog																	
	UC	OP/PP 3337	Өндірістік практика/ Производственная практика/ Production practice	5	150			50	100						5			3	diff. credit	
		KP/PP 4339	Кәсіби практика/ Профессиональная практика/ Professional practice	5	150			50	100								5	3	diff. credit	
Қорытынды аттестаттау/ Итоговая аттестация/ Final assessment				8	240			80	160											
БАРЛЫҒЫ: ИТОГО: TOTAL:				240	7200	510	1680	30	380	1080	3520	28	32	31	29	28	32	30	30	

¹ 1 note:

Факультет / Кафедра		
	ҚАЗАҚ ТІЛІНДЕ	IN ENGLISH
I	Агробиология	Agrobiology
1	Агрономия, селекция және биотехнология	Agronomy, breeding and biotechnology
2	Жеміс-көкөніс шаруашылығы, өсімдік қорғау және карантин	Horticulture, plant protection and quarantine
3	Топырақтану, агрохимия және экология	Soil science, agrochemistry and ecology
II	Ветеринария	Veterinary
4	Акушерлік, хирургия және өсіп-өну биотехнологиясы	Obstetrics, Surgery and Reproductive Biotechnology
5	Биологиялық қауіпсіздік	Biosecurity
6	Клиникалық ветеринариялық медицина	Clinical Veterinary Medicine
7	Микробиология, вирусология және иммунология	Microbiology, virology and immunology
8	Ветеринариялық санитариялық сараптау және гигиена	Veterinary sanitary examination and hygiene
9	Н.У.Базанова атындағы «Физиология, морфология және биохимия»	"Physiology, morphology and biochemistry" named after N.U. Bazanova
III	Су, жер және орман ресурстары	Water, land and forest resources
10	Орман ресурстары, аңшылықтану және балық шаруашылығы	Forest resources, hunting and fisheries
11	Жер ресурстары және кадастр	Land resources and cadastre
12	Су ресурстары және мелиорация	Water resources and melioration
IV	«Бизнес және құқық» жоғары мектебі	Higher School "Business and Law"
13	Есеп, аудит және қаржы	Accounting, audit and finance
14	Х.Д.Чурин атындағы «Менеджмент және агробизнесті ұйымдастыру»	"Management and organization of agribusiness" named after H.D. Churin
15	Құқық	Right
V	Зооинженерия және тағам өндірісінің технологиясы	Zooengineering and food production technology
16	Зооинженерия	Zooengineering
17	Тағам өнімдерінің технологиясы және қауіпсіздігі	Technology and food safety
VI	Инженерлік-техникалық	Engineering
18	Аграрлық техника және механикалық инженерия	Agricultural machinery and mechanical engineering
19	И.В.Сахаров атындағы «Машина пайдалану»	"Machine use" named after I.V. Sakharov
20	Энергия үнемдеу және автоматика	Energy saving and automation
21	IT-технологиялар және автоматтандыру	IT technologies and automation
VII	Басқарма Төрағасы - Ректордың орынбасары	Deputy Chairman of the Board-Rector
22	Жалпы білім беру пәндер	General university department
23	Дене тәрбиесі және спорт	Physical education and sports
24	Әскери кафедра	Military department

4. Map of competence

Codes	Module	Educational competence	Learning outcomes
MC1	Module 1. General education subjects cycle	<p>aimed at the formation of fundamental source and historiographic materials, as well as for the achievement of modern historical science of Kazakhstan; to determine the role of the history of Kazakhstan in the system of humanitarian knowledge;</p> <p>on revealing the specifics of the object and subject of history of Kazakhstan for the analysis of topical problems of the modern stage of development; on creation of scientifically grounded concept of history of Kazakhstan based on integral and objective coverage of the main stages of ethnogenesis of the Kazakh people, evolution of forms of statehood and civilization in the Great Steppe; on systematization of knowledge of the main events of the modern history of Kazakhstan.</p>	<ul style="list-style-type: none"> - demonstrate knowledge and understanding of the main stages of development of the history of Kazakhstan - correlate the phenomena and events of the historical past with the general paradigm of world-historical development of human society through critical analysis; - possess the skills of analytical and axiological analysis in the study of historical processes and phenomena of modern Kazakhstan - be able to comprehend objectively and comprehensively the immanent features of the modern Kazakhstan model of development - to systematize and give a critical assessment of historical phenomena and processes in the history of Kazakhstan.
		<p>forms a system of General competencies that provide social-cultural development of the personality of the future specialist on the basis of the formation of his worldview, civil and moral positions;</p>	<ul style="list-style-type: none"> - to evaluate the surrounding reality on the basis of ideological positions, formed by the knowledge of the fundamentals of philosophy, which provide scientific understanding and study of the natural and social world by methods of scientific and philosophical knowledge; - to interpret the content and specific features of the mythological, religious and scientific worldview; - to give assessment to everything happening in the social and industrial spheres;

		develops the capacity for interpersonal social and professional communication in the state, Russian and foreign languages	<ul style="list-style-type: none"> - implement the use of language and speech tools based on a system of grammatical knowledge; analyze information in accordance with the situation of communication; - to carry out the use of linguistic and speech means based on the system of grammatical knowledge; analyze information in accordance with the communication situation;
MC2	Module 2. Professional and communicative	contribute to the development of information literacy through the mastering and use of modern information and communication technologies in all spheres of their life and work; develop the ability to form the foundation of scientific research	<ul style="list-style-type: none"> - evaluate the activities and actions of communication participants. - to use in personal activities various types of information and communication technologies: Internet resources, cloud and mobile services for searching, storing, processing, protecting and distributing information; - collection of facts, their constant updating and systematization, critical analysis and, on this basis, synthesis of new knowledge
		Have an intolerant attitude toward corrupt behavior, respectful of legislation and law.	<ul style="list-style-type: none"> - analyze events and actions from the point of view of the area of legal regulation and be able to refer to the necessary regulatory acts; - to be guided in the current legislation; using the law, to protect their rights and interests, - to carry out professional activities on the basis of a developed legal awareness, legal thinking and legal culture; - to acquire a sufficient level of legal awareness; - be able to assess the facts and phenomena of professional activity from an ethical point of view; - apply moral rules and

		<p>Be competent to analyze and obtain information in accordance with the basic knowledge of the economy; use the basics of economic knowledge in various fields; able to apply this knowledge in solving situational and practical problems.</p>	<ul style="list-style-type: none"> - to know the fundamental problems of the functioning of the economy, the mechanism of action and manifestation of economic laws, as well as the main features of the leading schools and areas of economic science; - to be aware of economic terms and categories, use them in their educational activities; - to understand and know the main events of the world and domestic economic history, the course of ongoing reforms in the light of the strategy "Kazakhstan - 2050", development trends in the field of modern business; - to distinguish and compare the behavior of market agents in different types of market structures; - to explain the interaction of economic agents in macroeconomic markets; - to compare the impact of macroeconomic policies in different countries; - to argue their own views on modern macroeconomic phenomena; - to use the knowledge gained in practice to assess the
		<p>To be competent in the application of methods for the implementation of low-waste production and the assessment of the environmental efficiency of economic activity.</p>	<ul style="list-style-type: none"> - know the contents of the basic terms in the field of ecology, environmental management; modern global and regional environmental problems and their solutions; - be able to apply environmental knowledge to solve and predict possible environmental problems; - apply methods for the implementation of low-waste production and assess the environmental performance of economic activity. - establish causal relationships between phenomena occurring in nature and society, - apply environmental knowledge to solve and predict possible environmental problems.
		<p>Contribute to the ability to apply this knowledge to address the issues of safety and reliability of operation of machinery and equipment and knowledge of the issues of social protection of workers.</p>	<ul style="list-style-type: none"> - to know the main legislative acts on industrial safety, labor protection, environmental protection and civil protection; - apply the knowledge gained to address the safety and reliability of the operation of machinery and equipment; - ability to evaluate machinery and process equipment in terms of exposure to abnormal situations.
MC3	Module 3. Socio-political	<p>form the skills of self-development and education</p>	<p>-to assess situations in various spheres of interpersonal, social and professional</p>

	knowledge and a healthy lifestyle	throughout life;	<p>communication, taking into account the basic knowledge of sociology, political science, cultural studies and psychology;</p> <ul style="list-style-type: none"> - to synthesize knowledge of these sciences as a modern product of integrative processes; - to use scientific methods and approaches of research of a specific science, as well as the entire socio-political cluster; - develop their own moral and civic position; - operate with the social, business, cultural, legal and ethical norms of Kazakhstan society; - demonstrate personal and professional competitiveness; - to put into practice knowledge in the field of social sciences and humanities, having international recognition; - to make a choice of methodology and analysis; - summarize the results of the study; - to synthesize new knowledge and present it in the form of humanitarian socially significant products;
		form a personality capable of mobility in the modern world, critical thinking and physical self-improvement.	- to build a personal educational trajectory throughout life for self-development and career growth, focus on a healthy lifestyle to ensure full social and professional activities through methods and means of physical culture.
		Core and Major competencies	Learning outcomes
MC 4	Module 4. Ecology and environment	<p>the formation of the foundations of environmental knowledge, which is the theoretical Foundation of all environmental measures, including measures to ensure environmental safety of people, preserve their health, greening consciousness and education of environmental culture, allowing future specialists to use environmental knowledge not only in narrow professional interests, but also to contribute to society's recovery from the</p>	<ul style="list-style-type: none"> - describe the main objects of natural ecosystems, the state of biota, its habitats and ecosystems; - distinguish anatomical and morphological features of plants, as well as navigate the basics of the features of the flow of physiological processes occurring in plants. - apply environmental knowledge to solve and predict possible environmental problems; - distinguish methods of soil research; preparation of soil maps and cartograms for economic entities;

		environmental crisis and move towards sustainable development,, chemical and biological methods for assessing the soil fertility of the agricultural landscape, in the definitions of various representatives of systematic groups and in the knowledge of the processes of life of plant organisms to increase plant productivity and improve the quality of agricultural products;	
MC 5	Module 5. Natural resources and Statistics	in modern concepts and strategies of sustainable development of mankind, aimed at systematic changes in traditional forms of management and lifestyle of people in order to preserve the stability of the biosphere, in solving a wide range of professional tasks, in assessing regional aspects of climate impact on health; in the main aspects of protecting atmospheric air (objects) from pollution; in the field of basic laws and transformation of energy and organic matter in aquatic ecosystems;	<ul style="list-style-type: none"> - solve the methods of rational use of limited resources, the impact of harmful and dangerous factors of production and the environment on human health; - explain the causes of global environmental problems; analyze the possible transformation of emissions and discharges of industrial enterprises and transport in the air, water and soil, and the impact on living organisms; - assess the ecological state of the natural environment; - to investigate the problem of the current state of atmospheric air; - observe the principles of monitoring research and analysis of physical and chemical indicators of atmospheric air; - assess the probability of adverse effects on the body of natural, social and anthropogenic environmental factors in specific conditions of life- a person's personality.
MC 6	Module 6. Economy and sustainable development	to own the culture of economic thinking: the choice of many of the solutions to the most rational, abstracting from minor to detect major; apply knowledge of economic theory with case studies and practical problems; have the skills of a systematic approach to the study of economic problems which required students for further training in matters of business correspondence;	<ul style="list-style-type: none"> - understand the actions of economic laws, apply standards for labor protection, the environment, and rules for moral development - use the main features of academic writing genres; structure and pragmatics of scientific communication, the main features of academic writing genres; - provide examples of economic analysis and critical perception of economic information about trends in the development of the national and world economy; - to form the basic laws of interaction between nature and society; - apply knowledge of the General distribution of organisms, explain the

		<p>to evaluate legislative and regulatory framework, competent in matters of building communication based on the goals and situation of communication; implementation of professional written and oral communication; in Agroecology in solving agricultural problems; in forecasting the activities of agricultural producers, taking into account the direct and numerous indirect consequences for the biosphere; in ensuring the environmental safety of cities and the natural environment; in managing anthropogenic processes that have a catastrophic nature; to apply the theoretical knowledge and skills obtained in professional activities;</p>	<p>features of the distribution of species by their history; be able to work with biogeographic maps;</p>
MC 7	Module 7. Chemistry and environment	<p>the ability to plan experiments, conduct information search and acquire new knowledge in the preparation of samples, in the field of new technologies, independently solve research problems in the field of technology, in the classification of industries and assess their impact on nature;</p>	<ul style="list-style-type: none"> - determine the environmental problems of individual industrial production sectors and ways to solve them; - to solve the main trends and problems of using the country's natural potential in modern conditions; - apply environmental norms and standards in the field of waste management; - compare the main system approaches to solving problems of reducing environmental risk in the field of hazardous waste management; <p>to assess the biogeochemical cycles of migration of chemical elements;</p>
MC 8	Module 8. Ecotourism development	<p>in a wide range of professional tasks; in preserving positive synergies between tourism, biodiversity and local people, in General, natural-recreational and historical-cultural factors of the country; about technology development organization and carrying out of ecological routes, the impact of climate</p>	<ul style="list-style-type: none"> - have the skills to analyze developing sectors of the world tourism industry; - develop environmental and tourist programs, give an objective comprehensive assessment of environmental and tourist resources; - observe the impact of the natural environment on humans, the main methods used to study the bioclimate; - apply environmental research methods and diagnose environmental problems and assimilate regional features of climate formation.

		change on human health is a way to independently organize and conduct research;	
MC 9	Module 9. Monitoring of environmental objects	ability to determine geoecological loads and classify the main categories of environmental loads; in the issue of environmental monitoring of the environment; in modern concepts and strategies for sustainable development of mankind, aimed at systematic changes in traditional forms of management and lifestyle of people in order to preserve the stability of the biosphere;	-develop measures to prevent depletion and pollution of soil resources; assess the impact of human activities on the soil; - to organize and carry out field and laboratory geo-environmental research; - conduct ecological and geochemical assessment of the state of natural and anthropogenic landscapes; - knowledge of standard methods of environmental monitoring; - identify global environmental processes and make development forecasts on this basis; - conduct an experiment with geobotanical indication methods of vegetation research, methods for determining the species composition of indicator plants - possess methods of phyto-indication research and the most developed areas-indication of underground water, rocks, soils and minerals; - Have the skills to process data on the ecological state of soils and soil biota.
MC10	Module 10. Environmental regulation and the use of chemicals	in assessing the impact of various activities on the environment; in determining the species composition of indicator plants; use the results of biomonitoring in research work, in the field of agricultural chemization and their negative impact on soil biota;	- apply environmental activities, principles and rules of environmental protection, environmental quality standards, principles of environmental expertise, environmental audit, and EIA; - possess methods of processing, analysis and synthesis of field and laboratory environmental information and use theoretical knowledge in practice; - use the environmental safety of agricultural landscapes in the cultivation of agricultural crops; - conduct environmental parameters of land suitability for cultivation of agricultural crops, taking into account the production of quality products; - determine the values of green spaces; features of the relationship of agrocenosis organisms with the environment and alternative farming systems;
MC 11	Module 11. Assessment of the quality of the natural environment	in terms of disturbed ecosystems and ways to eliminate them; in the field of radiation ecology and their negative impact on soil biota; in spreading and combating soil erosion; in	- solve problems of disturbed ecosystems, nature protection and rational use of natural resources; - distinguish between natural and artificial sources of radiation and the composition of radiation. - identify and determine soil processes and

		making and justifying any management decision;	possible ways to regulate them; diagnose the main signs of erosion spread, while collecting reliable statistical information; - have in-depth knowledge about the restoration of polluted and disturbed lands, the ability to correctly use this knowledge in the production and scientific sphere.
	Professional Internship	to obtain primary skills is to develop primary vocational and practical skills acquired by students as a result of the development of their theoretical courses during training is essential for the development of physical, chemical and biological bases of ecology and environmental management;	- safety engineering, documentation that is filled in during the internship, report form, theoretical knowledge of the theoretical course of ecology, methods of sampling and conducting chemical analysis of harmful emissions into the environment; - conduct accounting and observation and collection of experimental material necessary for writing a thesis. The rule and methodology for conducting experimental research, to conduct sampling and analysis of samples, processing of laboratory environmental information; -Have the skills obtained in the learning process for the entire range of modules under study, sampling technologies and analysis, processing, analysis and synthesis of field and laboratory environmental information.

5. Summary table reflecting the volume of disbursed credits in the context of the educational program:

Curriculum	Half year	The number of investigate disciplines			Number of academic credits						Total academic hours	Military training	Quantity	
		CC	UC	OC	Theoretical training	Training practice	Production practice	Professional practice	Final assessment	Total			Exam	Diff. offset
I	1	3	3		28					28	840		6	
	2	5	1		30	2				32	960		6	1
II	3	1	4	1	31					31	930		5	
	4	3	2		24		5			29	870		5	1
III	5		4	1	28					28	840		5	
	6		3	2	27		5			32	960		5	1
IV	7		3	2	30					30	900		5	
	8		1	2	17			5	8	30	900		3	1
Total		12	21	8	215	2	10	5	8	240	7200	588	40	4

Data on disciplines

№	Name of discipline	Short description of discipline (30-50 words)	Quantity of the credits	The formed competences (codes)
General education subjects cycle /Core component				
1	History of Kazakhstan (SE)	Studying of a course is directed to formation at students concepts of the modern history of the Fatherland based on complete and unbiased interpretation of problems of ethnogenesis of the Kazakh people, evolution of forms of statehood and a civilization in the territory of the Great steppe and set of the most significant historic facts and events. Systematization of historical knowledge of the main events of modern history forming scientific outlook and a civic stand. Creation of an ideological and spiritual basis for consolidation of multiethnic and polyconfessional Kazakhstan society	5	MC 1
2	Philosophy	The course is aimed at forming students understanding of philosophy as a special form of knowledge of the world, its main sections, problems and methods, as well as skills of self-analysis and moral self-regulation, the development of research abilities and the formation of intellectual and creative potential. Special attention is paid to the problems of preserving national identity, assimilation of such key worldview concepts as justice, dignity and freedom, and the role of philosophy in modernizing public consciousness and solving global problems of our time	5	MC 1
3	Foreign language	Development of foreign-language communicative competence in the totality of its components: speech competence – development of communicative skills in four main types of speech activity; language competence – mastering new language tools (phonetic, spelling, lexical, grammatical; socio-cultural competence-formation of the ability to represent their country and its culture; educational and cognitive competence-familiarization with the available methods and techniques of self – study of languages and cultures.	10	MC 1
4	Kazakh (Russian) language	Discipline is intended for the development of language the identity of the learner who is able to perform cognitive and	10	MC 1

		<p>communicative activities in Russian in the fields interpersonal, social, professional, intercultural communication in the context of the implementation of state programs of trilingual and spiritual modernization of the national consciousness. Discipline implies the successful mastery of the types of speech activity in according to the level preparation</p>		
5	Information and communication technology	<p>Formation of the ability to critically evaluate and analyze processes, methods of searching, storing and processing information, ways of collecting and transmitting information through digital technologies. Mastering the conceptual fundamentals of computer systems, operating systems and networks. Formation of knowledge about the concepts of development of network and web applications, information security tools.</p>	5	MC 2
Social and political knowledge module (Social Studiez, Political Studies, Cultural Studies, Psychology)				
6	Social Studiez	<p>The purpose of the discipline is to systematize knowledge about society as an integral system, its structural elements, connections and relationships between them, features of functioning and development, to teach future specialists to use an arsenal of creative models and applied methods for analysis, explanation, prediction of specific social processes and systems. The following are considered: sociological theories, methods of sociological research, the social structure of society.</p>	2	MC 3
	Political Studies	<p>The discipline forms knowledge about the laws of world politics, modern political processes, the essence and content of the policy of national states, on the basis of ensuring national security and the realization of national interests. Promotes the formation of a socio-humanitarian worldview as the basis for the modernization of public consciousness.</p>	2	MC 3
	Cultural Studies	<p>The purpose of the discipline is to understand the specifics of the development of national culture in the context of world culture, includes the study of morphology, language, anatomy of culture, addresses the cultural heritage of Nomads, Turks and Proto-Turks of Kazakhstan, medieval culture of Central Asia, analyzes the process of formation and history of Kazakh culture, cultural policy of the Republic of Kazakhstan, the place of</p>	2	MC 3

		culture of Kazakhstan in the context of modern world processes		
	Psychology	Psychology is a science which goal is to study the mechanisms of the functioning of the human psyche. It examines the patterns of people's behavior in various situations, the resulting thoughts, feelings and experiences. Psychology is something that helps us to get to know ourselves more deeply, to understand our problems and their causes, to recognize our weaknesses and strengths. Studying Psychology contributes to the development of moral character and morality in man.	2	MC 3
7	Physical Training	Discipline covers a range of issues related to physical culture, as part of human culture, healthy lifestyle, its main components, socio-biological basis of human adaptation to physical and mental activity, preparation for independent physical culture and sports, age physiology, self-control physical condition, psychophysical basis of physical culture and sports, hygiene.	8	MC 3
General education subjects cycle / Optional component				
8	Law and anti-corruption culture	The course program provides for the disclosure of such issues as the basic theories of the origin of the state and law, the identification of features, subject, methods, principles, branches of law of Kazakhstan, such as constitutional, administrative, labor, civil law, criminal, family, land, financial, tax, banking, insurance law of the Republic of Kazakhstan, improving the legal literacy of students in in the field of anti-corruption legislation, the formation of an anti-corruption worldview, an anti-corruption standard of conduct, and an intolerant attitude towards any manifestation of corruption.	5	MC 2 LO 1
9	Economy	The content of the discipline "Economics" is aimed at mastering basic knowledge about the economic life of a society in which the economic activities of individuals, individual enterprises and the state are carried out. The subject promotes the development of students' economic thinking and the ability to make rational decisions with limited natural resources. The discipline contributes to the formation of readiness to use the acquired knowledge about the functioning of the economy for orientation in choosing a profession and further education.	5	MC 2 LO 1

10	Life safety	The course forms a professional safety culture, which is understood as the willingness and ability of an individual to use in professional activities the acquired set of knowledge, skills and abilities to ensure safety in the field of professional activity.	5	MC 2 LO 1 LO 4
11	Entrepreneurship	The discipline is aimed at forming students' understanding of the basics of entrepreneurship, developing key skills and competencies for successful business. The purpose of the course is to familiarize students with the main aspects of entrepreneurship, including the creation of a business idea and the development of a business plan. As a result of the training, students gain the ability to develop and analyze business plans, apply strategic and tactical approaches to managing an entrepreneurial project, as well as effectively solve business problems.	5	MC 2 LO 1
12	Fundamentals of Scientific Research	Within the framework of this discipline, students study the main approaches to scientific research in the electric power industry, including the choice of a research topic, the development of a hypothesis, the choice of methods for data collection and analysis of results. They also learn the basics of statistics and experimental research, which help them analyze data and draw conclusions based on research results.	5	MC 2 LO 3 LO 8
13	Basics of financial literacy	Personal finance management. Formation of own funds and selection of a bank. Financial risks and investment strategy. Types of taxes paid by individuals in the Republic of Kazakhstan. Insurance market of the Republic of Kazakhstan. Creating your own business. Financial fraud. Retirement savings opportunities.	5	MC 2 LO 1 LO 9
Core subjects cycle / University component / Optional component				
14	Ecology	The formation of natural scientific systemic knowledge about the ecological patterns of the existence of individuals, populations and communities of living organisms, which are the theoretical foundation of all environmental protection measures to ensure human environmental safety, preserve his health and ecological culture, allowing the use of environmental knowledge not only in narrow professional interests, but also to contribute to society's recovery from the environmental crisis and movement towards sustainable development and apply	5	MC 4 LO 1 LO 2

		theoretical knowledge for solving environmental problems.		
15	Plant biology	The discipline "Plant Biology" reveals the essence of the physiological processes of plant vital activity, such as the water regime, photosynthesis and respiration of plants, their ontogenesis, organization in order to control the course of growth and development, and also allows you to gain knowledge on the basics of cytology and histology, organography, reproduction and systematics of plants, their role in the biosphere and human life.	5	MC 4 LO 2
16	Ecological aspects of natural science	The discipline represents the concept of a natural scientific image as a global model of nature, reflecting the integrity and diversity of the natural world. It is aimed at studying the objective laws of nature and promoting their practical application in the interests of man, familiarization with scientific principles and methodology, the study of basic concepts, theories, laws, models, hypotheses, empirical generalizations. The following are considered: methods of scientific cognition, the development of biological ecology, environmental aspects of chemistry, etc.	6	MC 4 LO 2 LO 4
17	Soil science	The discipline studies the soil as an independent natural body of natural history, the factors and processes of soil formation, the composition and properties of the soil, the geographical features of the formation of the soil cover. It includes issues of rational use of arable soils, development of methods for increasing soil fertility and protecting soils from pollution and degradation processes.	5	MC4 LO 7 LO 8
18	Ecology of animals and plants	The discipline gives an idea of the diversity of fauna and flora; their morpho-anatomical and biological features; the evolution of organisms and their adaptability to various living conditions; shows the practical importance of environmental knowledge for the conservation and rational use of the diversity of animals and plants.	5	MC 4 LO 2 LO 7
19	Environmental biogeography	The objectives of the discipline are the formation of ideas about the geographical distribution of biodiversity, familiarization with the patterns of formation and structure of the vegetation and animal population of the planet as a whole and its individual regions, laws, problems and methods used in general theoretical and practical biogeography, the formation of competencies in the field of ecology and environmental management, and environmental safety. The	6	MC 4 LO 2 LO 4

		most biogeographic issues of the geographical distribution of living organisms, their communities and the globe as a whole are also considered.		
20	Global ecology	The subject reveals the issues of origin, structure and general patterns of development of the global ecosystem of the Earth, the student identifies the cause of global environmental problems (waste, processing of raw materials and conservation of biodiversity), the formation of planetary ecological thinking and ways to solve them.	5	MC 5 LO 3 LO 5 LO 7
21	Soil ecology	The discipline is considered as a new theoretical science of the biosphere class, reveals the problems of solving applied protection and rational use of land resources, as well as forecasting the impact of human economic activity on the biosphere. The properties and composition of the soil, its degradation and pollution are considered.	5	MC 5 LO 7 LO 8 LO 9 LO 10
22	Natural resources and sustainable development	Subject: fundamentals of resource, sectoral, territorial nature management, as well as resource nature management; formation of theoretical knowledge about the natural resource and ecological and economic potential of lands. Principles of rational nature management in the chemical sector, features of water, land and forest resources. The problems of nature management and environmental protection, the importance of biological resources are considered.	6	MC 5 LO 3 LO 7
23	Ecology of man and cities	Formation of knowledge about the peculiarities of human interaction as a representative of a biological species with a unique biopsychosocial essence with formed competencies related to the environment. Relevance of human scientific research in environmental conditions and rational use of the territory, reasonable exploitation of natural resources, conservation and improvement of the natural environment.	6	MC 5 LO 7 LO 8
24	Environmental impact assessment	The discipline considers assessments of the impact of various types of economic and other activities on the environment, taking into account the real diversity of landscapes of Kazakhstan. Objectives of the discipline: to give an idea of the objectives of assessing the impact of economic and other activities on the environment (EIA); to familiarize with the types and types of economic and other activities that affect the environment.	5	MC 5 LO 5 LO 8 LO 9
25	Environmental Code of the Republic of Kazakhstan	The discipline forms the ability of ecological thinking in the process of designing and conducting environmental assessments, is	6	MC 10 LO 4 LO 6

		aimed at instilling skills of practical work of environmental impact assessment, environmental justification of economic activity, familiarization with regulatory and technical documentation. Summary: study of the main points of the Environmental Code		LO 7
26	Economic analysis and statistics	This discipline is designed to ensure that during the learning process the student gets a clear and concise understanding of the assimilation of methods and techniques for collecting information, analyzing data, establishing connections and making forecasts. The purpose of teaching the discipline is to train students to read digital information competently in social and economic sciences, economics by industry and other disciplines.	5	MC 6 LO 1 LO 8 LO 9
27	Basics of agroecology	The subject of the formation of students' modern understanding of the laws of the relationship of organisms with the environment at all levels of organization, the role of agriculture in the pollution of the biosphere, the features of the ecological crisis, ways and methods of preserving the modern biosphere. The following are considered: agroecological safety of the country, fundamentals of ecology of agriculture, ecological condition of agricultural lands in Kazakhstan.	6	MC 6 LO 7 LO 8 LO 9
28	Industrial ecology	The discipline considers the material, first of all, the interconnection and interdependence of industrial production, man and other living organisms, and their habitat. The subject of the study of industrial ecology is ecological and economic systems. The following topics are considered: industry and the environment, greening of industrial production, the influence of the energy industry on environmental conditions.	5	MC 7 LO 5 LO 8
29	New waste technologies	The discipline reveals the issues of complex processing of raw materials using all its components. The following are considered: classification, composition and properties of waste, assessment of the size of the formation of typical waste, methods of recycling, disposal and waste reduction.	6	MC 7 LO 4 LO 5 LO 7
30	Biogeochemistry and Ecotoxicology	The discipline is the study of patterns of distribution and movement of chemical elements and toxicants in the biosphere, quantitative and qualitative characteristics of biogeochemical characteristics of elements, significance, role of chemical elements and toxicants in the circulation of substances in nature. Tasks: to study the basics of the	6	MC 7 LO 3 LO 7

		movement of substances in the environment; to determine the role of chemical elements and ecotoxicants; to identify the main trends in changing the volumes and actions of chemical elements and toxicants.		
31	Ecological tourism	The discipline studies general issues related to the organization of recreation of the population, the legal basis for the development of eco-tourism. The features of the organization of ecological tourism in Kazakhstan and the role of specially protected natural areas in the development of this direction of tourism are considered.	6	MC 8 LO 6 LO 8
32	Ecological bioclimatology	The discipline involves mastering theoretical and practical knowledge, assessing the impact of climate on the well-being of the population based on the concept of the role of the environment as the most important environmental factor and ensuring sustainable development. The following are considered: bioclimatology and their natural significance, bioclimatic indices, agrometeorological forecasts.	6	MC 8 LO 6 LO 7 LO 8
33	Ecology of agrolandscapes	The discipline studies environmental factors affecting plants and animals, natural complexes transformed by human activity for the production of environmentally friendly crop and livestock products, systems of measures that ensure the rational use of land, conservation, reproduction of soil fertility and other natural resources, in which the landscape remains stable.	6	MC 8 LO 8 LO 9 LO 10
34	Protection of aquatic ecosystems	The discipline studies general ecological knowledge based on familiarization with the peculiarities of the organization, functioning and problems of aquatic ecosystems, including regional aspects. Objectives: to study the features of the organization and functioning of aquatic ecosystems at various levels, to identify natural and anthropogenic factors affecting aquatic ecosystems.	6	MC 8 LO 3 LO 4 LO 7
Major subjects cycle / University component / Optional component				
35	Geoecology	The discipline is aimed at studying the stability of geosystems to the effects of environmental factors, forecasting the consequences of natural and man-made disasters and their impact on environmental components. Considered: review of changes in the geosphere, ecological consequences of anthropogenesis, the geosphere of the earth and human activity.	5	MC 9 LO 4 LO 5 LO 9

36	Ecological monitoring	The discipline is aimed at studying the basic principles of monitoring research, the relationship of environmental factors and environmental problems and practical approaches at the global, regional and local levels. The following are considered: classification of environmental monitoring, methods of environmental monitoring.	6	MC 9 LO 3 LO 5 LO 8
37	Bioindication research methods	The discipline studies the methodological foundations of biological monitoring of the state of the environment and the main methods of biotesting natural and anthropogenic-transformed ecosystems. Tasks: to give an idea of the principles and methods of biomonitoring and biotesting; to master the methods of biotesting natural and anthropogenic-transformed ecosystems.	6	MC 9 LO 7 LO 8 LO 10
38	Basic ecological standardization and examination	The discipline is an acquaintance of students with the types of environmental activities, the system of norms and rules, regulatory documentation on design, environmental management, rational use of natural resources, environmental safety, as well as environmental expertise, audit and EIA. Course objectives: study of types of environmental activities, systems of norms and rules; study of regulatory documentation on design, environmental management, rational use of natural resources; study of safety issues, environmental expertise.	6	MC 10 LO 7 LO 8 LO 9 LO 10
39	Basics of system ecology	The development of students' system thinking in mastering the discipline, the construction of physical and mathematical models characterizing the functioning of ecological systems, and the use of methods of system analysis in the study of these ecosystems. To achieve this goal, the following tasks are solved: search for information on the task received, collection and analysis of data necessary for conducting specific environmental studies; construction of standard theoretical models of the processes under study, analysis, evaluation, interpretation of the results obtained and justification of conclusions.	6	MC 10 LO 3 LO 8 LO 9
40	Environmental legislation of the Republic of Kazakhstan	The discipline reveals the laws of interaction between society and nature, theoretical knowledge about environmental legislation, establishing the requirements of the science of environmental law, environmental protection and environmental management, as well as the skills of practical application of the tasks received in various fields of professional activity.	6	MC 10 LO 4 LO 6 LO 10

41	Ecological basics of the chemicalization of agriculture	The discipline considers the provision of sustainable production of biological quality products, taking into account the ecological foundations of agricultural chemistry for the study of environmental disciplines, the maximum use of natural bioenergetic potential in agroecosystems, storage and production of fertilizers in the agricultural sector, negative minimal impact on the natural environment. The following are considered: ecological problems of modern agriculture, agroecological assessment of crops, the main sources of environmental pollution.	6	MC 10 LO 7 LO 9 LO 10
42	Sustainable agriculture and food systems	Ensuring the creation of a sustainable food production system and the introduction of agricultural methods. Main objectives: to increase viability, productivity and increase production volumes.	6	MC 10 LO 9 LO 10
43	Radiation ecology	The discipline considers theoretical and practical training in radiation safety, ensuring safe operation with ionizing radiation sources, their dosimetry and control. The main objectives of studying the discipline are knowledge of the basics of dosimetry and radiobiology, ensuring radiation safety and organization of dosimetric control at enterprises using radioactive substances and sources of ionizing radiation.	5	MC 11 LO 5 LO 8
44	Environmental Pollution and Recovery Technolog	The discipline considers knowledge of the principles and rules of environmental protection and the rational use of its resources, as well as environmental awareness. To form ideas about the main directions of recultivation of anthropogenic disturbed natural territories, modern technologies for the restoration of reservoirs, soils, and natural ecosystems. To form skills in the practice of studying the state of natural environments, their pollution and restoration measures.	6	MC 11 LO 7 LO 9 LO 10
45	Restoration of damaged ecosystems	The discipline consists in the formation of knowledge about the directions and procedure of work on the restoration of lands disturbed by economic and other activities. The objectives of the discipline are: the study of the regulatory framework for solving issues of reclamation of disturbed lands; the study of directions and technologies of reclamation; the formation of knowledge about the features of soil formation processes in man-made landscapes. Considered: stability of ecosystems and geosystems, restoration of disturbed	6	MC 11 LO 9 LO 10

		ecosystems, stages of land restoration.		
46	Innovative financial analysis	The course forms and teaches systematic theoretical knowledge, practical skills in organizing and conducting economic analysis of financial and economic activities of an enterprise. During the study of this discipline, the student masters statistical and economic methods and techniques, as well as collects information in the social and economic sciences, analyzes data, establishes connections and forecasts, and masters digital information methods and approaches.	5	MC 6 LO 1 LO 8 LO 9
47	Environmental safety	The discipline forms an understanding of the concepts underlying the methodology of financial analysis, the nature and approaches to the study of investment risks; identification of controversial aspects of the theory of financial analysis and the main directions for their further study; development of skills in choosing analytical tools to justify decisions on the main objects of management: company development strategy; investment policy; operational; financing of a commercial organization; its business, investment and financial risks; familiarization with the principles and procedures for monitoring the effectiveness of a commercial organization and ensuring the growth of its value. Development of practical skills of financial analysis in the framework of interaction of enterprises with commercial banks and insurance companies; formation of the necessary and sufficient information base for various areas of financial analysis.	5	MC 11 LO 4 LO 6 LO 7
48	Protection of atmospheric air	Atmospheric protection is a multidisciplinary scientific discipline. While studying the discipline, students will get acquainted with the causes of air pollution carried out by processing heat, oil, gas and transportation. Air pollutants are molten oxides, sulfur and nitrogen compounds, hydrocarbons and industrial dust. Identification of sources of pollution from changes in the physical, chemical or biological characteristics of atmospheric air.	6	MC 17 LO 3 LO 5 LO 6

Appendix for Educational program

Base practice

№	Name of companies, enterprises, organizations	Contacts Tel, e-mail
1	RSI "Ile-Alatau state national natural Park" Of the Committee of forestry and wildlife of the Ministry of agriculture	Tel: 8 (727) 297-07-72, 297-07-74 e-mail: alataupark@mail.ru
2	Department of agrochemical, soil surveys and complex survey work – branch of NSS State Corporation "Government for citizens in Almaty»	Tel: 87273758346 e-mail: ashat_kif@mail.ru
3	RSE on PVC "Institute of botany and Phytointroduction" SC MES RK	Tel: 87273948040 e-mail: www.botsad.kz
4	"Republican state institution "Department of ecology of Karag	Tel: 87212410754 e-mail: ecokaraganda@mail.ru
5	"Seismological experimental-methodical expedition" LLP	Tel: +7(727) 2694614 e-mail: seismology@seismology.kz
6	JSC "Management company Special Economic	Tel: 87470833071 e-mail: kense_himparc@seztaraz.kz
7	«Disposal of medical waste» TOO	Tel: +7(728)227-18-69 e-mail: info-dmw17@mail.ru
8	RSU "Charyn state national natural Park»	Tel: 8(72778)2 14 33, 8(72778)2 32 62 e-mail: nept61@mail.ru
9	KSU "Shardara state institution for the protection of forests and wildlife»	Tel: 8(72535)21787 e-mail: shar_leshoz@mail.ru
10	LLP «ӨзенМұнайСервис»	Tel: 87293493170 e-mail: Ozenmunaiservice@oms.kmgep.kz
11	Too "Tynys Ecolo	Tel: 87272558444
12	SI "Shalkar district Department of land relations»	Tel: 87133521329 e-mail: shalkar-zher66@mail.ru
13	SE "Department of ecology in Almaty of the Committee of environmental regulation, control and state inspection in the oil and gas complex of the Ministry of energy" of Kazakhstan	Tel: 87272391103 e-mail: ecokomitet.kz

СЫН ШҚІР

6B05201- «Экология» білім беру бағдарламасына

Рецензияланатын білім беру бағдарламасы Қазақстан Республикасының Заңына сәйкес әзірленген құжаттар жүйесі болып табылады.

Білім беру бағдарламасы мақсаты, паспорты, біліктілік және лауазымдар тізімі, бітірушінің біліктілік сипаттамасы, саласы, объектілері, пәні, түрлері, функциялары мен кәсіби қызметінің бағыттары және білім беру бағдарламасының картасы бар.

Білім беру бағдарламасының мақсаты қоршаған ортаны қорғау саласында білімі бар бәсекеге қабілетті мамандарды даярлау экология саласындағы мемлекеттік реттеу жүйесінің негізгі принциптерін түсінуге қабілетті; тіршілік ету ортасының қауіпті факторларының деңгейін бағалау; биосфера шегінде географиялық заңдылықтардың тұрақтылығын сақтауды қамтамасыз ету және экологиялық қауіпсіздікті сақтау.

Бұл мақсаттарды шешу үшін кафедрада 6B05201 – «Экология» білім беру бағдарламасы әзірленді, ол үш циклден тұрады: жалпы білім беру пәндері, базалық пәндер, кәсіби пәндер. Оқу жоспарында құзыреттілікті қалыптастыруды қамтамасыз ететін модульдерді меңгеру реті көрсетіледі. Пәндердің, модульдердің, сынақ бірліктеріндегі практикалардың жалпы еңбек сыйымдылығы, сондай-ақ олардың сағаттағы жалпы және аудиториялық еңбек сыйымдылығы көрсетіледі. Білім беру бағдарламасының жалпы көлемі -240 кредит.

Бағдарламаға экология саласында мамандар дайындау үшін қажетті пәндер енгізілген және кәсіби қызмет дағдыларын қамтамасыз етеді. Айта кету керек, жұмыс беруші кәсіптік қызмет түрлерін және білім беру саласындағы бітірушінің құзыреттілігін анықтауға белсенді қатысады. Ұсыныс ретінде «Биоиндикациялық зерттеулердің әдістері», «Агроландшафтар экологиясы», «Жүйелі экология негіздері», «Бұзылған экожүйелерді қалпына келтіру», «Агроэкология негіздері» пәндерін ұсынуға болады. Білім беру бағдарламасының мазмұндық сапасы күмән тудырмайды. Жоспарға енгізілген пәндер бүгінгі таңда өзекті мәселелердің мәнін ашады.

Жалпы алғанда, әзірленген білім беру бағдарламасы экологтың кәсіби қызметінің міндеттеріне сәйкес келеді, 6B05201 – «Экология» білім беру бағдарламасы бойынша сапалы кәсіби дағдыларды алуды қамтамасыз етеді.

«ТЖН и К Агрофирмасы» ЖШС директоры



Сайкенов Б.Р.

РЕЦЕНЗИЯ

на образовательную программу 6B05201 – «Экология»

Рецензируемая образовательная программа представляет собой систему документов, разработанную на основе в соответствии Закона Республики Казахстан.

Образовательная программа содержит цели, паспорт, перечень квалификаций и должностей, квалификационную характеристику выпускника, сферу, объекты, предмет, виды, функции и направления профессиональной деятельности и карту образовательной программы.

Целью образовательной программы подготовка конкурентоспособных специалистов, обладающих знаниями в области охраны окружающей среды, способных понять основные принципы системы государственного регулирования в области экологии; оценить уровень опасных факторов среды обитания; обеспечить сохранение стабильности географических закономерностей в пределах биосферы и соблюдать экологическую безопасность.

Для решения этих целей на кафедре разработана образовательная программа 6B05201 – «Экология», которая состоит из трех циклов: общеобразовательные дисциплины, базовые дисциплины, профилирующие дисциплины. В учебном плане отображается последовательность освоения модули, обеспечивающих формирование компетенций. Указывается общая трудоемкость дисциплин, модулей, практик в зачетных единицах, а также их общая и аудиторная трудоемкость в часах. Общий объем образовательной программы составляет -240 кредитов.

В программу включены дисциплины, необходимые для подготовки специалистов в области экологии и обеспечивает навыки профессиональной деятельности. Следует отметить, что работодатель принимает активное участие в определении видов профессиональной деятельности и компетентностей выпускника по ОП. В качестве рекомендации можно предложить дисциплины «Экология агроландшафтов», «Биоиндикационные методы исследований», «Восстановление нарушенных экосистем», «Основы агроэкологии», «Основы системной экологии». Качество содержательной составляющей образовательной программе не вызывает сомнений. Включенные в план дисциплины раскрывают сущность актуальных на сегодняшний день проблем.

В целом считаю, что разработанная образовательная программа соответствует задачам профессиональной деятельности эколога, обеспечит получение качественных профессиональных навыков по образовательной программе 6B05201 – «Экология».

Директор ТОО «Агрофирма ТЖН и К»



Сайкенов Б.Р.

РЕЦЕНЗИЯ

на образовательную программу 6B05201- «Экология»

Рецензируемая образовательная программа представляет собой систему документов, разработанную на основе в соответствии Закона Республики Казахстан.

Образовательная программа содержит цели, паспорт, перечень квалификаций и должностей, квалификационную характеристику выпускника, сферу, объекты, предмет, виды, функции и направления профессиональной деятельности и карту образовательной программы.

Цель образовательной программы: Подготовка конкурентоспособных специалистов, владеющих знаниями, в области охраны окружающей среды, способны понимать основные принципы системы государственного регулирования в области экологии: оценивать уровни опасных факторов среды обитания; обеспечивать сохранение устойчивости географических закономерностей в пределах биосферы и сохранять экологическую безопасность.

Для решения этих целей на кафедре разработана образовательная программа 6B05201- «Экология», которая состоит из трех циклов: общеобразовательные дисциплины, базовые дисциплины, профилирующие дисциплины. В учебном плане отображается последовательность освоения модули, обеспечивающих формирование компетенций. Указывается общая трудоемкость дисциплин, модулей, практик в зачетных единицах, а также их общая и аудиторная трудоемкость в часах. Общий объем образовательной программы составляет -240 кредитов.

В программу включены дисциплины, необходимые для подготовки специалистов в области экологии и обеспечивает навыки профессиональной деятельности. Следует отметить, что работодатель принимает активное участие в определении видов профессиональной деятельности и компетентностей выпускника по ОП. В качестве рекомендации можно предложить дисциплины: «Восстановление нарушенных экосистем», «Промышленная экология», «Экологическая безопасность». Качество содержательной составляющей образовательной программе не вызывает сомнений. Включенные в план дисциплины раскрывают сущность актуальных на сегодняшний день проблем.

В целом считаю, что разработанная образовательная программа соответствует задачам профессиональной деятельности эколога, обеспечит получение качественных профессиональных навыков по образовательной программе 6B05201 – «Экология».

Директор
ТОО «Научно-технический центр-Энерго»



К. Кумгамбаев

ҚАЗАҚ ҰЛТТЫҚ АГРАРЛЫҚ ЗЕРТТЕУ УНИВЕРСИТЕТІ
АГРОБИОЛОГИЯ ФАКУЛЬТЕТІ
ТОПЫРАҚТАНУ, АГРОХИМИЯ ЖӘНЕ ЭКОЛОГИЯ КАФЕДРАСЫ

№ 6 ХАТТАМАСЫНАН КӨШІРМЕ

Алматы қаласы

16 қаңтар 2024 жыл

Топырақтану, агрохимия және экология кафедра мәжілісінің отырысы

Төрайымы - Ж.Бакенова
Хатшы - Э. Куандықова

Қатысқандар: 18 адам

КҮН ТӘРТІБІ:

1.2024-2028 оқу жылына арналған 6B05201-«Экология», 2024-2026 оқу жылы 7M05204-«Экология», 2024-2027 оқу жылына арналған 8D05204-«Экология» білім беру бағдарламаларын талқылау, бекіту.

ТЫҢДАЛДЫ:

Кафедра меңгерушісі Ж. Бакенова 2024-2028 оқу жылына арналған 6B05201-«Экология», 2024-2026 оқу жылы 7M05204-«Экология», 2024-2027 оқу жылына арналған 8D05204-«Экология» білім беру бағдарламалары туралы талқылады.

СӨЗ СӨЙЛЕГЕНДЕР:

Профессор Махамедова Б.Ж. кафедрада 2024-2028 оқу жылына білім беру бағдарламасы профессор-оқытушылар және жұмыс берушілермен қоса дайындалды. Білім беру бағдарламасы 3- тілде жасалынды және білім алушыларға, қазіргі заман талабына сай академиялық дәрежесінде білім беруге бағытталған білім беру бағдарламасы.

СӨЗ СӨЙЛЕГЕНДЕР:

Жұмыс берушілер: Сайкенов Б. (ЖШС «ТЖН и К Агрофирмасы») бағдарламаға экология саласында мамандар дайындау үшін қажетті пәндер енгізілген және кәсіби қызмет дағдыларын қамтамасыз етеді. Айта кету керек, жұмыс беруші кәсіптік қызмет түрлерін және білім беру саласындағы бітірушінің құзыреттілігін анықтауға белсенді қатысады. Ұсыныс ретінде «Экологиялық қауіпсіздік», Бұзылған экожүйелерді қалпына келтіру, «Агроландшафтар экологиясы» пәндерін ұсынуға болады.

СӨЗ СӨЙЛЕГЕНДЕР:

PhD, аға оқытушы Э. Куандықова 2024-2026 оқу жылы 7M05204-«Экология», 2024-2027 оқу жылына арналған 8D05204-«Экология» білім беру бағдарламаларында академиялық кредиттерінде өзгертулер енгізілгені туралы атап өтті. Білім беру бағдарламалары заман талабына сай жасалынып жатқандығы және жұмыс берушілердің ұсыныстары ескерілгенін айтты.

СӨЗ СӨЙЛЕГЕНДЕР:

Кафедра меңгерушісі Ж. Бакенова 2024-2028 оқу жылына арналған 6B05201-«Экология», 2024-2026 оқу жылы 7M05204-«Экология», 2024-2027 оқу жылына

арналған 8D05204-«Экология» білім беру бағдарламалары кафедра отырысында қарастырылып, бекітуге ұсынылды. Кафедра профессор-оқытушылары бірауыздан қолдады.

ҚАУЛЫ ЕТТІ:

2024-2028 оқу жылына арналған 6B05201-«Экология», 2024-2026 оқу жылы 7M05204-«Экология», 2024-2027 оқу жылына арналған 8D05204-«Экология» білім беру бағдарламалары мақұлданып, «Агробиология» факультетінің Академиялық комитетіне ұсынылсын.

Төрайымы:



Ж. Бакенова

Хатшы:



Э. Куандыкова

ҚАЗАҚ ҰЛТТЫҚ АГРАРЛЫҚ ЗЕРТТЕУ УНИВЕРСИТЕТІ

Коммерциялық емес акционерлік қоғамы

«Агробиология» факультетінің

Академиялық комитеті мәжілісінің

№ 6 ХАТТАМАСЫНАН КӨШІРМЕ

Алматы қаласы

30 қаңтар 2024 жыл

ҚАТЫСҚАНДАР:

Төрайымы - Г. Баядилова

Хатшы - А. Ешенгалиева

Қатысқандар: 9 адам

Е. Жанбырбаев

М. Есеналиева

Ж. Бакенова

К. Караева

Ж. Сагидолдина

Э. Куандыкова

Г. Байсеитова

КҮН ТӘРТІБІ:

1. «Агробиология» факультетінің 2024-2028 оқу жылына арналған білім беру бағдарламаларын талқылау, бекіту

ТЫҢДАЛДЫ:

Факультеттің Академиялық комитетінің төрайымы Г. Баядилова және Академиялық комитеттің мүшелері, 2024-2028 оқу жылына арналған 6B05201-«Экология», 2024-2026 оқу жылы 7M05204-«Экология», 2024-2027 оқу жылына арналған 8D05204-«Экология» білім беру бағдарламаларын талқылау.

СӨЗ СӨЙЛЕГЕНДЕР:

Факультеттің Академиялық комитетінің төрайымы Г. Баядилова, сөз кезегін Академиялық комитеті отырысының мүшесі Э. Куандыковаға берді.

Академиялық комитет мүшесі Э. Куандыкова өз сөзінде 2024-2028 оқу жылына арналған 6B05201-«Экология», 2024-2026 оқу жылы 7M05204-«Экология», 2024-2027 оқу жылына арналған 8D05204-«Экология» білім беру бағдарламалары кафедра қаралып, жұмыс берушілермен бірігіп дайындалғаны туралы атап өтті. Білім беру бағдарламалары қазіргі заман талабына сай академиялық дәрежесінде білім беруге бағытталған пәндермен толықтырылған.

Білім беру бағдарламасына МЖМББС сай ЖБП міндетті пәндер компоненттеріне өзгерістер жасалынып, БП, КП циклінің таңдау пәндеріне заман талабына байланысты толықтырулар жасалынды. Жаңа оқу бағдарламасына сай кейбір пәндер жаңартылды. Аталған оқу бағдарламалары жұмыс берушілермен келісілген.

Қорыта келгенде 6B05201-«Экология», 7M05204-«Экология», 8D05204-«Экология» білім беру бағдарламалары білім алушыларды сапалы дайындауға

бағытталған. Білім беру бағдарламаларын жан-жақты қаралып енгізілген және кафедра отырысында қорытындыланған.

ҚАУЛЫ ЕТТІ:

2024-2028 оқу жылына арналған 6B05201-«Экология», 2024-2026 оқу жылы 7M05204-«Экология», 2024-2027 оқу жылына арналған 8D05204-«Экология» білім беру бағдарламалары факультеттің Академиялық комитеті комиссиясының ұйғарымымен бір ауыздан бекітілсін.

Дайындалған білім беру бағдарламасы Университеттің оқу-әдістемелік Кеңесінде қарастыру үшін «Агробиология» факультетінің Кеңесіне жіберілсін.

Төрайымы:



Г. Баядилова

Хатшы:



А. Ешенгалиева