

MINISTRY OF AGRICULTURE OF THE REPUBLIC OF KAZAKHSTAN
S. SEIFULLIN KAZAKH AGROTECHNICAL UNIVERSITY

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S.Seifullin Kazakh AgroTechnical
University


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**CATALOG OF UNIVERSITY AND ELECTIVE DISCIPLINES
FOR TRAINING DIRECTION
B051 Environment**

Nur - Sultan, 2022

The catalog of university and elective disciplines for training direction B051 "Environment" - Nur-Sultan, 2022. - 24 p.

This catalog contains the list and content, post- and prerequisites, the volume of loans of disciplines of the university and elective components offered by the university for mastering bachelor's educational programs for the direction of preparation B051 "Environment" and is intended for students studying on the credit system.

Explanatory note

Dear students! Under the credit system of education, the obligatory element of the educational complex of the educational program is the catalog of university and elective disciplines (CUED) in the direction of training. CUED is a list of disciplines included in the university component and the component for the choice of educational programs in the framework of the B051 “Environment” training area.

The catalog of disciplines is used by students in the preparation of an individual curriculum developed by the student personally under the guidance of an adviser, taking into account the individual abilities of the student, the prospects for its growth, the needs of the labor market and production.

The catalog offers disciplines that allow students to form their educational path in accordance with the educational program as part of the training direction.

In order to form his educational trajectory, the student must master all the disciplines of the compulsory and university components in accordance with the educational program, and also select several disciplines of choice for study from the catalog.

The catalog of disciplines of the university component, unified for the direction of preparation
B051 "Environment"

№	Name of EP	Discipline cycle	Name of the discipline	Number of loans	Trimester	Summary of discipline (topic names)	Learning outcomes of discipline	Prerequisites	Post requisites
Бакалавриат									
1.	«Agroecology»	BD	Ecological aspects of natural science	5	3,4	A systematic approach to the study of biological, chemical, physical ecology. Objects of the material world and fundamental interactions. Science and its methodology. The origin of scientific knowledge: a materialistic and idealistic worldview. He studies the basic principles of the evolution of life. Human evolution: skilled person, upright person, intelligent person, modern person. Biological patterns and their functioning and sustainable development. Types of terrestrial and aquatic ecosystems. Chemical ecology: the dual role of the chemical industry in the nature – production system. Chemical ecology and environmental problems. Chemical ecology of the atmosphere, hydrosphere, lithosphere. Biogeochemical cycles of the most important elements. Chemistry of pollutants in the environment and methods for their separation, purification and control.	Know: to assess the possible changes in nature or their consequences from the standpoint of the need to ensure and maintain a healthy ecological environment within the boundaries of a particular geographical system. To analyze environmental objects and methods of protecting the environment from pollution. Able to argue the introduction of new technological processes in accordance with environmental safety requirements. Recognize the social significance of their future profession, have a high motivation to carry out professional activities. Master: analyze natural science methods in human areas of activity, problems using theoretical and practical knowledge; Demonstrate knowledge and understanding in the field of study, including elements of the most advanced knowledge in the field	School Biology Course	Landscape ecology and ecosystems
2.		BD	General chemistry	5	5	The chemical basis for the conversion of pollutants in the environment. Introduction to environmental chemistry. The relationship of environmental chemistry with other scientific disciplines. The chemical basis of environmental interactions. Chemical environmental factor. Ecological properties of chemical elements and their compounds. General characteristics of pollutants. The concept of maximum permissible concentration (MPC). Characterization of s-elements, p-elements, d-elements and f-elements. Heavy metals are toxicants in the environment. Release into the environment, forms of existence, transformation in aquatic ecosystems. Toxic effect on living organisms. Major organic pollutants. General characteristics. The relationship of the toxic properties of organic substances and their composition and structure. Hydrocarbons and halogen derivatives. Amines. Nitro compounds. Persistent organic pollutants. Sources of organic pollutants in the environment. Toxic effect. Ecological chemistry and atmospheric problems. Chemistry of the upper atmosphere and	Have an idea of the volume of emissions of pollutants of anthropogenic origin; predicting possible changes in the biosphere under the influence of human activities. To know and understand the content of chemical elements in nature; basic characteristics of the atmosphere, hydrosphere and lithosphere; the spread of chemical pollutants in the biosphere; the effect of chemical pollutants on all living things. To be able to distinguish between natural and man-made sources of chemical pollution; evaluate the effect of chemical pollutants on the biosphere and its components; to take and prepare samples for analysis to perform quantitative chemical analysis in natural objects. To	School chemistry, General ecology	Ecological Monitoring, Ecological, Hygiene and Rationing and Expertise in Agriculture

						<p>the problems of their pollution. Chemistry of the lower atmosphere and its pollution. Ecological chemistry and hydrosphere problems. The chemical composition of natural waters.</p> <p>Problems of water treatment and water treatment. Chemical pollution of natural waters.</p> <p>The main classes of pollutants. Ecological chemistry and problems of the lithosphere. Chemistry of soil composition. The main soil pollutants. Pollution analysis methods and environmental monitoring.</p> <p>Modern analytical methods for determining elements in environmental objects. Environmental monitoring. Priority controlled environmental parameters. Ecological monitoring of the state of the environment. The concept and structure of the monitoring system, the principles of its functioning. The main tasks of environmental and analytical monitoring.</p>	<p>gain practical skills in the selection and preparation of samples for analysis; performing quantitative chemical analysis in natural objects.</p>		
3.		BD	Livestock processing technology	5	5	<p>Livestock production technology. Horse breeding production technology. Camel production technology. Technology of production of sheep and goats. Pig production technology. Technology for the production of poultry products. Technology for the production of beekeeping, fish farming and rabbit farming.</p>	<p>To know and understand the biological characteristics and economically useful traits of agricultural animals; breeding and feeding methods for agricultural animals; technological parameters of the content of agricultural animals; methods of keeping and rational feeding of agricultural animals; reproduction methods of agricultural animals; be able to draw up a plan for breeding and breeding work with agricultural animals; own methods of selection and selection of agricultural animals; compile reports on livestock, products and feed accounting; analyze the milk and meat productivity of the herd; plan the production of milk and beef; own technological methods for the production of milk, meat, wool, eggs. To own technologies for the production of milk and dairy products, meat and meat products and eggs and egg products.</p>	General Ecology	Methods of processing and recycling agricultural waste
4.		BD	Sustainability and Agroecosystem Management	5	7	<p>Own methods of analyzing ecological processes in agroecosystems, setting specific tasks and priorities for protecting the environment and society, knowledge on the laws of development of the biosphere and the conditions of anthropogenic and technogenic impact on nature and the agricultural sector;</p> <p>To be able to analyze the processes occurring in the components of the biosphere, agricultural sector and use the methods of detection and quantification of the main pollutants in the environment, to develop environmental measures for sustainable development and</p>	<p>Sustainable development and management of agroecosystems, the nature and specificity of methods for analysis, assessment and prediction of pollution in the agricultural sector. Features of the organization of monitoring of different hierarchical levels. Methodology for organizing the collection of environmental information for a comprehensive</p>	General Ecology	Pregraduation practice

						management of agroecosystems.	assessment of pollution in the agricultural sector. Determination of the degree of anthropogenic and technogenic impact on the environment. Determining the quality of the natural environment at the local, regional and global levels. Interpretation of information data using modern information systems for predicting environmental pollution with the goal of sustainable development and management of agroecosystems, rational nature management and environmental safety.		
5.		BD	Geocology	5	9	Theoretical and methodological foundations of geocology, environmental properties of the environment and anthropogenesis of the region; ecosystem productivity and dynamics, degree of ecological sustainability of ecosystems. Geoecological zoning, patterns of geoecological differentiation of the region. Achieving high quality information on geo-ecological systems. The final stages of environmental education, knowledge of the geoecological state and patterns of spatial differentiation of natural and technical geosystems, assessment of the prospects for the development of regional geoecological situations	As a result of studying the discipline, the student should know: the basics of geocology, the features of regional geocology, the spatial organization of natural and technical geosystems, the possibility of human adaptation to the conditions of existence in destabilized geosystems, the geoecological principles of design. To be able to: assess the geo-ecological situation, use the basic methods of geo-ecological assessments of the state parameters of natural-technical geosystems, acquire practical skills to solve regional geo-ecological problems in the socio-economic, political and legal fields.	General ecology, General chemistry	Environmental monitoring, Ecological, hygienic regulation and expertise in agriculture
6.		BD	Ecological safety of agricultural products	5	8	Various pollutants of environmental objects (water, air and soil) and their impact on agricultural products. Features of the organization of environmental monitoring of different hierarchical levels. Methodology for organizing the collection of information for a comprehensive assessment of agricultural pollution. Assessment of the degree of anthropogenic impact on agricultural territories. Interpretation of information data and organization of forecasting pollution of agricultural land territories to ensure food and environmental safety.	To study the theoretical aspects and identify the nature of the pollution of agricultural land located near the agricultural sector. Own methods of analysis of the assessment of environmental objects (water, air, soil) of agricultural land located near the agricultural sector. To be able to analyze the processes occurring in the components of the biosphere. Use	General ecology, General chemistry	Ecological monitoring, Ecological, Hygienic Ration

							methods for the detection and quantification of major agricultural pollutants. To be able to practically apply knowledge on agroecological monitoring to assess the quality of the natural environment to predict changes in environmental sustainability to anthropogenic and technogenic effects..		ing and Expertise in Agriculture
7.		BD	Integrated water resources management	5	8	The composition and structure of the hydrosphere. The value of the hydrosphere. The value of the oceans. Fresh water distribution. The formation of the chemical composition of natural waters. The state of water use by sectors of the economy in the world and Kazakhstan. Problems of anthropogenic pollution of the hydrosphere. Use and protection of water resources of the Republic of Kazakhstan. Prospects for sustainable water supply. Water quality and water uses. Classification of water treatment methods. The legal basis for the use of water resources of the Republic of Kazakhstan. Tasks and principles of water legislation of the Republic of Kazakhstan.	<p>Know: the importance and functions of the hydrosphere, the distribution of fresh water on Earth, the chemical composition and structure of natural waters, the problems and sources of anthropogenic pollution of water resources, international water quality standards, the principles of environmental monitoring of surface waters in the Republic of Kazakhstan, methods of treating natural and waste waters and types of treatment facilities, the legislative framework for the protection and rational use of water resources, standards for the quality of natural waters, effective methods for treating industrial and waste water to comply with established of established environmental standards.</p> <p>To be able to: draw conclusions about the state and methods of protecting water resources, operate on acquired knowledge and apply them in the process of professional activity, determine substances that pollute natural waters.</p> <p>Own: methods for determining the composition and properties of natural and wastewater, rules for standardizing water quality and water consumption</p>	General Ecology, Green Economy and Climate Change	Organic farming, Economy of nature using
8.		BD	Ecological methods of analysis in the agricultural sector	5	9	Introduction to environmental analysis methods. Methods of controlling the degree of environmental pollution. Methods for determining the quality of agricultural and industrial products. Modern physicochemical methods. General characteristics of environmental analysis methods in the agricultural sector. Optical analysis methods. Absorption spectroscopy. Refractometric and polarimetric methods of analysis. Emission spectral analysis. Conductometry. Potentiometry Coulometry Polarography. Chromatography.	<p>To have an idea of each the features of each method, the intricacies of the operation of modern devices, for which it is necessary to know the device structure and the principles of their operation.</p> <p>To know and understand the basics of qualitative and quantitative analysis, natural and human impacts on the environment of the agricultural sector. To be able to conduct laboratory experiments with environmental objects, for which you</p>	General ecology, General chemistry	Environmental monitoring, Ecological, hygienic rationing and

							need to master the instrumental methods of analysis. To acquire practical skills in the preparation of solutions of acids, salts and alkalis, the selection and preparation of samples for analysis; perform quantitative chemical analysis.		expert ise in agricu lture
9.		BD	GIS technology in agriculture	5	10	Introduction to GIS technology. GIS and agriculture. The basics of cartography. Maps and agroecology. Volumes and variety of cartographic products. Large-scale and small-scale maps. Thematic cartographic materials. Remote shooting. Modern directions of ecological and geographical research for the agricultural sector. Agroecotourism and cartographic training.	As a result of studying the discipline, students should know the features and specifics of the main cartographic projections and distortions characteristic of small-scale ecological and geographical maps. Features of the creation and use of environmental maps. To be able to apply methods of studying and using ecological-geographical maps. Perform basic cartometric and graphical work on cards. Build and analyze plans, profiles, cartographic grids and maps using various construction methods. Own methods of processing, analysis and synthesis of field and laboratory environmental information and use theoretical knowledge in practice.	Gener al ecolog y	Ecolo gical, hygien ic ration ing and expert ise in agricu lture, Metho ds of proces sing and recycli ng agricu ltural waste
10.		BD	Protection and rational use in biological resources of rural areas	5	8	The phenomenon of biodiversity, species richness and factors of its formation. The concept of biodiversity and its interpretation. Modern views on biological diversity. Convention on Biological Diversity. Modern areas of research on the assessment, conservation of biological diversity. The concept of a systematic approach to the study of the organization of living. Levels of biological systems: species - population - ecosystem - biome. The idea of the interconnectedness and interaction of living systems at different levels. Genetic diversity. View as a universal biodiversity unit. Species diversity. Ecosystem diversity. Aspects of biodiversity conservation. Tasks in the field of biodiversity conservation. The concept of agrobiodiversity. Cartagena Protocol on Biosafety. Nagoya Protocol. Man-made biodiversity. Ex situ and in situ conservation. Centers of origin of crops. Food Security and Agrobiodiversity of Kazakhstan. Sustainable agrobiodiversity under climate change. Strengthening human and technical capacity to preserve valuable agrobiodiversity. Monitoring as a system for obtaining information on the state of biodiversity in all its manifestations in order to assess its change. Biodiversity monitoring as part of environmental monitoring. Key Trends in	As a result, the student must: know: - about the terminological apparatus and the basic concepts of discipline; - theoretical and methodological foundations of resource science; - main groups, types of agricultural resources (economically useful plants, mushrooms, animals); - synanthropic plant bioresources of Kazakhstan; - measures for the conservation and rational use of agricultural resources of Kazakhstan; be able to: - correctly apply the basic terms and concepts; assess the status and dynamics of biodiversity, predict changes in diversity under the influence of natural and man-made factors; - determine and justify operating standards	Gener al ecolog y, Ecolo gy of plants, animal s and micro organi sms	Econo my of nature using, Enviro nment al Laws and Docu mentat ion in Agric ulture

						Biodiversity.	for various groups of plant and animal resources, measures for environmental optimization of sustainable use of natural resources; - apply modern experimental methods of working with agrobiological objects in the field and laboratory conditions. own: - independently determine the types of agricultural resources of the area; - carry out the counting of plants and animals of agricultural significance. - methods of analysis and assessment of biodiversity at different levels of the organization of the biosphere; methods for monitoring and protecting biodiversity; own methods of search and exchange of information in global and local computer networks.		
11.		BD	Ecology of plants, animals and microorganisms	7	6	The history of the study of ecologists of plants, animals and microorganisms. The main methods for studying the ecology of plants, animals and microorganisms. Ecological classifications of organisms. Life form of plants, animals and microorganisms. General issues of the stability of organisms. Some patterns of environmental factors. The body's defensive reaction against stressors. Light as an environmental factor. Lighting mode. Quantitative and qualitative characteristics of lighting accepted by organisms. Ecological groups of plants in relation to light. Anatomical and morphological characteristics of plants in relation to light. The influence of light on the structure, growth, development, photosynthesis, transpiration of plants. Ecological groups of animals in relation to light. Photoperiodism and its environmental significance. Heat as an environmental factor. The temperature regime of the habitat. The effect of temperature on the vital functions (growth, development, photosynthesis, respiration, transpiration) of plants. Ecological plant groups according to Ellenberg. The effect of temperature on the livelihoods of animals. Ecological groups of animals in relation to temperature. Poikilothermic and homeothermic organisms. Adaptation of plants, animals and microorganisms to extreme temperatures. The rules of K. Bergman and D. Allen. Water as an environmental factor. The main properties of the aquatic environment. Morphological, anatomical and physiological adaptation of plants to water deficiency. Ecological groups of plants in relation to humidity. The environmental significance of transpiration. Factors affecting transpiration. Ecological groups, adaptive features of aquatic	The student must know: - the place and role of the ecology of plants, animals and microorganisms, as a science; - resistance to exposure to plants, animals and microorganisms to the effects of adverse factors; - temperature, light, air, water, soil, biotic and anthropogenic factors as an environmental factor affecting plants, animals and microorganisms; - Features and patterns of distribution of plants, animals and microorganisms; - the use and diversity of resources of the plant, animal world and microorganisms. be able to: - understand the mechanisms of the influence of environmental factors on plants, animals and microorganisms; - understand the processes of interaction of organisms with each other; - determine the necessary resources and conditions for the comfortable functioning of living organisms; - collect, process and interpret using modern technologies the data necessary for understanding the discipline being studied.	General ecology	Ecological biogeography

						<p>organisms. Air as an environmental factor. Environmental values of oxygen and carbon dioxide. The effect of pollution on plants. Assessment of pollution by vegetation. Anemophilia, anemochoria, draining by the wind, mechanical injuries. Methods of movement of animals in the air and in the soil. Soil as an environmental factor. The main properties and ecological significance of the soil. Ecological groups of plants in relation to soil pH. Salinization of the soil. Psammophytes and lithophytes. Methods of movement of soil organisms. The spread of microorganisms. The importance of microorganisms in ecosystems. Biological rhythms of organisms. Inner and outer loops. Daily, seasonal rhythms and rhythms of ebb and flow. Biotic environmental factors. The relationship of organisms in the biocenosis. Ecological niche. Gause principle. Ecological succession. Anthropogenic environmental factors. Anthropogenic habitat change. Features of agrocenoses and ruderal communities.</p>	<p>own: - methods of searching for information in the field of ecology of plants, animals and microorganisms; - skills of a meaningful discussion of the problems that are reflected in this discipline; - the skills of students to form ideas about the processes of interaction of organisms with each other and with the environment; - skills of using theoretical and practical knowledge on the ecology of plants, animals and microorganisms in professional activities.</p>		
12.		PD	Rational nature management in agriculture	5	8	<p>Types of nature management. Resource, sectoral and territorial use of natural resources, the basics of resource use of natural resources: the natural resource and ecological-economic potential of the Earth. Principles of environmental management. The natural environment of human society and its natural potential. The concept of natural capital as a set of natural values, its relative limitations. Natural limitations of development strategies. Global environmental problems in the socio-economic aspect. Criteria for assessing the state and sustainability of natural and natural-technogenic systems. The role of natural factors in the formation of national wealth. Natural resource potential of the territory and its use. Specially protected natural areas. Resources: climatic, mineral, water, land, forest, biological. Land resources, features of the use of land for various purposes, agricultural land. Water resources and water use. Prospects for rational water use. State system for monitoring natural resources, cadastres. Methodology for monitoring and compiling a cadastre of land resources. State monitoring of water bodies. Sectors of the economy as nature users. Features of nature management in the sectors of mining and industrial, productive nature management and land use. Features of agricultural nature management, water consumption of crops. Features of commercial, recreational, urban nature management. Features of environmental management in the transport industry. Environmental reporting in enterprises. Ecological passport. Classification of environmental waste. Criteria for classifying waste as hazard class. The scale of waste generation and accumulation. General concept of the economic mechanism of environmental management and its tools. Economic instruments for environmental protection and nature management. The problem of the correlation of economic and policy instruments in environmental management and its solution</p>	<p>As a result, the student must: know: - provisions of the concept of sustainable environmental and economic development; problems associated with changes in the state of the environment and using the natural resource potential of the territory; - nature management in various sectors of the economy and related environmental problems; the composition of environmental waste and methods for their disposal; methods of wastewater treatment and protection of atmospheric air from pollution, used abroad and in our country, be able to: - freely use scientific and reference literature; - use regulatory literature in the field of environmental management. - calculate the concentration of pollutants at the border of the sanitary protection zone of the enterprise and the volume of maximum permissible emissions; own: - skills of compiling an environmental passport of the enterprise</p>	General ecology, Ecology of plants, animals and microorganisms	Economy of nature using, Environmental Laws and Documentation in Agriculture

						in the countries of the world. Eco-restructuring and environmental modernization of production. International relations in the field of environmental management and environmental protection. The participation of countries in global environmental programs.			
13.		PD	Fundamentals of agribusiness and entrepreneurship	5	11	<p>Organizational and economic foundations of the peasant farm or FH farm, joint-stock company, cooperatives, LLP. Organization and regulation of labor in the enterprise. Organization of remuneration. Organization of production in the main sectors of crop production. Organization of the production and use of feed. Organization of cattle breeding. Organization of the machine-tractor fleet. Organization of processing agricultural products. Organization of product sales. State support for the agro-industrial complex.</p> <p>Entrepreneurship: concept, essence, basic types and organizational forms. Resource potential of an organization (firm). Rationing and remuneration. Costs and financial performance of the organization (company). Economic efficiency of the organization (company) and entrepreneurial projects. Marketing and organization management. State support for entrepreneurship and its infrastructure. Business Financing. Business planning in the system of entrepreneurial activity. Risks in entrepreneurial activity. Organization of business transactions. Responsibility of business entities. Risks in entrepreneurial activity. Entrepreneurial secret and ways to protect it. Termination of business.</p>	<p>On the basics of agribusiness, have an idea: the production technology of the main types of agricultural products; Means of mechanization of the main technological processes; methods of economic research, analysis approaches; regulatory framework for planning; supply and demand; competitiveness; financial security of the enterprise.</p> <p>know: the theoretical foundations and patterns of organization of production and enterprise management, the principles and methods of rational organization of production and management processes in the enterprise;</p> <p>be able to: carry out the design of the organization and production management system and organize the work of production teams;</p> <p>have skills: analysis of the state of development of agriculture, industries and enterprises; formulate conclusions and predict the development prospects of business entities in a market environment; identify socially significant problems in the development of agriculture; economic feasibility of effective projects.</p> <p>The purpose of studying the discipline "Economics of Entrepreneurship" is the formation of a complex of knowledge, skills, competencies required by a modern entrepreneur.</p> <p>As a result of studying the discipline, the student must:</p> <p>have an idea: about the theoretical and methodological foundations of entrepreneurship; on the process of organizing entrepreneurial activities and evaluating its effectiveness; on state mechanisms for regulating and supporting the development of entrepreneurship.</p> <p>know: the mechanism of functioning</p>	General ecology	Pre-graduate practice

							<p>of organizations (firms) of various legal forms; culture of contractual relations, entrepreneurial code of ethics; psychology of entrepreneurship, elements of business communication; reasons, factors and conditions for termination of business.</p> <p>be able to: organize a business and manage it; make decisions in the process of functioning of entrepreneurial activity, conclude agreements, make decisions on the organization and functioning of entrepreneurial activity; calculate the level of risk, assess the business activities,</p> <p>own: skills in applying various techniques and tools in a business management system; personnel assessment methods; risk management methods; methods for assessing the effectiveness of entrepreneurial activity.</p>		
14.		PD	Economy of nature using	5	11	<p>Introduction to environmental economics. Natural science and economic foundations of environmental economics. General characteristics of the natural resource potential of the Republic of Kazakhstan. The main environmental problems of the Republic of Kazakhstan. The content of existing economic mechanisms for environmental management. Problems and prospects of development of the environmental management system of the Republic of Kazakhstan. Environmental protection in the Republic of Kazakhstan. Natural resource potential of the Republic of Kazakhstan. Fuel and energy and mineral resources of the Republic of Kazakhstan. Effective ways of rational use of natural conditions and resources. Environmental protection and economics. Consideration of environmental, socio-economic consequences of the interaction of nature and society.</p>	<p>Have an idea of the negative effects caused by industrial enterprises. Ecologization of technological industrial enterprises, the use of knowledge gained in their activities. Assess the environmental status of industrial sites. Use the basic methods of environmental assessments of the state parameters of natural-technical systems. Carry out calculations and predict changes in environmental sustainability to anthropogenic impact. Ecology as a theoretical basis for nature conservation and rational nature management. To be able to analyze the processes occurring in the components of the biosphere; identify, identify and anticipate the negative impact caused by industrial enterprises; greening technological industrial enterprises.</p> <p>Fundamentals of nature management and environmental protection, methods of economic assessment of natural resources, basic concepts and categories of environmental economics. Comprehensive economic assessment of natural resources, taking into account environmental protection. Effective management of natural resources and the use of income from the</p>	General ecology	Methods of processing and recycling agricultural waste, Pre-graduation practice

							primary sector of the Republic of Kazakhstan. The use of an integrated approach in the study of economic problems of environmental management.		
15.	«Natural resource use»	BD	Ecological aspects of natural science	6	3,4	A systematic approach to the study of biological, chemical, physical ecology. Objects of the material world and fundamental interactions. Science and its methodology. The origin of scientific knowledge: a materialistic and idealistic worldview. He studies the basic principles of the evolution of life. Human evolution: skilled person, upright person, intelligent person, modern person. Biological patterns and their functioning and sustainable development. Types of terrestrial and aquatic ecosystems. Chemical ecology: the dual role of the chemical industry in the nature – production system. Chemical ecology and environmental problems. Chemical ecology of the atmosphere, hydrosphere, lithosphere. Biogeochemical cycles of the most important elements. Chemistry of pollutants in the environment and methods for their separation, purification and control.	<ul style="list-style-type: none"> - Know: to assess the possible changes in nature or their consequences from the standpoint of the need to ensure and maintain a healthy ecological environment within the boundaries of a particular geographical system. To analyze environmental objects and methods of protecting the environment from pollution. -Able to argue the introduction of new technological processes in accordance with environmental safety requirements. Recognize the social significance of their future profession, have a high motivation to carry out professional activities. -Master: analyze natural science methods in human areas of activity, problems using theoretical and practical knowledge; - Demonstrate knowledge and understanding in the field of study, including elements of the most advanced knowledge in the field 	School Biology Course	Landscape ecology and ecosystems
16.		BD	Teaching about environment	5	5	Environment as a human habitat and industrial activity. Concept of geographical space. Main features of the Earth's surface. Biosphere and geographical envelope. Cycle of substances and energy in nature. Rhythmic phenomena in nature. Zonality on Earth as a planetary regularity. Landscape zones of the Earth and Kazakhstan. The zoning of the oceans. Forms of interaction between society and the natural environment Natural resources and the problem of their protection Global environmental problems of mankind Forecasting the state of the environment Sustainable development of mankind at the present stage The doctrine of the noosphere Actual problems of global ecology.	<ul style="list-style-type: none"> - The formation of a holistic natural-science outlook on the world around us, the assimilation of the idea of the unity of the natural-science process of cognition, the development of their skill in a broad philosophical formulation of specific natural-science problems. - Know and understand the basic ideas that make up the basis of modern science, common problems that are borderline and discussed both by experts in the field of ecology and in the field of science, the history of the development of natural science concepts, the methodological basis of science and the main problems of specific branches of science. - To be able to navigate in the modern array of natural science knowledge 	School Biology Course	Ecosystem and Landscape Ecology

							and independently identify the main worldview, methodological and social problems with which he may come into contact in the process of practical activity.		
17.		BD	Environmental chemistry	5	4	The chemical basis for the conversion of pollutants in the environment. Introduction to environmental chemistry. The relationship of environmental chemistry with other scientific disciplines. The chemical basis of environmental interactions. Chemical environmental factor. Ecological properties of chemical elements and their compounds. General characteristics of pollutants. The concept of maximum permissible concentration (MPC). Characterization of s-elements, p-elements, d-elements and f-elements. Heavy metals are toxicants in the environment. Release into the environment, forms of existence, transformation in aquatic ecosystems. Toxic effect on living organisms. Major organic pollutants. General characteristics. The relationship of the toxic properties of organic substances and their composition and structure. Hydrocarbons and halogen derivatives. Amines. Nitro compounds. Persistent organic pollutants. Sources of organic pollutants in the environment. Toxic effect. Ecological chemistry and atmospheric problems. Chemistry of the upper atmosphere and the problems of their pollution. Chemistry of the lower atmosphere and its pollution. Ecological chemistry and hydrosphere problems. The chemical composition of natural waters. Problems of water treatment and water treatment. Chemical pollution of natural waters. The main classes of pollutants. Ecological chemistry and problems of the lithosphere. Chemistry of soil composition. The main soil pollutants. Pollution analysis methods and environmental monitoring. Modern analytical methods for determining elements in environmental objects. Environmental monitoring. Priority controlled environmental parameters. Ecological monitoring of the state of the environment. The concept and structure of the monitoring system, the principles of its functioning. The main tasks of environmental and analytical monitoring.	<ul style="list-style-type: none"> - Have an idea of the volume of emissions of pollutants of anthropogenic origin; predicting possible changes in the biosphere under the influence of human activities. - Know and understand the content of chemical elements in nature; basic characteristics of the atmosphere, hydrosphere and lithosphere; the spread of chemical pollutants in the biosphere; the effect of chemical pollutants on all living things. - Be able to distinguish between natural and man-made sources of chemical pollution; evaluate the effect of chemical pollutants on the biosphere and its components; to take and prepare samples for analysis to perform quantitative chemical analysis in natural objects. - To acquire practical skills in the selection and preparation of samples for analysis; performing quantitative chemical analysis in natural objects. 	General ecology	Protection of atmospheric air, Water resources protection, Runoff, Erosion and Restoration
18.		BD	Study about environmental resource using	5	7	Fundamentals of Resource Management. Basic concepts, object and subject. Resources and their classification. Natural resource potential and its assessment. Environmental pollution and the threat of the destruction of ecological ties in nature. Inventories of natural resources. Theoretical foundations of environmental management. Soil and land resources. Water resources. Biological resources. Energy and mineral resources. Forest resources. Labor resources as a structural element of resource conservation. Rational use of natural resources. Modern effective technologies for the use of natural resources. Legal basis of nature management and resource conservation.	<p>As a result of studying the discipline, the student must:</p> <p>Know:</p> <ul style="list-style-type: none"> - The main types of natural resources and their classification; - The current state and distribution of natural raw materials and mineral resources on the globe, the territory of the Republic of Kazakhstan and other countries; - the resource supply of the countries of the world, the place of Kazakhstan in the distribution of natural resources on Earth; 	Bioindication	Environmental mapping and GIS

							<ul style="list-style-type: none"> - The main problems of using natural resources and ways to solve them. Be able to: <ul style="list-style-type: none"> - analyze the state of natural resource potential in the world and Kazakhstan; - on the basis of the analysis of literary sources and a set of geographical maps to give a comprehensive assessment of the mineral resource base of the region, region, country and the world; - give an assessment of the environmental situation, analyze environmental problems; - evaluate the most important types of natural resources. Own: <ul style="list-style-type: none"> - a holistic view of the types of natural resources, methods for their assessment, location on the territory of the Republic of Kazakhstan. 		
19.		BD	Protection of atmospheric air	5	8	<p>The composition and structure of the atmosphere. Sources of disturbance and air pollution. Types of pollutants. Legislative and regulatory framework of the Republic of Kazakhstan in the field of atmospheric air protection. Classification of sources of emissions of pollutants into the atmosphere, the concepts of WPI, SPZ, KOP. Methods of dust and gas collection. The impact of agriculture on the state of atmospheric air. The main sources of pollution (livestock and poultry farms, industrial complexes for the production of meat, energy and heat-producing enterprises, pesticides used in agriculture, warehouses where seeds are treated with pesticides, and fields where pesticides and mineral fertilizers are applied, as well as ginneries) in the field of agriculture .. Carcinogenic and non-carcinogenic priority air pollutants in rural areas. Methods of air quality control. The impact of priority pollutants on living conditions of the rural population.</p>	<ul style="list-style-type: none"> - To have an idea of the types of exposure and sources of exposure to atmospheric air, how to clean dust and gas mixture, how to prevent the negative impact of agricultural emissions on the state of atmospheric air. - Know and understand the main types of pollutant emissions into the atmosphere. - be able to analyze and assess the degree of danger of the impact of agricultural enterprises on atmospheric air by indicators of the harmfulness of pollutants; - to acquire practical skills in determining the composition of emissions of pollutants from agricultural enterprises and measures to reduce them. 	Environmental chemistry	Environment Impact Assessment
20.		BD	Water resources protection	5	8	<p>The composition and structure of the hydrosphere. The value of the oceans. Fresh water distribution. Formation of the chemical composition of natural waters. The state of water use by sectors of the economy in the world and Kazakhstan. Problems of anthropogenic pollution of the hydrosphere. Use and protection of water resources of the Republic of Kazakhstan. Prospects for sustainable water supply. Water quality and water uses. Classification of water treatment methods. The legal basis for the use of water resources of the Republic of Kazakhstan. Tasks and principles of water legislation of the Republic of Kazakhstan.</p>	<ul style="list-style-type: none"> - Know: the significance and functions of the hydrosphere, the distribution of fresh water on Earth, the chemical composition and structure of natural waters, the problems and sources of anthropogenic pollution of water resources, international water quality standards, the principles of environmental monitoring of surface waters in the Republic of Kazakhstan, methods for treating natural 	Environmental chemistry	Environment Impact Assessment

							and waste waters and types treatment facilities, the legislative framework for the protection and rational use of water resources, quality standards of natural waters, effective methods of treating industrial and waste water to comply with the updated environmental regulations - To be able to: draw conclusions about the state and methods of protecting water resources, operate on the acquired knowledge and apply them in the process of professional activity, identify substances that pollute natural waters, - Own: methods for determining the composition and properties of natural and wastewater, the rules for normalizing water quality and water consumption		
21.		BD	Runoff, Erosion and Restoration	5	8	Classification of erosion processes. Physical foundations of soil erosion. Patterns of motion of liquids and gases. The formation of surface water runoff in the catchment. Patterns of formation of runoff of surface water on the slopes. Erosive effect of water flows. Factors of water erosion of soils. Methods of studying soil erosion. Methods of combating water erosion of soils. General and summary indicators of water quality. Assessment of the quality of natural, drinking and industrial waters. Hydrobiological indicators of water in water bodies. Water quality control in drinking water and industrial water supply systems. Environmental and sanitary-hygienic requirements and drinking water standards. Types of pollution of natural and waste waters. Methods for the treatment and removal of contaminants. Monitoring of pre-treatment, after-treatment and disinfection of wastewater, sludge treatment processes. Methods for the extraction of pollutants from wastewater and process control. Mechanical, biological, physico-chemical wastewater treatment facilities. Facilities for the treatment of sewage sludge.	- Know: The theoretical foundations of erosion processes, methods for studying erosion processes, factors in the development of water soil erosion. The main problems and prospects of using effective technologies in the field of natural and waste water treatment. Control of industrial wastewater treatment processes. Hygienic requirements for water quality. Quality standards for drinking water, types of pollutants and methods for their removal; processes of mechanical, biological, physico-chemical wastewater treatment. - Be able to: Assess the erosion hazard of territories. Develop measures to combat water and wind erosion and give recommendations on their use. Classify natural and wastewater. Draw up a water analysis chart, a conclusion on the operation of water treatment facilities. Determine the hydrobiological indicators of water in water bodies. - Possess: Skills for diagnosing soil erosion, assessing the erosion hazard of soil cover, and using methods to combat soil water erosion.	Environmental chemistry	Environmental Impact Assessment
22.		BD	Urban ecology	5	7	The problems of the interaction of cities and nature, the ecology of the air, water, soil environment, ecology of flora and fauna in the conditions of urban ecosystems. Problems of new environmental	- Know: the theoretical issues of urban ecology, the main anthropogenic factors affecting the ecology of the urban	General ecolog	Industrial Ecolo

						trends related to the study of the urban environment: arkology, videoecology, urban planning ecology. Issues of regulation of urban environment pollution and measures to protect atmospheric air, surface and underground waters, soil cover. Environmental problems of cities and ways to solve them for sustainable development. Urban areas. Development of decisions within the framework of urban development and the organization of the territory, aimed at ensuring acceptable hygienic living conditions for the population in cities.	environment; questions of the ecology of the home, the determining factors of the internal environment of the premises, the environmental characteristics of building materials; the main provisions of the concept of sustainable development of the city, issues and environmental problems of urban development in the future; the negative impact of the city on the natural environment, manifested in all geospheres; problems of interaction between cities and nature, ecology of air, water, soil environment, ecology of flora and fauna in urban ecosystems. - Be able to: expound and critically analyze basic information in the field of urban ecology and Natural resource use. Identify the components and conditions of the functional zoning of the city, plan the structure of urban areas; to identify the degree of anthropogenic load on the soil in an urban environment; identify measures to improve and protect soils in urban environments; identify sources of impact on water bodies in urban environments; assess water quality based on environmental safety of water use; have the skills of organizational work to form a team to solve the tasks. - Possess: the skills to study the main components of the urban environment, their relationship, anthropogenic sources of impact on the urban environment, the paths to transition to sustainable urban development.	y	gy, Radio ecology
23.		BD	Nature Conservation Biology	5	7	Bioresources of Kazakhstan and their features. The formation of botanical resource science as a science, history and research methods. UN Convention on Biological Diversity, Objectives. Problems of conservation and rational use of biological resources of Kazakhstan. Synanthropic plants, anthropophytes. Comopolites, endemics and relics. Classification of endemic and relict species. The concept of vicarism. Endemic plants of Kazakhstan. Centers of origin of cultivated plants (according to Vavilov). Differences and features of cultivated plants from wild relatives.	As a result, the student must know: - plant bioresources of Kazakhstan; - Animal bioresources of Kazakhstan; - measures for the Conservation and rational using of bioresources of Kazakhstan; - rare and endangered species of	General ecology	Agriculture and the environment

						<p>Classifications of plant resources (Classifications of Pavlov, Ilyin, Attacks, etc. by energy value, by useful properties, by economic value, by industry principle, etc.). Resources of medicinal, poisonous and industrial plants in Kazakhstan and their use. Food, feed plants of the republic, species, values. Honey plants, essential oil plants of local flora. Zoning of plant resources in Kazakhstan and prospects for their research. Wildlife resources in Kazakhstan and their importance in the economy. Resources of water animals of Kazakhstan (invertebrates, fish). Amphibian and reptile resources in Kazakhstan, methods for their calculation. Resource species of birds and problems of their conservation. Carrying out and methods of counting birds. Resource species of animals of Kazakhstan. Carrying out and methods of counting animals. Red Book of Kazakhstan, categories, value</p>	<p>plants and animals of Kazakhstan. be able to: - determine the lower and higher vascular plants, invertebrate and vertebrate animals of the area; - apply modern experimental methods of working with biological objects in the field and laboratory conditions. own: - independently determine the types of bioresources of local flora and fauna: - to count amphibians, reptiles, birds and mammalian species of the territory; - analysis of data on the current state and in the long term the biological resources of the area</p>		
24.		BD	Conservation and rational use of biological resources	5	6	<p>Bioresources of Kazakhstan and its features. The formation of botanical resource science as a science, history and research methods. UN Convention on Biological Diversity, Objectives. Problems of conservation and rational use of biological resources of Kazakhstan. Synanthropic plants, anthropophytes. Comopolites, endemics and relics. Classification of endemic and relict species. The concept of vicarism. Endemic plants of Kazakhstan. Centers of origin of cultivated plants (according to Vavilov). Differences and features of cultivated plants from wild relatives. Classifications of plant resources (Classifications of Pavlov, Ilyin, Attacks, etc. by energy value, by useful properties, by economic value, by industry principle, etc.). Resources of medicinal, poisonous and industrial plants in Kazakhstan and their use. Food, feed plants of the republic, species, values. Honey plants, essential oil plants of local flora. Zoning of plant resources in Kazakhstan and prospects for their research. Wildlife resources in Kazakhstan and their importance in the economy. Resources of water animals of Kazakhstan (invertebrates, fish). Amphibian and reptile resources in Kazakhstan, methods for their calculation. Resource species of birds and problems of their conservation. Carrying out and methods of counting birds. Resource species of animals of Kazakhstan. Carrying out and methods of counting animals. Red Book of Kazakhstan, categories, value</p>	<p>As a result, the student must know: - plant bioresources of Kazakhstan; - Animal bioresources of Kazakhstan; - measures for the conservation and rational use of biological resources of Kazakhstan; - rare and endangered species of plants and animals of Kazakhstan. be able to: - determine the lower and higher vascular plants, invertebrate and vertebrate animals of the area; - apply modern experimental methods of working with biological objects in the field and laboratory conditions. own: - independently determine the types of bioresources of local flora and fauna: - to count amphibians, reptiles, birds and mammalian species of the territory; - analysis of data on the current state and in the long term the biological resources of the area</p>	General Ecology, Ecosystem and Landscape Ecology	Sustainable development and management of agroecosystems

25.		BD	Environmental Analysis	5	10	The nature and specificity of the methods of analysis, assessment and prediction of environmental pollution. Types of environmental monitoring (geoecological, biological, geosystem, engineering-geological, etc.). Features of the organization of monitoring of different hierarchical levels. Methodology for organizing the collection of environmental information for a comprehensive assessment of environmental pollution. Determination of the degree of anthropogenic and technogenic impact on the environment. Determining the quality of the natural environment at the local, regional and global levels. Interpretation of information data using modern information systems for predicting environmental pollution with the goal of rational nature management and environmental safety.	<ul style="list-style-type: none"> - To study the basic methods for observing, evaluating and forecasting the systems of environmental conditions in order to prevent the impact of environmental factors of the agricultural sector on the state of the environment for environmental management; - Own methods of analyzing environmental processes, setting specific tasks and priorities for protecting the environment and society, knowledge on the laws of development of the biosphere and the conditions of anthropogenic and technological impact on nature; - To be able to analyze the processes occurring in the components of the biosphere and to use methods for the detection and quantification of the main pollutants in the environment; to develop environmental measures. - To master modern information methods of environmental monitoring and control of pollution of natural and environmental using GIS technologies; - To be able to practically apply knowledge on agroecological monitoring to assess the quality of the natural environment in order to predict changes in environmental resistance to anthropogenic and technogenic effects. 	Climate Change and the Green Economy	Environmental documentation for companies
26.		PD	English for special purposes	6	6	Categorical-conceptual apparatus of modern ecology in a professionally-oriented foreign language. Fundamentals of reading, translating, writing, listening and speaking a foreign language. Ways to solve environmental management and sustainable development of the world.	<p>As a result of studying the discipline, students should know:</p> <ul style="list-style-type: none"> - professional terminology in the areas of development of modern ecology; - the basics of vocabulary and grammar of a professionally-oriented foreign language in the specialty of ecology, the main grammatical phenomena characteristic of oral and written professional speech; - methods for collecting, storing and processing environmental information; educational and scientific literature, online resources on environmental issues in a professionally-oriented foreign language; 	Foreign language	English Academic Language

							<p>be able to:</p> <ul style="list-style-type: none"> -free to read and translate original literature on the chosen specialty with subsequent analysis, interpretation and assessment of the information extracted, for example: to generalize and analyze foreign literature and Internet sites about the state of the environment, the dynamics of environmental processes associated with anthropogenic impact and natural disasters; - to transmit in writing in a foreign language and correctly format information in accordance with the goals and objectives of the training (abstract, abstract, resume), to translate texts in the specialty in writing; - participate in professional discussions, round-table discussions, perceive and understand public speeches in direct and indirect communication (lectures, reports, television and Internet programs). - conduct educational and upbringing work in a foreign language environment in the field of ecology; have skills: <ul style="list-style-type: none"> - oral communication in the specialty in monologue and dialogue form, preparation of a scientific report, report, presentation, for example, on environmental issues and sustainable development in a foreign language; - conducting business correspondence, correspondence in a professionally-oriented foreign language; - recording the results of field and experimental environmental studies for the subsequent writing of essays, essays and scientific articles in a foreign language. 		
27.		PD	Pastures: ecology, conservation and restoration	5	7	Earth is the most important object of the natural environment. Land resources of Kazakhstan. The concept and content of the protection and rational use of land resources. Agricultural land. Pastures. Characteristic, types. Protection and rational use of soil resources. Characterization of the soil cover of Kazakhstan. Land management, state land cadastre and land monitoring. State regulation of land relations. State control over the use and protection of pasture lands.	As a result of studying the discipline, the student must: know: <ul style="list-style-type: none"> - structure of land resources; - classification of land by purpose and use; - characteristics of the soil cover of Kazakhstan; - land management structure; 	Soil science	Agriculture and the environment

							<ul style="list-style-type: none"> - characteristics, ecology of pasture lands. be able to: - assess the condition of pasture land on the basis of environmental monitoring; - give an economic assessment of land resources; - establish a fee for land use; - choose an effective method of use and restoration of pasture lands; - use the knowledge gained in practice own: - skills in analyzing the state of pastures, choosing an effective method for restoring degraded pastures. 		
28.		PD	Agriculture and the environment	5	8	Ecological problems of agricultural production. Agriculture. Environmental regulation of anthropogenic pressures to maintain the ecological balance of natural ecosystems. Economic capacity of natural ecosystems.	<p>must know:</p> <ul style="list-style-type: none"> - Features of the functioning of agroecosystems in the conditions of modern technogenesis; - The main methods of production of environmentally friendly agricultural products; - The basic principles of the organization of agroecosystems and the optimization of agrolandscapes; <p>should be able to:</p> <ul style="list-style-type: none"> - to predict the activities of the agricultural producer, taking into account direct and numerous indirect effects on the biosphere as a whole. <p>must own:</p> <ul style="list-style-type: none"> - skills of using various agroecosystems depending on environmental conditions. <p>must demonstrate ability and readiness:</p> <ul style="list-style-type: none"> - apply the acquired knowledge for the analysis and integrated assessment of specific agroecosystems 	Biological ecology, Range lands: Ecology, Conservation and Restoration	Integrated Plant Protection
29.		PD	English Academic Language	4	5	Globalization in Education. Grant proposal and policy. Teamwork as a tool for professional communication. Scientific article as a tool of technical communication. Visuals in written academic text. Presentation skills development for participating in a conference and other academic events.	<p>As a result of studying the discipline, students should:</p> <ul style="list-style-type: none"> -Able to use English at a level that provides free communication, both in the general cultural sphere, and in professional activities with foreign partners, colleagues Have skills (gain experience) in business communication: public speaking, negotiations, meetings, business correspondence, electronic 	Foreign language, English for special purposes	Writing a thesis

							communications, etc .; establishing and maintaining social relationships in the multicultural environment of modern society; the effective implementation of managerial functions in a multicultural environment; solutions to managerial tasks related to operations in global markets in the context of globalization.		
30.		PD	Integrated plant protection	5	8	. The formation of theoretical knowledge on the ecology and harmfulness of insects and pathogens; identification of factors affecting the number of pests and the development of diseases; the formation of practical skills for identifying and recording pests and diseases of agricultural crops; identification of ways to control the number of pests and prevent crop diseases; the study of the basic methods of plant protection, taking into account the environmental situation; the study of the basic laws of the dynamics of populations of pests.	<p>- Knowledge and understanding: to demonstrate basic ideas about the bioecological characteristics of the main plant pests, their systematic position; features of the life cycle and reproduction of phytophages; morphological and biological features of phytopathogens; the main types of manifestations of diseases, the most dangerous types of diseases of agricultural crops; preventive and extermination measures to combat pests;</p> <p>- To be able to: determine the species composition of pests and diseases of agricultural crops; identify signs of damage and damage to plants, diagnose and record pests and diseases of agricultural crops, decide on the need for protective measures;</p> <p>- Possess: knowledge to analyze the state and possible development of the situation in agrophytocenoses on harmful organisms of plants, draw a conclusion about the need for protective measures, draw up a comprehensive system of measures for plant protection;</p> <p>- To acquire practical skills: compliance with safety measures when using plant protection products; use in practice of methods for identifying pests and pathogens of plant diseases, their diagnosis, proper selection and application of a set of plant protection measures, work with scientific, technical, regulatory and other documentation in the field of plant protection.</p>	Methods of processing and recycling agricultural waste, Agriculture and the Environment	Writing a thesis
31.		PD	Environmental mapping and GIS	5	10	The role of environmental mapping in science and practice. Information sources of environmental mapping. Topographic map, its definition and basic properties. Projection of topographic maps.	<p>Students should</p> <p>- know the terminological apparatus and the basic concepts of discipline;</p>	Study about enviro	Writing a thesis

						Thematic groups of environmental maps. Environmental risk maps. Integrated environmental mapping. Satin environmental mapping. General concepts of geographic information systems. Geoinformational and landscape-ecological mapping. Applied GIS.	theoretical and methodological foundations of mapping; the main properties and significance of ecological geographic maps, including topographic maps. To know and understand: features and specifics of the main cartographic projections and distortions characteristic of small-scale ecological-geographical maps; features of the functioning of geographic information systems. - Be able to: perform basic cartometric and graphic work on cards; Build and analyze plans, profiles, cartographic grids and maps using GIS technologies. - Own: own methods for processing, analyzing and synthesizing field and laboratory environmental information and use theoretical knowledge in practice.	environmental resource using	
32.		PD	Environmental documentation for companies	5	11	Fundamentals of legal knowledge in environmental activities. Preparation of documentation for Environment Impact Assessment of various types of project analysis. Carrying out environmental engineering studies to assess the environmental impact of various types of economic activity. Methods for assessing the impact of economic activities on the environment and public health, assessing economic damage and risks to the environment, economic efficiency of environmental measures. Payment for the use of natural resources. The main environmental laws of the Republic of Kazakhstan and documentation.	- Possession of knowledge of the basics of Natural resource use, economics of Natural resource use, sustainable development, Environment Impact Assessment, legal fundamentals of Natural resource use and environmental protection. - Possibility to carry out the following professional tasks: knowledge of environmental laws and the design of related documents, participation in scientific research in the field of ecology, nature conservation and other environmental sciences and the agricultural sector, in organizations engaged in educational activities; laboratory research; collection and primary processing of material; participation in field research. Competence for the implementation of public administration in the agricultural sector and in the field of nature conservation and environmental management; services for environmental monitoring, environmental safety and environmental policy. - Possession of methods for preparing environmental documentation for environmental review of various types of project analysis, environmental engineering	Environment Impact Assessment, Environmental Analysis	Writing a thesis

							<p>studies to assess the environmental impact of various types of economic activity, including agriculture, methods for assessing the impact of economic activity on the environment and public health, assessment economic damage and risks to the environment, economic efficiency of environmental measures, fees for the use of natural and resources.</p> <p>- Implementation of environmental audit activities. Participation in the assessment of environmental impacts, the identification and diagnosis of environmental problems and the interaction systems of the agricultural sector, society and nature, the solution of ecological and geographical problems associated with sustainable development; analysis of private and general problems of the rational use of natural resources, in environmental management in the agricultural sector.</p>		
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Authors:

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