

Ministry of Agriculture of the Republic of Kazakhstan
S. Seifullin Kazakh Agrotechnical University

Considered
at a meeting of the University Academic
Council
protocol No. 15
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APPROVED
Chairman of the Board
"S.Seifullin Kazakh AgroTechnical
University "



A.K. Kurishbayev
" 30 " 05 2019

EDUCATIONAL PROGRAM
"Natural resource use"

Code and classification of the area of education:

6B05 Natural sciences, mathematics and statistics

Code and classification of training program:

6B052 Environment

Code in the International Standard Classification of Education: 0520

Qualification: Bachelor of Natural Science

Duration of study: 4 years

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№ _____ from _____

Educational program "Natural resource use"
considered at a meeting of the Department of Ecology
Protocol No. 99 of "18" 04 2019,
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Protocol No. 9 "28" 05 2019

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1 Passport of the educational program

1.1 The purpose of the educational program:

The main goal of the educational program is to meet the needs of society in qualified personnel by training environmental specialists who are able to assess the state of ecosystems in modern conditions, use land, natural, industrial and biological resources efficiently, and develop environmental measures to reduce the impact of growing man-made pressure on the environment and degradation of natural resources in accordance with the Concept for the transition of the Republic of Kazakhstan to "green economy".

The objectives of the educational program:

1. Formation of the main professional competencies of future specialists in the field of environmental protection.
2. Creation of prerequisites for independent search and research activities of students in the framework of the experiment at all its stages.
3. The ability to work with scientific and technical information, to use domestic and foreign experience in professional activities, to systematize and summarize the received information.

The direction of preparation for the Natural resource use educational program assumes a clear orientation towards the future, which is manifested in the possibility of constructing own education, taking into account success in personal and professional activities that meet the requirements of employers.

2 General characteristics of the educational program

Currently, Kazakhstan has faced the problem of serious deterioration of the state of natural resources and the environment for the most important environmental indicators. In this regard, the protection of nature and human health at the present stage of development of Kazakhstan is an urgent task, because trends in the development of the economy, industry, agriculture with non-compliance with environmental standards will lead to irreversible industrial and social disasters. Intensive growth in industrial and agricultural production will entail climate change, ozone layer depletion, depletion of natural resources and other global problems, which will affect the living standards and health of the country's population. The solution of urgent tasks in the field of environmental protection and the prevention of negative consequences requires the training of competent specialists with a high level of environmental knowledge, a systematic approach and ecological thinking. In order to prevent further imbalance in the biosphere and to reduce or prevent anthropogenic pressure on the environment, future specialists in the field of environmental management should have a set of knowledge fully covered by this educational program.

The Natural resource use educational program has been developed in accordance with the National Qualifications Framework, agreed with the Dublin Descriptors and the European Qualifications Framework, and is designed on the basis of a modular system for studying disciplines that form general cultural and professional competencies.

The peculiarity of the “Natural resource use” educational program was developed on the basis of the “Environmental Management” educational program of UC Davis University (USA), which ensures the competitiveness of graduates in the labor market. In addition, students have the opportunity to study the following disciplines within the framework of academic mobility at UC Davis University: Conservation Biology, Restoration Ecology, Grassland: ecology, conservation and restoration, Ecosystem and landscape ecology, Sewage, erosion and water quality management, Urban ecology, Fundamentals of soil science, Sustainable development and management of agroecosystems, Agriculture and the environment, Environmental analysis, Environment Impact Assessment, Introduction to geographic information system.

UC Davis University is one of the first places in the world in the field of veterinary medicine, as well as in the field of economics and agriculture, second place among the leading graduates of the undergraduate degree in biological and biomedical sciences of US universities.

3 Competency model (portrait) of a graduate

3.1 Areas of professional activity

The scope of professional activities of the bachelor is production, management, research and educational, the sphere of green economy, environmental quality control and Environment Impact Assessment. The scope of activities also includes environmental mapping and GIS, environmental regulation and expertise.

3.2 Types of professional activity

3.2.1 Objects of professional activity

The objects of professional activity of graduates are: territorial departments of natural resources and Natural resource use, specially protected natural territories, industrial enterprises, agricultural complexes, landfills for various wastes, energy facilities, including nuclear power plants, institutions for analytical control of environmental objects, research institutes and centers.

3.2.2 Professional subject

Areas of professional activity of students in the framework of the educational program "Natural resource use": 1) the development of emission limits standards, preparation of environmental passports, environmental audits; 2) the research methods in ecology; 3) the methods for calculating environmental damage; 4) the basics of technology and the organization of environmentally friendly production; 5) the problems of the interaction of nature and society; 6) the impact of the scientific and technological revolution on the state of the environment; 7) the forms and methods of rational use, transformation and nature conservation; 8) ecology and environmental protection activities (by type); 9) ecology and rational use of natural resources; 10) waste processing; 11) environmental monitoring.

3.2.3 Areas of professional activity

Bachelors can perform the following types of professional activities: organizational and management; production and technological; service-operational; experimental research; educational (pedagogical); design.

3.3 General educational competencies

A graduate of this educational program is awarded a bachelor's degree in the "Natural resource use" educational program. Upon completion of the study of compulsory disciplines, the student will be able to:

- justify their own assessment of everything that happens in the social and industrial spheres and use the methods and techniques of historical description to analyze the causes and consequences of the events of modern history of Kazakhstan;
- assess situations in various fields of interpersonal, social and professional communication, taking into account the basic knowledge of sociology, cultural studies and psychology;
- Demonstrate personal and professional competitiveness;

- apply in practice knowledge in the field of social sciences and humanities, which is internationally recognized and summarize the results of the study;
- enter into communication in oral and written forms in Kazakh, Russian and foreign languages to solve the problems of interpersonal, intercultural and industrial (professional) communication;
- use in personal activities various types of information and communication technologies.

3.4 Basic competencies

Formation of a holistic natural-scientific view of the environment.

Have an idea of the current state and location of natural raw materials and mineral resources on the globe.

Have an idea of the types and sources of impact on the hydrosphere and atmosphere.

To analyze the nature of the spread of ecological groups of plants, animals, microorganisms, biodiversity at the population-species and biocenotic levels of ecosystem organization.

To master the skills:

- monitoring the current state of environmental components using information on their component composition; analysis of natural and anthropogenic environmental processes and prediction of possible ways to regulate them.
- assessment of negative impacts caused by industrial enterprises, agroecosystems and urbanization.
- assessment and analysis of methods to reduce and prevent the impact of environmental disturbances on agroecosystems and agricultural products.
- conducting a comprehensive economic assessment of natural resources, taking into account environmental protection.

To master the basic methods of observation, assessment and forecasting of environmental analysis systems to prevent the impact of environmental factors of the agricultural sector on the state of the environment for environmental management to be able to perform basic cartometric and graphic work on cards.

3.5 Professional competencies

To have a view:

- on the technogenic impact on the environment and methods for assessing environmental risk;

To know and understand:

- The principles of the organization of Environment Impact Assessment of territories, industries and technological projects;
- the methodological and environmental-economic foundations of Environment Impact Assessment;
- the purpose and classification of environmental monitoring and its individual units, methods of observation;
- The basis of national and international legislation on environmental quality control, social regulation, antitrust pricing control in the use and protection of natural resources;

- the basics of modern information technology;
- the methods for collecting, storing and processing environmental information.

- the methods of economic assessment of natural resources, basic concepts and categories of environmental economics. Effective management of natural resources and the use of income from the primary sector of the Republic of Kazakhstan.

To be able to:

- monitor and analyze the state of the natural environment;
- analyze and evaluate the dynamics of environmental processes associated with anthropogenic impact and natural disasters;
- analyze and evaluate possible ways to restore the violated territories;
- plan, organize and conduct theoretical, field and experimental environmental studies;

- carry out expert and audit assessment of the quality of the environment;
- draw up prognostic models of changes in the state of ecological geosystems;
- use the basics of environmental regulation;
- solve professionally individual practical issues of environmental activity of the enterprise and organization;

- analyze the development trends in the field of modern business and its significance for the ecology of the region, region;

- conduct a comprehensive economic assessment of natural resources, taking into account environmental protection;

- carry out calculations and predict changes in environmental sustainability to anthropogenic impact;

- monitor the storage, processing and disposal of radioactive waste.

To gain practical skills:

- performance of analytical work and documentation on Environment Impact Assessment;

- assessment of the impact of economic and other activities on the environment;

- preparation of constituent documents and commercial agreements in the field of environmental management;

- compliance with environmental safety requirements in the workplace;

- assessment of the state of the environment;

- knowledge of modern information technology and GIS.

- application of an integrated approach in the study of economic problems of environmental management;

- conducting pedagogical work in the field of ecology and Natural resource use.

4 Base of professional practices

The following types of practices are envisaged in the Natural resource use educational program: educational practice in general ecology, educational practice in ecology of animals and plants, industrial practice and undergraduate practice.

Students in this educational program can take internships at the following enterprises and organizations: the Ministry of Energy of the Republic of Kazakhstan, the International Academy of Ecology (MAE), the Public Association "Kazakhstan Association for the Conservation of Biodiversity", the Information Center for Atomic Energy, the RSE "National Center for Biotechnology of the Republic of Kazakhstan", RSE Zhasyl Aimak, Astana Ormany JSC, AAEkologiya LLP, national natural parks, natural resources departments and Natural resource use regulation, regional territories inspections and other government agencies.

5 Structure of the educational program

№	The name of the cycles and disciplines	General complexity	
		in academic hours	in academic credits
1	2	3	4
1	The cycle of general education disciplines	1680	56
1)	Compulsory component	1530	51
	The modern history of Kazakhstan	150	5
	Philosophy	150	5
	Foreign language	300	10
	Kazakh (Russian) language	300	10
	Information and communications technology (in English)	150	5
	The module of socio-political knowledge (sociology, political science, cultural studies, psychology)	240	8
	Physical Culture	240	8
2)	University component	150	5
	Fundamentals of economic theory and law	150	5
2	The cycle of basic disciplines		
1)	University component		
	General ecology	270	9
	Green Economy and Climate Change	120	4
	Educational practice on the discipline "General Ecology"	60	2
	Ecology of plants, animals and microorganisms	180	6
	Ecological biogeography	150	5
	Educational practice on the discipline "Ecology of animals and plants"	90	3
	Ecosystem and Landscape Ecology	150	5
	Fundamentals of soil science	150	5
	Methods of processing and recycling agricultural waste	150	5
	Economy of nature using	150	5
	Agroecology	150	5
	Biological ecology	150	5
	Practical training	150	5
	Pre-graduation practice	360	12
2)	Elective component		
	Ecological aspects of natural sciences	180	6
	Teaching about environment	150	5
	Environmental chemistry	150	5
	Study about environmental resource using	150	5
	Protection of atmospheric air	150	5
	Water resources protection	150	5
	Runoff, Erosion and Restoration	150	5
	Urban ecology	150	5
	Conservation Biology	150	5
	Conservation and rational using of bioresources	180	6
	Environmental Analysis	150	5
3	The cycle of core disciplines		

1)	University component		
	Bioindication	150	5
	Industrial ecology	150	5
	Radioecology	150	5
	Ecological safety of agricultural products	150	5
	Environment Impact Assesment	150	5
2)	Elective component		
	English for special purposes	180	6
	Rangelands: Ecology, Conservation and Restoration	150	5
	Agriculture and the Environment	150	5
	English Academic Language	120	4
	Integrated plant protection	150	5
	Environmental mapping and GIS	150	5
	Environmental documentation for companies	150	5
5	Final state certification	360	12
1)	Writing and defending a thesis (project) or preparing and passing a comprehensive exam	360	12
	Total		

Код	Наименование дисциплины	Курс	Семестр	Дополнительные модули: выходящие за рамки квалификации												Количество часов	Количество недель
				1	2	3	4	5	6	7	8	9	10	11	12		
56	Экология и документация на предприятиях	Рад.3321	5	9	9	5/150	2/30	1,3/20	20	80							5.0
57	Экологическая документация на предприятиях	EDP 4323	5	11	11	5/150	2/30	1,3/20	20	80							5.0
Дополнительные модули: выходящие за рамки квалификации																	
Модули по выбору																	
1	Средняя недельная нагрузка в часах																
	Общеобразовательные дисциплины(ООД)		56	12	1680	120	30	570	192	768	63	48	63	63	63	60	42
	Обязательный компонент(ОД/ОК)		51	11	1530	100	30	540	172	688	23	16	23	23	23	20	14
	Вузовский компонент(ОД/ВК)		5	1	150	20	0	30	20	80	0	0	0	0	0	0	0
	Компонент по выбору(ОД/КВ)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Базовые дисциплины(БД)		125	22	3330	570	20	520	444	1776	0	5	8	15	15	10	4
	Обязательный компонент(БД/ОК)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Вузовский компонент(БД/ВК)		68	11	1620	280	0	260	216	864	0	5	6	10	12	10	4
	Компонент по выбору(БД/КВ)		57	11	1710	290	20	260	228	912	0	2	9	5	6	15	5
3	Профилирующие дисциплины(ПД)		60	12	1800	260	0	340	240	960	0	0	4	4	11	10	10
	Обязательный компонент(ПД/ОК)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Вузовский компонент(ПД/ВК)		25	5	750	140	0	110	100	400	0	0	0	0	5	10	5
	Компонент по выбору(ПД/КВ)		35	7	1050	120	0	230	140	560	0	0	4	4	6	5	5
	Итого по учебному плану		241		4290	510	50	1030	540	2160	23	11	10	15	11	25	5
4	Дополнительные виды обучения																
4.1	Модули профессиональной практики, в т.ч.																
	Учебная практика								5			3,6			150		5
	Преддипломная практика								4			11			120		4
	Производственная практика								5			9			150		5
	Итого по практике								14						420		14.0
4.2	Модуль Физической культуры								0						0		
	Итого								14						420		14.0
5	Модуль итоговой государственной аттестации (МИГА)																
	ГЭ по специальности																
	Написание и защита дипломной работы								12			12					
	Итого								12								

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Appendix 3 Description of the disciplines of compulsory and university components

1. Basic information about the discipline:	
Name of the discipline	Foreign language
2. The number of credits	10
3. Prerequisites:	Basic school knowledge
4. Post requisites:	Professionally-oriented foreign language
5. Competencies:	<p>According to the results of mastering the program, the student has the following competencies:</p> <ul style="list-style-type: none"> - to accumulate the conceptual basis for understanding the communicative intentions of the partner, the authors of texts at this level; - to compare and selects the forms and types of speech / communication appropriate to the communicative intention with a logical construction adequate to the type of speech; - adequately expresses its own communicative intentions with the correct selection and appropriate use of appropriate language means, taking into account their compliance with the socio-cultural norms of the language being studied; - to classify the levels of use of real facts, links to authoritative opinion; speech behavior is communicatively and cognitively justified; - to reveal the patterns of development of a foreign language, paying attention to the study of stylistic identity; - to master the techniques of linguistic description and analysis of the causes and consequences of events in texts of a scientific and social nature; - to express in a foreign language possible solutions to modern problems based on the use of reasoned information; - Evidently use linguistic material with reasoned linguistic means sufficient for a given level, timely and independently correct errors in 75% of error-free statements; - to master the strategy and tactics of constructing a communicative act, correctly arranges speech intonationally, relying on lexical sufficiency in the framework of speech subjects and grammatical correctness.
6. Course author	Department of Foreign Languages
7. Basic literature	<ol style="list-style-type: none"> 1. Бонк Н.А., Котий Г.А., Лукьянова Г.А. Учебник английского языка, часть первая. –М.: 1996. 2. Голицынский Ю. Грамматика. Сборник упражнений. -Санкт - Петербург, 2007. 3. Качалова К.Н., Израилевич Е.Е. Практическая грамматика английского языка с упражнениями. –М.: 1997. 4. Савельев Л.А. Учебное пособие английского языка "EnglishfortheStudentsofEcology" для экологов. -СПб: изд. РГГМУ, 2007 - 148 с. 5. Saspugayeva G.Y. Ecology. Textbook. S.Seifullin Kazakh agrotechnical university, 2015, -179 pages. 6. Иванова Н.К. Английский язык для химиков (фонетика). -Иваново, "ИГХТУ", 2007, -100 с. 7. Кутепова М.М. - Theworldofchemistry / Английский язык для химиков: Учебник: Изд. 4-е. -М.: КД Университет, 2006. -256с. 8. Серебренникова Э.И., Круглякова И.Е. Английский язык для химиков: Учебник: Изд. 3-е. -М.: Альянс, 2009. - 400 с. 9. Тимофеева Т.В., Поталуй Л.В. Technical Correspondence: Учебное пособие по англ.яз. -Воронеж: Изд-во ВГУ, 2005. -27 с. 10. K. Harding. Englishfor Specific Purposes. Oxford University Press, 2009. 11. Акимова Т.А. Экология. Человек - Экономика - Биота - Среда. -М: ЮНИТИ, 2007.
8. The content of the discipline.	
Family relationships and personality characteristics. The world of the language being studied. Cultural features and national traditions of the USA and Great Britain. Modern education system.	

1. Basic information about the discipline:	
Name of the discipline	Kazakh language
2. The number of credits	10
3. Prerequisites:	Theoretical and practical skills corresponding to the basic levels A1, A2
4. Post requisites:	Professional Kazakh
5. Competencies:	<ul style="list-style-type: none"> - to choose and use language and speech tools correctly on the basis of a complete understanding of vocabulary, the grammatical system of knowledge and the pragmatic content of intentions; - to transmit the exact content of the text, be able to formulate conclusions, characterize the final part of the entire text and its individual structural parts; - to explain textual information, disclose style and genre features of social, social, cultural, socio-political, educational and professional texts; - to be able to request and report information in accordance with communication situation, evaluate the actions of participants in verbal communication, use information to influence a friend or unfamiliar interlocutor; -in accordance with the peculiarities of linguistic and culturological communication, show personal, social and professional competencies; - to discuss ethical, cultural and socially significant problems, to be able to express their point of view, justify it, critically evaluate the opinions of participants; - to realize personal needs (domestic, educational, social, cultural, professional), to be able to participate in various communication situations with the aim of expressing an ethically correct, from a meaningful point of view complete, in due lexical and grammatical and pragmatic level of one's position.
6. Course author	Department of Kazakh and Russian languages
7. Basic literature	<ol style="list-style-type: none"> 1. Абдуова Б.С., Асанова Ұ.О. Қазақ тілі: Орыс тілді топтарға арналған оқу құралы. - Астана, 2017. -282 б. 2. Айтбаева Б.М. Қазақ тілі (B1 деңгейі) оқулығы. – Қарағанды, 2014. – 205 б. 3. Бозбаева-Хунг А.Т., Балабеков А.К., Досмамбетова Г.Қ., Салыхова Б.О., Хазимова Ә.Ж. Қазақ тілі: орта деңгейге арналған оқулық. Ұлттық тестілеу орталығы. – Астана: 2017.
8. The content of the discipline	
Scientific and technical style and its features. Functional styles. General concept of scientific and technical style. Professional concepts and terms in a scientific text. The interactive form of scientific speech. Dialogue and its features. Features of oral and written scientific speech.	

1. Basic information about the discipline:	
Name of the discipline	Russian language
2. The number of credits	10
3. Prerequisites:	School course of the Russian language and literature
4. Post requisites:	Professional Russian
5. Competencies:	<ul style="list-style-type: none"> - to make the right choice and use of linguistic and verbal means to solve certain tasks of communication and cognition on the basis of knowledge of a sufficient amount of vocabulary, a system of grammatical knowledge, pragmatic means of expressing intentions; to. transmit the factual content of the texts, formulate their conceptual information, describe the derivative knowledge (pragmatic focus) of both the entire text and its individual structural elements; - to interpret the information of the text, explain in the scope of certification requirements the style and genre specifics of the texts of the socio-cultural, socio-political, official-business and professional areas of communication;

	<ul style="list-style-type: none"> - to build programs of speech behavior in situations of personal, social and professional communication in accordance with the norms of language, culture, the specifics of the sphere of communication, certification requirements; - to discuss ethical, cultural, socially significant problems in discussions, express their point of view, defend it reasonably, critically evaluate the opinions of interlocutors; - to participate in communication in various situations in different areas of communication in order to realize their own intentions and needs (domestic, educational, social, cultural), declaring them ethically correct, meaningfully complete, lexico-grammatical and pragmatically appropriate to the situation; - to compile everyday, socio-cultural, official-business texts in accordance with generally accepted standards, a functional orientation, using lexical-grammatical and pragmatic material of a certain certification level that is adequate to the set goal.
6. Course author	Department of Kazakh and Russian languages
7. Basic literature	<ol style="list-style-type: none"> 1. Русский язык: учебное пособие для студентов казахских отделений университетов (бакалавриат) / под ред. К.К. Ахмедьярова, К.К. Жаркынбековой. – Алматы: Қазақ университеті, 2008. 2. Мухамадиев Х.С. Пособие по научному стилю речи. Русский язык. – Алматы: Казак университеты, 2009. 3. Федосюк М.Ю., Ладыженская Т.А., Михайлова О.А., Николина Н.А. Русский язык для студентов-нефилологов: учебное пособие. – М., 2000. – 256 с.
8. The content of the discipline	Fundamentals of reading, translation, writing, listening in Russian. Russian language in Kazakhstan. The main vocabulary of the scientific style. Types of service documents. Scientific and special technologies. Information and communication technology. Legal documents.

1. Basic information about the discipline:	
Name of the discipline	The modern history of Kazakhstan
2. The number of credits	5
3. Prerequisites:	School basic knowledge
4. Post requisites:	Cultural Studies, Political Science, Philosophy, Sociology
5. Competencies:	<p>As a result of mastering the discipline, students must:</p> <ul style="list-style-type: none"> - to know the prerequisites for the formation of statehood in modern Kazakhstan at the source of world and Eurasian historical processes; - be able to critically analyze historical events, on the basis of retrospective, comparative. historical and other scientific methods to have the skills to compare them with the world development of mankind; - have the ability to analyze the activities of historical figures of modern Kazakhstan, complex historical processes and phenomena; - comprehensively take into account the priorities of a kind of Kazakhstani development, its features, etc.
6. Course author	Department of History of Kazakhstan
7. Basic literature	<ol style="list-style-type: none"> 1. Современная история Казахстана: учебник для студентов неисторических спец. (бакалавриата) высш. учеб. заведений / Б. Г. Аяган [и др.]. ; ред. Б. Г. Аяган ; Ин-т истории гос-ва М-ва образования и науки РК. – Алматы: Раритет, 2010. 2. Аминов Т.М. Современная история Казахстана. Учебное пособие. -Алматы., 2017. 3. Назарбаев Н.А. Эра независимости. - Алматы: ҚАЗАқ-парат, 2017. 4. Нуртазина Р.А. Национальная безопасность Республики Казахстан: учеб. пособие. - Алматы: Бастау, 2014. 5. Ертлесова Ж. Реформы 90-х: интервью с ключевыми участниками событий. - Алматы, Атамұра. - 2016.
8. The content of the discipline	

History, specificity of historical processes and phenomena. Features and specifics of historical processes. The subject and methods of historical culture. Theoretical and methodological concepts.

1. Basic information about the discipline:	
Name of the discipline	Philosophy
2. The number of credits	5
3. Prerequisites:	Sociology, Political Science, Cultural Studies, Psychology, Modern History of Kazakhstan.
4. Post requisites:	Green Economy and Climate Change
5. Competencies:	<ul style="list-style-type: none"> - to describe the main content of ontology and metaphysics in the context of the historical development of philosophy; explain the specifics of philosophical understanding of reality; substantiate a worldview as a product - philosophical reflection and study of the natural and social world; - to classify the methods of scientific and philosophical knowledge of the world; - to interpret the content and specific features of the mythological, religious and scientific worldview; - to substantiate the role and importance of key worldview concepts as values of the social and personal being of a person in the modern world; - to analyze the philosophical aspect of media texts, socio-cultural and personal situations to justify and make ethical decisions; to formulate and competently argue their own moral position in relation to the urgent problems of modern global society; - to conduct research relevant to identify the philosophical content of problems in the professional field and present the results for discussion.
6. Course author	Department of Philosophy
7. Basic literature	<ol style="list-style-type: none"> 1. Петрова В.Ф., Хасанов М.Ш. «Философия». – Алматы: Эверо, 2014. 2. Бертран Р. «История западной философии» – М.: Издатель Litres, 2018. – 1195 с. 3. Kenny A.«New History of Western Philosophy». Volume 1-4. – Oxford University Press, 2006 - 2010. (Кэнни Эй. «Нью хистори оф Вестерн философи». Волум 1-4 – Оксфорд юниверсити пресс, 2006-2010)
8. The content of the discipline	
Introduction to Philosophy: Philosophy, its subject and place in the culture of mankind; History of Philosophy: Ancient World Philosophy, Ancient Philosophy, Medieval Philosophy, Renaissance Philosophy, Modern Philosophy, Enlightenment Philosophy, Classic Stage of Modern Philosophy, German Classical Philosophy, Marxism, Frankfurt School Philosophy, Utopian Socialism, Russian Philosophy; Modern philosophy: philosophy of life, psychoanalytic philosophy, philosophy of existentialism, philosophy of positivism, structuralism, pragmatism; Philosophical problems of understanding the world: the doctrine of being (ontology), the doctrine of development (dialectics), the problems of consciousness, the philosophical problems of cognition (epistemology), the nature of man and the meaning of his existence; Philosophical problems of society: the doctrine of society (social philosophy), philosophical problems of culture, culture and civilization, the future of mankind (philosophical aspect), a person in the information-technological world.	

1. Basic information about the discipline:	
Name of the discipline	Political science and sociology
2. The number of credits	4
3. Prerequisites:	Basic school knowledge
4. Post requisites:	Philosophy, Economy of nature using
5. Competencies:	<ul style="list-style-type: none"> - to identify objects of study of sociology (society, social organizations, social groups, the individual, etc.) to explain social reality; to explain key sociological ideas and theories; to describe the social structure and stratification of society, to distinguish and analyze the degree of social inequality;

	<ul style="list-style-type: none"> - to disclose the mechanism for the formation of public opinion and consciousness in society; to analyze the features of social institutions in the modernization of Kazakhstan society; - to understand the mutual influence of social processes at the micro and macro levels, using the advantages of a sociological perspective; to distinguish and justify sociological research strategies and methods for collecting and analyzing information; to apply the sociological methodology to the study of contemporary problems of society. - to describe the features of the organization and functioning of political institutions (institutions of representation and coordination of interests); to demonstrate an understanding of the mechanisms and principles of the functioning of political power, political institutions, domestic, foreign, world politics and international relations; to demonstrate an understanding of the essence and patterns of the functioning and development of politics, its role in various areas of society; substantiate the relationship of political systems and political regimes; - to assess the degree of objectivity of political information from various sources, reasonably express their civic position, evaluate facts, events, phenomena based on an analysis of the political strategy and national interests of modern states; justify the leading role of identity (national, civil) as a factor in ensuring the national security of the Republic of Kazakhstan; to identify the nature of socio-political conflicts and evaluate their legitimacy; to generate new ideas and apply changing political reality
6. Course author	Department of Philosophy
7. Basic literature	<ol style="list-style-type: none"> 1. Назарбаев Н.А. Взгляд в будущее: модернизация общественного сознания. -Астана, 2017. 2. Биекенов К.У., Биекенова С.К., Кенжакимова Г.А. «Социология: Уч.пособие». – Алматы: Эверо,2016. – 584с. 3. Социология. Основы общей теории: учебник / Под ред. Г.В. Осипов, Л.Н. Москвичев. - 2-е изд., испр. и доп. - М.: Норма, 2015. - 912 с. 4. Macionis J. Society: The Basics. Pearson, 2016. (Масионис Джей. Соушети: Зе Байзикс. Пэрсон, 2016.) 5. Heywood A. Politics. - N.-Y.: Palgrave Macmillan, 2013. (Хэйуд Эй. Политикс. – Эн. – Уай.: Палграив Макмилан, 2013)
8. The content of the discipline	The subject, methods and functions of political science. History of Western Political Thought. Politics as a public phenomenon. Political power. Political system. Political culture and political socialization. The state as a political institution. State and civil society. The main factors of world politics. Theory and methodology of sociological analysis. Types of social organization of society. Social structures and processes.

1. Basic information about the discipline:	
Name of the discipline	Cultural studies and psychology
2. The number of credits	4
3. Prerequisites:	Basic school knowledge
4. Post requisites:	Philosophy
5. Competencies:	<ul style="list-style-type: none"> - to describe the morphology and anatomy of culture as a system of parameters and forms in contexts: nature, man, society; - to explain the origin and essence of signs, meanings, archetypes, symbols as a system of cultural code through correlation with the type of material culture defined by the way of being; - to streamline information on the cultural heritage of the inhabitants of Kazakhstan and determine the channels of their influence on the formation of the culture of the Kazakh people; - to classify the cultural capital of the Turks, streamline the forms and channels of cultural interaction with the peoples of Western Europe, the Middle East, identify their contribution to the intellectual and cultural history of mankind and the Kazakh people;

	<ul style="list-style-type: none"> - to provide reasoned and justified information on the various stages of the development of Kazakh culture as a factor in preserving the cultural heritage and the Kazakh language, including modern state programs for its development and modernization; - to give an objective assessment of the national cultural heritage from the position of maintaining the status of the Kazakh culture, the Kazakh language and their role in the formation of cultural and national identity; - assess the state of modern Kazakh culture, identify and justify the prospects for its development and the direction of modernization; - to build programs of professional activity taking into account cultural characteristics. <p>Understanding the psychological foundations of personality and the creation of a tentative basis for students to study personality; to form and develop the ability to effectively build interactions and communication with people, the ability to create a personal growth strategy, the ability to develop a path to successful professional activity. To be able to use the specifics of psychological knowledge in a specific activity; to analyze of the psychological reasons underlying the decrease in the effectiveness of activities; to apply psychological knowledge in future practice; to know and understand the psychological foundations of occupational stress and ways to overcome it.</p>
6. Course author	Department of Philosophy
7. Basic literature	<ol style="list-style-type: none"> 1. Джакупов С.М. «Введение в общую психологию». – А.: Қазақ университеті, 2014. 2. Руденко А.М. «Психология в схемах и таблицах»: учебное пособие. –М: Феникс, 2016. –379 с. 3. Нуржанов Б.Г., Ержанова А.М. «Культурология».-Алматы, 2011. 4. Жолдубаева А.К. «Культурология:практикум».-Алматы:Казну им. аль-Фараби, 2014.
8. The content of the discipline The development of the socio-humanitarian world view as the basis for the modernization of public consciousness through the formation of cultural identity, the ability to analyze and evaluate cultural situations based on an understanding of the nature of cultural processes, the specifics of cultural objects, the role of cultural values in intercultural communication. Fundamentals of general psychology, personality psychology, individual typological personality traits: temperament, character, ability; Emotional-volitional sphere of personality, Cognitive processes: memory, attention, imagination, thinking and speech. Psychology of professional communication.	

1. Basic information about the discipline:	
Name of the discipline	Information and communication technologies
2. The number of credits	5
3. Prerequisites:	Maths, physics
4. Post requisites:	GIS technology in agriculture / Environmental mapping and GIS
5. Competencies:	As a result of studying the discipline, students should: Know: <ul style="list-style-type: none"> - The main trends in the field of information and communication technologies; - the economic and political factors contributing to the development of information and communication technologies; - the features of various operating systems. - how to use information resources, to search and store information Be able to: <ul style="list-style-type: none"> - work with spreadsheets, perform data consolidation, build graphs; - work with databases; - apply methods and means of information protection; - design and create websites; - perform processing of vector and raster images;

	<ul style="list-style-type: none"> - create multimedia presentations; - use various social platforms for communication. <p>To master:</p> <ul style="list-style-type: none"> - the skills of applying modern information technologies in everyday life and in educational activities.
6. Course author	Department of Information and Communication Technologies
7. Basic literature	<ol style="list-style-type: none"> 1. Shynybekov D.A., Uskenbayeva R.K., Serbin V.V., Duzbayev N.T., Moldagulova A.N., Duisebekova K.S., Satybaldiyeva R.Z., Hasanova G.I., Urmashhev B.A. Information and communication technologies. Textbook: in 2 parts. Part 1, 1st ed. - Almaty: IITU, 2017. - 588 p., ISBN 978-601-7911-03-4 (A textbook in English with the stamp of the Ministry of Education and Science of the Republic of Kazakhstan) 2. Shynybekov D.A., Uskenbayeva R.K., Serbin V.V., Duzbayev N.T., Moldagulova A.N., Duisebekova K.S., Satybaldiyeva R.Z., Hasanova G.I., Urmashhev B.A. Information and communication technologies. Textbook: in 2 parts. Part 1, 1st ed. - Almaty: IITU, 2017. - 588 p., ISBN 978-601-7911-04-1 (A textbook in English with the stamp of the Ministry of Education and Science of the Republic of Kazakhstan) 3. Urmashhev B.A. Information and communication technology: Textbook / B.A. Urmashhev. – Almaty, 2016. - 410 p., ISBN 978-601-7940-02-7 (A textbook in English with the stamp of the Ministry of Education and Science of the Republic of Kazakhstan) 4. Нурпеисова Т.Б., Кайдаш И.Н. ИКТ. Учебное пособие / Алматы, изд-во Бастау, 2017, 183 с. 5. Nurpeisova T.B., Kaidash I.N. ICT, Almaty, Bastau, 2017. 241 p.
8. The content of the discipline	Data analysis. Data management. Database systems. Networks and telecommunications. Cybersecurity. Internet technologies. Cloud and mobile technology. Multimedia technology. Smart technologies: IoT, BigData, Blockchain. Artificial Intelligence. Green technologies in ICT. Teleconferencing. E-technology. E-business. E-learning. E-government. Information technology and the professional field. Industrial ICT.

1. Basic information about the discipline:	
Name of the discipline	Physical education
2. The number of credits	8
3. Prerequisites:	biology, anatomy, human physiology, hygiene, medical supervision, valeology, pedagogy, psychology
4. Post requisites:	The program of the course "Physical Culture" develops skills in the field of physical culture of students, forms the needs for maintaining a healthy lifestyle, maintaining and strengthening health, improves the level of physical fitness for the realization of their abilities in the process of everyday activities
5. Competencies:	<ul style="list-style-type: none"> - to master the methodological principles of physical education, methods and means of physical education. He independently applies them to increase the adaptive reserves of the body and promote health. - to master the knowledge and skills of a healthy lifestyle, ways to maintain and promote health. - to be able to follow socially significant ideas about a healthy lifestyle, adhere to a healthy lifestyle. - to master the basics of professionally-applied physical training, the basics of self-study techniques and can exercise self-control over the state of your body.
6. Course author	Shkurkov A.S., Satbaev E.K.
7. Basic literature	<ol style="list-style-type: none"> 1. Ильинич В.И. Физическая культура студента. -Москва, 2001. 2. Иванов Г.Д., Кульназаров А.К. Физическое воспитание студентов. -Алматы, 2002. 3. Теория и методика физического воспитания. / Под общ. ред. А.П. Матвеева и Д. Новикова. -М.: 2005.
8. The content of the discipline	Theoretical training. Athletics. Football. Basketball. Ski training.

1. Basic information about the discipline:	
Name of the discipline	Bases of economic theory and right
2. The number of credits	5
3. Prerequisites:	Philosophy, History of Kazakhstan, mathematics
4. Post requisites:	Business law
5. Competencies:	<ul style="list-style-type: none"> - to know the laws of economic development and law; - to know the basic concepts created during the long evolution of economic thought; - to know the principles of the functioning of the market mechanism of self-regulation and state influence on the economy; - to be able to systematize knowledge about the nature and forms of manifestation of economic and legal phenomena and processes; - to be able to put into practice the methods of scientific knowledge of economic and legal phenomena and patterns; - to have the skills to analyze the status and trends of socio-economic development of the national and world economy; - to have the skills of an interdisciplinary approach in solving economic and legal problems; - to have the skills necessary for the implementation of subjective rights and legal duties in various life situations.
6. Course author	Ovchinnikova T.V.
7. Basic literature	<ol style="list-style-type: none"> 1. Баликов В. З.. Общая экономическая теория. Учебник. –М.,2015 2. Базылев Н.И. Экономическая теория / Базылев Н.И., Базылева М.Н. Минск, 2010. 3. В. С. Гродский Экономическая теория: учеб. пособие для студентов бакалавриата. Стандарт третьего поколения / В. С. Гродский. СПб. : Питер, 2013 4. Джусибалиева А. К., А. А. Ержанова ; Экономическая теория : учеб. пособие / А. К. Джусибалиева, А. А. Ержанова ; рец.: Б. Е. Рустембаев, К. К. Хасенова ; М-во сельского хоз-ва. - Астана : КАТУ им.С.Сейфуллина, 2016 5. Сапаргалиев Г., Ибраева А.С.Теория государства и права. Учебник. Алматы: Жетіжарғы, 2012 6. Дулатпеков Н.О, Амандыкова С.К., Турлаев А.В. Основы государства права современного Казахстана. Алматы, 2012. 7. Атжанов Т.Ж., Роднов А.М. Теория государства и права: схемы и комментарии/ СПб. Астана-Север, 2013 8. www.nsc.kz 9. www.zakon.kz 10. www.conlex.kz/nauk_publicacii/regdejtao.html
8. The content of the discipline. The subject of the foundation of economics and law. Fundamentals of social production and economic systems. Forms of social economy, the emergence of money. The mechanism of functioning of the market system: demand, supply, price and competition. Production, costs and income of the company, markets for factors of production. National economy: content, structure and measurement of results. Economic growth and market instability: inflation and unemployment. State regulation and economic security of the national economy. The main branches of Kazakhstan law. Constitutional law. Administrative law. Civil law. Family law. Labor law. Criminal law.	

1. Basic information about the discipline:	
Name of the discipline	General Ecology
2. The number of credits	9
3. Prerequisites:	Biology
4. Post requisites:	Ecology of plants and animals, Ecological biogeography
5. Competencies:	As a result of studying the discipline, the student must:

	<p>know:</p> <ul style="list-style-type: none"> - the environmental laws and principles of interaction of organisms with the environment; - the types and composition of anthropogenic impact on the biosphere; - the essence of the current environmental crisis; - the requirements for professional responsibility for the preservation of the habitat; - The principles of state policy in the field of environmental protection. <p>to be able to:</p> <ul style="list-style-type: none"> - assess the state of ecosystems; - predict the consequences of their professional activities in terms of impact on biosphere processes; - choose the principles of environmental protection in accordance with environmental laws. <p>To master: analyzing socially significant problems and processes taking place in society, to predict their possible development in the future.</p>
6. Course author	A.T. Kuatbaev
7. Basic literature	<ol style="list-style-type: none"> 1. Куатбаев А.Т. Жалпы экология: оқулық. - Алматы: Дәуір, 2012. - 376 б. 2. Колумбаева С.Ж., Білдебаева Р.М. Жалпы экология. - Алматы: «Қазақ университеті», 2006. 3. Бигалиев А.Б., Халилов М.Ф., Шарипова М.А. Основы общей экологии. – Алматы: «Қазақ университеті», 2007. 4. Акимова Т.А., Хаскин В.В.. Экология. Человек-экономика-биота-среда., -М.: «ЮНИТИ», 2008. 5. Ильин В.И. Экология, - М.: «Перспектива», 2007. 6. Новиков Ю.В. Экология, окружающая среда и человек. - М.: «ФАИР-ПРЕСС», 2003.
8. The content of the discipline	<p>The place of ecology in modern science and in the training of specialists. The concept of ecology: the historical interpretation of the term (E. Haeckel), a modern definition that emphasizes the interdisciplinary nature of science. The history of ecology: the main stages, their characteristics, personalities. The subject and tasks of ecology. Objects of study of modern ecology, the relationship with the structure of science. Research methods of modern ecology. The main methodological approaches used in environmental research: ecosystem, population, evolutionary, historical. Levels of organization of living matter, studied in ecology. Periodization of change of concepts in the development of science. Modern ecology concept. Distinctive features of ecology at the present stage. Basic concepts and terms. The laws of B. Comonner. Types of global problems on the globe. Demographic and food problems. Environmental problems and their aspects. Shortage of fresh water and desertification, causes, consequences. Global warming, causes, consequences. UN Convention on Climate Change. Problems of the ozone layer, causes, consequences. Greenhouse effect, causes, consequences. Acid rain, photochemical smog. Problems of the oceans. Decrease in forest plantations, causes, consequences. Problems of biodiversity conservation.</p>

1. Basic information about the discipline:	
Name of the discipline	Climate change and green economy
2. The number of credits	4
3. Prerequisites:	General Ecology
4. Post requisites:	Environmental Analysis
5. Competencies:	<ul style="list-style-type: none"> - to have the opportunity to understand the components involved in the research process in the field of climate change and the green economy. To describe and recognize the main types of research in the field of climate change and the green economy in Kazakhstan. Critically analyze key theoretical, methodological and ethical issues in a study on climate change and the green economy. To use and explain the main quantitative and qualitative methods of data collection and analysis. To plan, design and carry out small research projects on topics of interest in the field of climate change and the green economy. - to know the key concepts of climate, climate features, its changes as a result of economic activity, the impact of

	<p>climate on natural and economic systems; the interconnection of the green economy and sustainable development on a global and national scale, the role of the green economy in the fight against climate change; adaptation to climate change in the world and the Republic of Kazakhstan; characteristics of greenhouse gases, their role in climate change, mechanisms for reducing GHG emissions, their implementation in Kazakhstan, GHG regulation system; the basics of energy conservation and energy efficiency; concepts of renewable energy sources, their types, practice in the field of international use, renewable energy potential in Kazakhstan; the impact of climate change on agriculture, the vulnerability of agriculture in Kazakhstan from climate change; consequences of climate impact on water resources, problems prevailing in the water sector of Kazakhstan, adaptation measures in the water sector; ways to solve the problem of waste offered by the green economy.</p> <p>- to be able to identify and analyze causal relationships of climate change and the environment; evaluate the role of climate resources in solving environmental, economic and social problems; use for solving research and practical problems related to the interaction of man and nature, the methods and tools of the "green" economy; draw up programs and plans for energy conservation in various sectors of the economy of Kazakhstan; analyze the best foreign practices in introducing new technologies, for example RES and make recommendations on their use in Kazakhstan; draw up programs for adaptation to climate change in the most vulnerable sectors of the economy of Kazakhstan; argued to defend their point of view in discussions on climate change and the green economy.</p> <p>- to have the skills to assess and analyze the state of the environment in connection with climate change, taking into account the requirements of the green economy; skills to develop national and regional programs and action plans for the implementation of green economy tools; ability to determine priority measures of the sustainable development policy of the Republic of Kazakhstan.</p>
6. Course author	Utarbaeva A.Sh.
7. Basic literature	<ol style="list-style-type: none"> 1. Алинов М.Ш. Основы зеленой экономики: учеб. пособие. - Алматы: Бастау, 2016. - 340 с. 2. Концепция по переходу Республики Казахстан к «зеленой экономике», утвержденная Указом Президента Республики Казахстан от 30 мая 2013 года № 577. 3. План мероприятий по реализации Концепции по переходу Республики Казахстан к «зеленой экономике» на 2013 – 2020 годы, утвержден постановлением Правительства Республики Казахстан от 31 июля 2013 года № 750. 4. Фюкс Р. Зеленая революция: Экономический рост без ущерба для экологии / пер. Е. Шукшина - М.: Альпина нон-фикшин, 2016. - 330 с. 5. Национальный доклад о состоянии окружающей среды в Республике Казахстан. Республиканское государственное предприятие «Информационно-аналитический центр охраны окружающей среды» Министерства энергетики Республики Казахстан. – Астана, 2015. 6. II-VI Национальное Сообщение Республики Казахстан Рамочной конвенции ООН об изменении климата. 7. Материалы шестой Конференции министров по окружающей среде и развитию в Азиатско-Тихоокеанском регионе MCED-6. 8. Towards a green economy in Europe: EU environmental policy targets and objectives 2010–2050. 9. Закон Республики Казахстан от 7 сентября 2011 года «Об энергосбережении и повышении энергоэффективности». 10. Киотский протокол к РКИК ООН. 11. ИСО 50001 - Энергетический менеджмент. 12. Association of Climate Change Officers training curriculum Renewables 2015 Global Status Report (GSR) – REN21. 13. Закон Республики Казахстан от 4 июля 2009 года № 165-IV «О поддержке использования возобновляемых источников энергии».
8. Discipline content. Climate change and the green economy. The concept of climate and its changes, the effects of climate change. Issues of sustainable development, the main provisions	

of the concept for the transition of the Republic of Kazakhstan to a green economy. International agreements to combat climate change, Kazakhstan's obligations under international agreements in the field of climate change. Renewable energy sources. Status and prospects of using renewable energy sources in Kazakhstan. Problems in the agricultural, water and other sectors of the economy that have developed in connection with climate change in Kazakhstan. Efficient waste management. Permissible discharges for water bodies.

1. Basic information about the discipline:	
Name of the discipline	Ecology of plants, animals and microorganisms
2. The number of credits	6
3. Prerequisites:	General Ecology
4. Post requisites:	Ecological biogeography, Ecosystem and Landscape Ecology
5. Competencies:	<p>The student must know:</p> <ul style="list-style-type: none"> - the place and role of plant and animal ecology as a science; - the resistance of plants and animals to the effects of adverse factors; - temperature, light, air, water, soil, biotic and anthropogenic factors as an environmental factor affecting plants and animals; - Features and patterns of distribution of plants and animal organisms; - the use and multi-species of plant and animal resources. <p>be able to:</p> <ul style="list-style-type: none"> - understand the mechanisms of the influence of environmental factors on plants and animals; - 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. <p>To master:</p> <ul style="list-style-type: none"> - the methods of searching for information in the field of plant and animal ecology; - the 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; - the skills of using theoretical and practical knowledge on the ecology of plants and animals in professional activities.
6. Course author	A.T. Kuatbaev
7. Basic literature	<ol style="list-style-type: none"> 1. Эметов Э.Э. Ботаника. Алматы: Дәуір, 2014. -512 бет. 2. Мухитдинов Н.М., Бегенов А.Б., Айдосова С.С. Өсімдіктер морфологиясы мен анатомиясы, Оқулық, Алматы, 2001. 280 бет. 3. Лотова Л.И. Морфология и анатомия высших растений М., 2000. 528 бет. 4. Березина Н.А., Афанасьева Т.А. Экология растений: учебное пособие. - М.: ИЦ «Академия», 2008. - 368 с. 5. Дәуітбаева, К. Ә.; Есжанов, Б. Е.; Сапарғалиева, Н. С.; Нұртазин, С. Т. Жануарлар алуантүрлілігі : оқулық. Алматы : Дәуір, 2011. - 712 б. 6. Олжабекова К. Б., Есжанов Б. Е. Омыртқалылар зоологиясы - Алматы : Қазақ ун-ті. - 2007. 1, 2 бөлімдер. - 398 б. 7. Есжанов Б. Е. , Көбегенова С. С., Нұртазин С. Т. Орнитология : оқулық. - Алматы : Дәуір, 2011. - 272 б.
8. The content of the discipline	
<p>History of the study of the ecology of plants and animals. The main methods of studying the ecology of plants and animals. Ecological classifications of organisms. Life form of plants and animals. General issues of the sustainability 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</p>	

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 groups of plants 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 and animals 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 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. 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.

1. Basic information about the discipline:	
Name of the discipline	Ecological biogeography
2. The number of credits	5
3. Prerequisites:	General Ecology
4. Post requisites:	Bioindication
5. Competencies:	<p>The student must know:</p> <ul style="list-style-type: none"> - The theoretical foundations of environmental biogeography, general resource management and environmental management, cartography; - the spatial patterns of distribution of environmental conditions for the existence of life on Earth; - the nature of the spread of biodiversity at the population-species and biocenotic levels of the organization; - The main laws of the formation, structure and chorology of flora, fauna and biomes of continents, islands, the oceans, freshwater bodies. <p>be able to:</p> <ul style="list-style-type: none"> - apply environmental methods in solving typical professional problems; - draw up cadastral reference maps of ranges; - navigate in modern theoretical and applied areas of biogeography; - apply the acquired knowledge to solve practical problems, use the reference literature, search and exchange information in global and local computer networks. <p>to master:</p> <ul style="list-style-type: none"> - the methods of searching and exchanging information in global and local computer networks; - the skills for assessing biodiversity, arealogy - the modern methods of biogeographic research.
6. Course author	A.T. Kuatbaev
7. Basic literature	<ol style="list-style-type: none"> 1. Абдурахманов Г.М., Криволицкий Д.А., Мяло Е.Г., Огуреева Г.Н. Биogeография: учеб. для вузов - М.: Изд. центр «Академия», 2003. - 480 с. 2. Мордкович В.Г. Основы биogeографии. -М.: 2005. 3. Радченко Т.А., Михайлов Ю.Е., Валдайских В.В. Биogeография. Курс лекций. 2015.
8. The content of the discipline	The place of biogeography among biological and geographical disciplines. The goals and objectives of the subject - the study of the main faunistic and floristic land regions and their

historical development. A brief history of the study of the geographical distribution of animals and plants: the work of K. Linnaeus, R. Roullet, C. Darwin, T. Huxley, N.A. Severtsova, M.A. Menzbir, Genter and Ortman on the basics of the resettlement of organisms. The concept of habitats. The ability of species to active and passive resettlement. The influence of wind, water, animals on the distribution of living organisms (anemochoria, hydrochoria, zoochoria: epi-, endo-, syn., Etc., ornitho-, myrmecochoria). Migrations of animals. Change of habitat in space and time. Typology of habitats. Continuous and disjunctive ranges. Lacc of the range. Cosmopolitan, Circumcontinental, vicarious, endemic areas. Point area. Island areas. Three-dimensional model of the species range. Alekhine's rule of precedence. The law of changing stations. The rule of geographical optimum. Allen's rule, Glauger's rule, Bergman's rule. Centers of distribution and origin of species. Centers of species diversity or distribution centers. The primary center of species diversity. Secondary Cent Development. The concept of flora and fauna. Cosmopolitan, endemic (paleoendemic and neoendemic). The ability of species to resettle (vagility), passive, active, mixed vagility. Physical and environmental barriers to resettlement. Acclimatization as a type of passive anthropohoric settlement of species. Range mapping methods. Outline, icon, extreme point method, mesh method. Patterns of distribution of communities. Latitudinal zoning and altitudinal zonation. Intrazonal and extrazonal communities. Provision of heat and moisture. "The perfect continent." The main types of biomes. A general characteristic of biogeographic regions. Paleogeographic factors of the modern distribution of living organisms. The kingdom of Paleogee and its divisions: Ethiopian region, Madagascar region, Indo-Malay (Oriental) region. The most characteristic representatives of the plant and animal world. The kingdom of Arctogeus and its divisions: Paleoarctic kingdom (European-Siberian region, Region of Ancient Middle-earth, East Asian, or Himalayan-Chinese region); Non-Arctic kingdom. The most characteristic representatives of the plant and animal world. The kingdom of Neogei. Neotropic (South American) region, Caribbean, or Antilles region. The most characteristic representatives of the plant and animal world. The kingdom of Notozey and its divisions: the Australian region, the New Zealand region of Patagonia, or the Golantarctic region. The most characteristic representatives of the plant and animal world. Kingdom of Cape.

1. Basic information about the discipline:	
Name of the discipline	Bioindication
2. The number of credits	5
3. Prerequisites:	Ecological biogeography
4. Post requisites:	Study about environmental resource using
5. Competencies:	<p>Learning Outcomes:</p> <p>To know and understand:</p> <ul style="list-style-type: none"> - the basic principles, approaches and areas of application of bioindication; - the risk factors in the environment, their sources and effects on humans; - the main sources of anthropogenic impact on ecosystems; - the patterns of technogenic and recreational successions of ecosystems; - the modern literature on the problems of the taught course. <p>- the general patterns of distribution of living organisms in space and time</p> <p>Be able to:</p> <ul style="list-style-type: none"> - select appropriate methods and test systems for assessing the state of biosystems in specific environmental conditions; - identify disturbances in ecosystems and provide business entities and management bodies with information about their condition; - present the acquired knowledge in the form of abstracts, reports, presentations <p>To master:</p> <ul style="list-style-type: none"> - the ideas about the tasks and structure of environmental monitoring; - the concept and methodology of risk and ideas about a comprehensive assessment of the risk to environmental health; - the methods of biological monitoring of the environment; - the skills of searching and selecting information on various sections of the course.
6. Course author	Zhaglovskaya A.A.
7. Basic literature	1. Биологический контроль окружающей среды: биоиндикация и биотестирование: учеб. Пособие для студ. высш. учеб.заведений/ О.П.Мелехова, Е.И.Сарапульцева, Т.И.Евсеева и др.; под ред. О.П.Мелеховой и

8. The content of the discipline

Bioindication of the environment. Ecological basis of bioindication. Biological indication. subject, tasks, methods. Bio indicators Bioindication and bioindication object. Bioindication types. Methods of bioindication research. Biochemical and physiological reactions to anthropogenic stressors. Bioindication at the tissue and body levels. Bioindication at the highest hierarchical levels: population, ecosystem, biocenosis. Recorded indicators of the state of biological systems at different levels of bioindication. Requirements for the characteristics of biotests. understanding of monitor organisms. Bioindication methods for assessing the quality of the air. Bioindication of air pollution. Bioindication of soil condition. Bioindication of water pollution. bioindication in forestry and agriculture. International bioindication programs.

1. Basic information about the discipline:

Name of the discipline	Ecosystem and landscape ecology
2. The number of credits	5
3. Prerequisites:	Ecology of animals, plants and microorganisms, Study about environmental resource using, Teaching about environment
4. Post requisites:	Conservation and rational using of bioresources
5. Competencies:	As a result of the training, the student must: know: -theoretical and methodological provisions of landscape ecology; - the patterns of organization and spatial and temporal dynamics of landscapes, their resistance to external influences; - geophysical, geochemical and environmental features of the functioning of landscapes; - the basic ecological functions of landscapes; be able to: - identify problems associated with the transformation of matter and energy in landscapes; -define the parameters characterizing the ecological state of landscapes; -analyze and evaluate the ecological state of landscapes. to master: - the special landscape ecological terminology; - the general methodological techniques of landscape-ecological research; - the basic skills for assessing the ecological state of landscapes.
6. Course author	Zhaglovskaya A.A.
7. Basic literature	1. Слюсарев В.Н. Ландшафтоведение. – Учебно-метод. пособ. – В. Н. Слюсарев, В. И. Терпелец, Е. Е. Баракина. – Краснодар: КубГАУ, 2013. – 58с. 2. Лопырѐв М.И., Макаренко С.А. Агрolandшафты и земледелие: Учебное пособие. Воронеж: ВГАУ, 2001. – 168 с. 3. Голованов А.И., Кожанов Е.С., Сухарѐв Е.И. Ландшафтоведение: учебник для студ. высш. учеб. заведений . – М.: КолосС, 2005. – 216 с. 4. Сабо Е.Д. Гидротехнические мелиорации объектов ландшафтного строительства: учеб. для студ. высш. учеб. завед./ Е.Д. Сабо, В.С. Теодоронский, А.А. Золотаревский. – М.: Изд. центр «Академия», 2008. – 336с. 5. Слюсарев В.Н. Геология: учеб. пособие (электрон. уч. пособ. на образоват. портале КубГАУ)/ В.Н. Слюсарев, В.И. Терпелец, А.В.Осипов. - Краснодар: КубГАУ, 2012.- 131 с.

8. The content of the discipline

The development of landscape ecology as a science, its main directions; the relationship between biota and abiotic components within ecosystems; spatial structures of ecosystems of all hierarchical levels (from local to global); main areas of application of landscape and environmental concepts. Sustainability of landscapes and applied landscape science. Stability, variability and dynamics of landscapes. The types of landscape changes are reversible and irreversible. Dynamics, landscape development. Centuries-old, secular rhythms of landscape

dynamics. Sustainability of landscapes. The development of the landscape, its connection with reversible and irreversible changes.

1. Basic information about the discipline:	
Name of the discipline	Fundamentals of soil science
2. The number of credits	5
3. Prerequisites:	General ecology
4. Post requisites:	Rangelands: Ecology, Conservation and Restoration
5. Competencies:	<ul style="list-style-type: none"> - The ability to use the concepts of soil science, the basic methods of studying soils, knowledge of morphology, soil properties, knowledge of the main pathogens of plant diseases, and sanitary and hygienic norms of the soil in the practice of scientific research. - The acquisition of practical skills in boxing, as well as working with drugs, microscopes, thermostats, soil determinants. - To be able to compare, formulate conclusions, build their own arguments, express and justify their position on soil science. - to be able to comply with personal hygiene standards, as well as standards for soil quality. - In the field of education - the ability to analyze the key problems of soil science from an environmental point of view.
6. Course author	Мухаметкаримов К.М.
7. Basic literature	<ol style="list-style-type: none"> 1. Алманова Ж.С., Кашкаров А.А. Охрана почв. Курс лекций для студентов специальности «Экология». –Астана. КазАТУ, 2014. -101 с. http://portal.kazatu.kz/e-books/content/7SyPO7z6D3RMLvnyYTEm/index.pdf 2. Геннадиев А.Н. География почв с основами почвоведения. Учебник - 2 изд. / А.Н. Геннадиев, М.А. Глазовская. - М.: Высшая школа, 2008. - 462 с. 3. Соколов И.А. Современные проблемы генетического почвоведения. Новосибирск: Гуманитарные технологии, 2004. - 288 с.
8. The content of the discipline. Fundamentals of soil science, the basic laws of soil cover formation, the relationship of soil science with the Earth sciences, ecology, agriculture, crop production, biology, geology, ecology and other sciences. The main soil-forming processes, soil-forming factors and environmental factors and their influence on soil formation, its physical and chemical properties. The main types of soils, their identification, assessment of the potential of soils and the development of measures for the effective environmental use of soil resources and the determination of soil bonitet score and features of the economic use of various soils. Land resources and basic methods of protecting soils from harmful effects, assessing the influence of soil formation factors on the formation and development of soil and its properties.	

1. Basic information about the discipline:	
Name of the discipline	Methods of processing and recycling agricultural waste
2. The number of credits	5
3. Prerequisites:	General Ecology
4. Post requisites:	Integrated plant protection
5. Competencies:	<ul style="list-style-type: none"> - To study the basic principles, knowledge and understanding of the need to reduce and prevent the impact of environmental disturbances on agroecosystems and agricultural products. - To know the features of the relationship of agrocenosis organisms with the environment and alternative farming systems. - To master the skills to preserve and restore natural and agricultural ecosystems. - To master methods of conservation of the modern agricultural sphere. - To be able to develop environmental protection measures. - To be able to practically apply knowledge on the discipline Agricultural Ecology, they should know the biosphere resources and food problems, agroecosystems, water pollution in conditions of intensification of agricultural production.

	- To be able to practically apply knowledge on agro-ecological monitoring, environmental fundamentals of agricultural production. Protection of flora and fauna. - To be able to conduct research on soils, crop and livestock products.
6. Course author	Zhanabergenov A.O.
7. Basic literature	1. Баранников В.Д., Кириллов Н. К. Экологическая безопасность сельскохозяйственной продукции. – М.: Колос, 2005. 2. Лер Р. Переработка и использование сельскохозяйственных отходов. -М.: Колос. 1999. - 411 с. 3. Сидоренко О.Д. Биоконверсия отходов животноводства. -М.: Изд-во МСХА, 2000. - 50 с.
8. The content of the discipline. Fundamentals of resource-saving Natural resource use. Legal and economic aspects of management in the treatment of agricultural waste and consumption. Terminology and classification of agricultural waste and consumption. Methods of processing and recycling agricultural waste.	

1. Basic information about the discipline:	
Name of the discipline	Industrial ecology
2. The number of credits	5
3. Prerequisites:	Urban ecology
4. Post requisites:	Environment Impact Assesment
5. Competencies:	- to have an idea of the negative effects caused by industrial enterprises. Ecologization of technological industrial enterprises, the use of knowledge gained in their activities. - to assess the environmental status of industrial sites. - to 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 Natural resource use. - 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.
6. Course author	Ismailova A.A.
7. Basic literature	1. Экологический кодекс Республики Казахстан от 9.01. 2007. 2. Голицин А.Н. Промышленная экология и мониторинг загрязнения природной среды. –М.: Высшая школа. 2010. -336 с. 3. Денисов В.В. Промышленная экология. -М.: Высшая школа. 2007. -720 с. 4. Гутенев В.В., Денисов В.В., Камышев А.П., Москаленко А.П., Нагибеда Б.А., Осадчий С.Ю., Хорунжий Б.И. Промышленная экология. -М.: «МарТ», 2007. – 368 с
8. The content of the discipline. Sources of pollution of surface and groundwater, methods for their purification. Measures to protect atmospheric air, water and land resources. Classification of subsoil use. Radioactive contamination and neutralization of radioactive waste. Urban ecology and construction. Utilization of associated and by-products, recycled materials. Environmental activities in industrial enterprises. Ecological passport of an industrial enterprise. Processes and devices for environmental safety and resource-saving technologies.	

1. Basic information about the discipline:	
Name of the discipline	Radioecology
2. The number of credits	5
3. Prerequisites:	Urban ecology
4. Post requisites:	Environment Impact Assesment

5. Competencies:	- Knowledge of the physical fundamentals of radioactivity, sources of radioactive radiation, standards for radiation exposure and its regulation, environmental problems of nuclear energy, problems of the processing of radioactive waste and their disposal. The conditions are dependent on the formation of a dose load acting on individual organisms and the entire community.
6. Course author	Ismailova A.A.
7. Basic literature	1. Александров Ю.А. Основы радиационной экологии: Учебное пособие. - Йошкар-Ола: Мар. гос. ун-т, 2007. - 268 с. 2. Пивоваров Ю.П., Михалев В.П. Радиационная экология: Учеб. пособие для студ. высш. учеб. заведений. / Ю.П. Пивоваров, В.П. Михалев – М.: Издательский центр «Академия», 2004. – 240 с. 3. Степановских А.С. Прикладная экология: Охрана окружающей среды. Учебник для вузов. / А.С. Степановских - М.: Юнити-Дана, 2003, 2005. - 751 с. 4. Виноградов Ю.А. Ионизирующая радиация: обнаружение, контроль, защита / Ю.А. Виноградов. - М. : СОЛОН-Р, 2002. - 221с.
8. The content of the discipline.	The basics of radioactivity, natural and anthropogenic sources of radioactivity, the spread of radioactive contaminants in the biosphere and the effects of radioactive radiation on all living things. Problems of radiation safety. The physical basis of radioactivity. Radioactive Safety Standards. Natural sources of radiation. Artificial radioactivity. Anthropogenic sources of radioactivity .. Radioactivity of the nuclear fuel cycle (NFC). Nuclear reactors, radioactive waste and radiosensitivity. Radiation protection.

1. Basic information about the discipline:	
Name of the discipline	Environment Impact Assessment
2. The number of credits	5
3. Prerequisites:	Radioecology, Industrial Ecology
4. Post requisites:	Environmental documentation for companies
5. Competencies:	As a result of studying the discipline, students should: Have an idea of: - types of environmental activities; - principles and rules of environmental protection; To know and understand: - regulatory documentation for environmental protection; - OS quality standards. Be able to: - assess the impact of various activities on the OS; - Conduct OS quality assessment through an instrumental approach. To master: - the methods of processing, analysis and synthesis of field and laboratory environmental information and use theoretical knowledge in practice. To gain practical skills: - Theoretical and practical skills in controlling the quality of OS using norms and rules, normative documentation, quality standards of OS, means of instrumental control.
6. Course author	Zhaglovskaya A.A.
7. Basic literature	1. Буторина М.В., Воробьев П.В., Дмитриева АП. и др. Инженерная экология и экологический менеджмент. -М.: Логос, 2003.

	2. Донченко В.К., Питулько В.М., Растоскуев В.В. и др. Экологическая экспертиза. -М.: Издательский центр «Академия», 2004.
8. The content of the discipline. Environmental impact management. Historical stages of OS protection: environmental regulation sanitary and hygienic standards. Production and business standards. Rationing the state of ecosystems. Rationing of Natural resource use. Environmental assessment. The concept of environmental audit. Rationing of Natural resource use in the Republic of Kazakhstan.	
1. Basic information about the discipline:	
Name of the discipline	Economy of nature using
2. The number of credits	5
3. Prerequisites:	General Ecology
4. Post requisites:	Pre-graduation practice
5. Competencies:	<ul style="list-style-type: none"> - to have an idea of the negative effects caused by industrial enterprises. Ecologization of technological industrial enterprises, the use of knowledge gained in their activities. - to assess the environmental status of industrial sites. Use the basic methods of environmental assessments of the state parameters of natural-technical systems. - to carry out calculations and predict changes in environmental sustainability to anthropogenic impact. Ecology as a theoretical basis for nature conservation and rational Natural resource use. - 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>Fundamentals of Natural resource use 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 primary sector of the Republic of Kazakhstan.</p> <ul style="list-style-type: none"> - The use of an integrated approach in the study of economic problems of environmental management.
6. Course author	Shupshibaev K.K.
7. Basic literature	<ol style="list-style-type: none"> 1. Экологический кодекс Республики Казахстан от 9.01. 2007. 2. Бобылев С.Н., Ходжаев А.Ш. Экономика природопользования: Учебник. - М.: ИНФРА-М, 2004. - 501 с. 3. Предельно-допустимые концентрации (ПДК) загрязняющих веществ в атмосферном воздухе населенных мест ГН 2.1.6.695–98 РК 3.02.036 99. 4. Голицин А.Н. Промышленная экология и мониторинг загрязнения природной среды. –М.: Высшая школа. 2010. -336 с. 5. Денисов В.В. Промышленная экология. -М.: Высшая школа. 2007. -720 с. 6. Гутенев В.В., Денисов В.В., Камышев А.П., Москаленко А.П., Нагибеда Б.А., Осадчий С.Ю., Хорунжий Б.И. Промышленная экология. -М.: «МарТ», 2007. – 368 с. 7. Тонкопий М.С. Экология и экономика природопользования. -Алматы, 2003. 8. Глушкова В.Г., Макара С.В. Экономика природопользования: учебник для бакалавров. - 2-е изд., перераб. и доп. - М.: Издательство Юрайт, 2013. - 588 с.
8. The content of the discipline Natural science and economic foundations of environmental economics. General characteristics of the natural resource potential and the main environmental problems of the Republic of Kazakhstan. The content of existing economic mechanisms for environmental management. Problems and prospects of developing a system of environmental management and 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. The experience of using the most justified effective ways of rational use of natural conditions and resources and environmental protection, taking into account the environmental, socio-economic consequences of the interaction of nature and society.	

1. Basic information about the discipline:	
Name of the discipline	Ecological safety of agricultural products
2. The number of credits	5
3. Prerequisites:	General Ecology, Environmental chemistry
4. Post requisites:	Environmental Analysis
5. Competencies:	To study the theoretical aspects and identify the nature of the pollution of agricultural land located near the agricultural sector. To master the 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 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.
6. Course author	Satybaldieva G.K., Satova K.M.
7. Basic literature	<ol style="list-style-type: none"> 1. Кузнецов М.С. Эрозия и охрана почв: учеб. для вузов. - Моск. гос. ун-т им. М.В. Ломоносова. -2-е изд. -М.: Изд-во Колосс, 2004. -350с. 2. Баранников В.Д. Экологическая безопасность сельскохозяйственной продукции: учебное пособие для студентов вузов. -М.: КолосС, 2005. -350 с. 3. Калыгин В.Г. Безопасность жизнедеятельности. Промышленная и экологическая безопасность в техногенных ЧС. -М.: Колосс, Химия, 2006. -520 с. 4. Каплин В.Г. Основы экотоксикологии: учебное пособие для студентов. -М.: КолосС, 2007. -231 с. 5. Герасименко В.П. Практикум по агроэкологии: учебное пособие для студентов с.х. вузов, обучающихся по специальности 110102-Агроэкология. -СПб.: Лань, 2009. -427 с. 6. Семенова И.И., Акбердина Р.Х. Основы экологической токсикологии: курс лекций для эколог. специальностей вузов). -Чебоксары: Чебоксарский фил. РГСУ, 2009. -102 с. 7. Витол И.С. Безопасность продовольственного сырья и продуктов питания: учеб. для студентов вузов. -М.: ДеЛи принт, 2010. -350 с. 8. Кирюшин В.И. Теория адаптивно-ландшафтного земледелия и проектирование агроландшафтов. –М.: Колосс, 2011. – 442 с. 9. Ким И.Н. Безопасность продовольственного сырья и продуктов питания: учебное пособие. – 1 часть. -М.: Юрайт, 2018. -230 с.
8. The content of the discipline	The essence and specificity of the subject is to determine the 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.

Appendix 4 Description of Disciplines of the Elective Component

1. Basic information about the discipline:	
Name of the discipline	Ecological aspects of natural science
2. The number of credits	5
3. Prerequisites:	School Biology Course
4. Post requisites:	Landscape ecology and ecosystems
5. Competencies:	<ul style="list-style-type: none"> - to know how 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. How to analyze environmental objects and methods of protecting the environment from pollution. - to 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. - to master: analyzing natural science methods in human areas of activity, problems using theoretical and practical knowledge; - to demonstrate knowledge and understanding in the field of study, including elements of the most advanced knowledge in the field
6. Course author	Nurbaeva N.A.
7. Basic literature	<ol style="list-style-type: none"> 1. Бродский А. К. Общая экология. -М.: Академия, 2006. - 256 с. 2. Естествознания и основы экологии: Учеб.пособие/ Р.А. Перросова, В.П. Голов, В.И. Сивоглазов, Е.К. Страуд. 4-е изд., стереотип. М.: «Академия» 2004. 3. Стадницкий Г. В. Экология. -М: Высшая школа, 1988. - 270 с. 4. Воронков Н. А. Основы общей экологии. -М.: АГАР, 1997. - 87 с. 5. Тарасова Н. П., Кузнецов В.А. Химия окружающей среды: Атмосфера. Учебное пособие для вузов. – М.: ИКЦ «Академкнига», 2007. – 228 с. 6. Голдовская Л. Ф. Химия окружающей среды. Учебник для вузов. – М.: Мир, 2005. – 296 с. 7. Ложниченко О. В., Волкова И. В., Зайцев В. Ф. Экологическая химия. Учебное пособие для вузов. – М.: ИЦ «Академия», 2008. -272с.
8. The content of the discipline. 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.	

1. Basic information about the discipline:	
Name of the discipline	Teaching about environment
2. The number of credits	5
3. Prerequisites:	School Biology Course
4. Post requisites:	Ecosystem and Landscape Ecology
5. Competencies:	- to develop 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.

	- to 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 and independently identify the main worldview, methodological and social problems with which he may come into contact in the process of practical activity.
6. Course author	Ismailova A.A.
7. Basic literature	1. Қуатбаев А.Т. Жалпы экология: оқулық. - Алматы: Дәуір, 2012. - 376 б. 2. Колумбаева С.Ж., Білдебаева Р.М. Жалпы экология. - Алматы: «Қазақ университеті», 2006. 3. Бигалиев А.Б., Халилов М.Ф., Шарипова М.А. Основы общей экологии. – Алматы: «Қазақ университеті», 2007.
8. The content of the discipline.	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. Zoning 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.

1. Basic information about the discipline:	
Name of the discipline	Environmental chemistry
2. The number of credits	5
3. Prerequisites:	General ecology
4. Post requisites:	Protection of atmospheric air, Water resources protection, Runoff, Erosion and Restoration
5. Competencies:	- to 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 acquire practical skills in the selection and preparation of samples for analysis; performing quantitative chemical analysis in natural objects.
6. Course author	Satova K.M.
7. Basic literature	1. Астафьева Л.С. Экологическая химия. М.: Академия. 2006. – 224 с. 2. Тарасова Н. П., Кузнецов В. А. Химия окружающей среды: Атмосфера. Учебное пособие для вузов. – М.: ИКЦ «Академкнига», 2007. – 228 с. 3. Голдовская, Л.Ф. Химия окружающей среды: учебник: допущено МО РФ/ М.: Мир:БИНОМ.Лаборатория знаний, 2008. – 294 с. 4. Ложниченко О. В., Волкова И. В., Зайцев В. Ф. Экологическая химия. Учебное пособие для вузов. – М.: ИЦ «Академия», 2008. – 272 с. 5. Егоров В.В. Экологическая химия: учеб. пособие для студентов вузов / Егоров В.В. - СПб.: Лань, 2009. - 181 с. 6. Сатова К.М. Экологическая химия. Учебное пособие. – Астана: КазАТУ им. С. Сейфуллина, 2018. – 274 с. 7. Лебедь Л.В., Дружкина Т.А., Гусакова Н.Н. Экологическая химия: Учебное пособие - Саратов, Изд-во: ФГОУ ВПО «Саратовский ГАУ», 2008, 152 с 8. Афанасьев Ю.А. Экологическая химия.- М. Изд-во МНЭПУ, 2008, 60 с.

9. Березина Н.А., Афанасьева Н.Б. Экология растений.- М.: Издательский центр «Академия», 2009. - 400с.
 10. Садовникова Л.К., Орлов Д.С., Лозановская И.Н. Экология и охрана окружающей среды при химическом загрязнении. Учебное пособие.- М: Выс.шк., – 2006. – 334с.
 11. Информационный бюллетень о состоянии окружающей среды РК с 2007 по 2018гг.
 12. Экологический кодекс РК. – Алматы: Юрист, 2007. – 164 с. С поправками 15.04.17. № 56- VI ЗРК.
 13. Федоров А.А., Казиев Г.З., Казакова Г.Д. Методы химического анализа объектов природной среды. – М.: КолосС, 2008. – 118 с.
 14. Васильев В.П. и др. Аналитическая химия. Лабораторный практикум. – М.: Дрофа, 2004. - 416 с.
 15. Трифонов К.И. Физико-химические процессы в техносфере/ К.И. Трифонов, В.А. Девисилов. – М.: ФОРУМ: ИНФРА-М, 2007. – 240 с

8. The content of the discipline. 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. 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.

1. Basic information about the discipline:

Name of the discipline	English for special purposes
2. The number of credits	6
3. Prerequisites:	Foreign language
4. Post requisites:	English Academic Language
5. Competencies:	As a result of studying the discipline, students should: know: - the 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; - the methods for collecting, storing and processing environmental information; educational and scientific literature, online resources on environmental issues in a professionally-oriented foreign language; be able 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; - 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

	<p>indirect communication (lectures, reports, television and Internet programs).</p> <ul style="list-style-type: none"> - conduct educational and upbringing work in a foreign language environment in the field of ecology; have skills: - communicate 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; - conduct business correspondence, correspondence in a professionally-oriented foreign language; - record the results of field and experimental environmental studies for the subsequent writing of essays, essays and scientific articles in a foreign language.
6. Course author	Zhaglovskaya A.A.
7. Basic literature	<ol style="list-style-type: none"> 1. Савельев Л.А. Учебное пособие английского языка "EnglishfortheStudentsofEcology" для экологов. СПб: изд. РГГМУ, 2007 - 148 с. 2. Saspugayeva G.Y. Ecology. Textbook. S.Seifullin Kazakh agrotechnical university, 2015, 179 pages 3. Иванова Н.К. - Английский язык для химиков (фонетика), Иваново, "ИГХТУ", 2007, 100 с. (адрес в Интернете: http://main.isuct.ru/files/dept/ino/fonetika.pdf) 4. Кутепова М.М. - The world of chemistry / Английский язык для химиков: Учебник: Изд. 4-е. М.: КД Университет, 2006, 256 с. 5. Серебренникова Э.И., Круглякова И.Е. - Английский язык для химиков: Учебник: Изд. 3-е. М.: Альянс, 2009, 400 с. 6. Тимофеева Т.В., Поталуй Л.В. - Technical Correspondence: Учебное пособие по английскому языку, Воронеж: Изд-во ВГУ, 2005, 27 с. (адрес в Интернете: http://window.edu.ru/window catalog/files/r40141/may05070.pdf) 7. К. Harding. English for Specific Purposes. Oxford University Press, 2009. 8. Акимова Т.А. Экология. Человек - Экономика - Биота - Среда.-М: ЮНИТИ, 2007.
8. The content of the discipline. 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. The definition of ecology as a science Ecology. Individuals - autecology. Ecological factors and their classification. The laws in ecology. Ecological factor. Trophic structure of the ecological community. Ecosystem and biocenosis. Population ecology. Characteristics of the population. The biosphere and noosphere concept. Natural resources.	

1. Basic information about the discipline:	
Name of the discipline	Study about environmental resource using
2. The number of credits	5
3. Prerequisites:	Bioindication
4. Post requisites:	Environmental mapping and GIS
5. Competencies:	<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; - The main problems of using natural resources and ways to solve them. <p>Be able to:</p> <ul style="list-style-type: none"> - analyze the state of natural resource potential in the world and Kazakhstan;

	<ul style="list-style-type: none"> - 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. <p>To master:</p> <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.
6. Course author	Zhaglovskaya A.A
7. Basic literature	<ol style="list-style-type: none"> 1. Капитонов, Д.Ю. Ресурсоведение : учебное пособие / Д.Ю. Капитонов. Воронеж : Воронежская государственная лесотехническая академия, 2011. [Электронный ресурс]. 2. Иванов, Е.С. Экологическое ресурсоведение: учебное пособие / Е. С. Иванов, Б. И. Кочуров, В. В. Черная; под ред. Ю. А. Мажайского. Москва : ЛЕНАНД, 2015 3. Бобылев С.Н., Ходжаев А.Ш. Экономика природопользования М.: ТЭИС, 2007 4. Воронцов А.П., Ресурсосбережение в АПК. М.: Юридическая книга, 2006 5. Панин М.С. Экология почв. – Алматы: Изд-во «Раритет», 2008. – 528 с.
8. The content of the discipline.	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 basics of Natural resource use and resource conservation.

1. Basic information about the discipline:	
Name of the discipline	Protection of atmospheric air
2. The number of credits	5
3. Prerequisites:	Environmental chemistry
4. Post requisites:	Environment Impact Assesment
5. Competencies:	<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. - to know and understand the main types of pollutant emissions into the atmosphere. - to 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.
6. Course author	Satova K.M.
7. Basic literature	<ol style="list-style-type: none"> 1. Бредшнайдер Б., Курфюрот И. «Охрана воздушного бассейна от загрязнений» - Химия, 2009. -288 с. 2. <i>Whitby K. T.</i>: The Physical Characteristics of Sulphur Aerosols. Lecture at the International Symposium on Sulphur in Atmosphere. Dubrovnik, Jugoslavia, Sept. 7 to 14, 2007. 3. Новиков Ю.В. Экология, окружающая среда и человек: Учебное пособие для вузов. – М.: ФОИР-ПРЕСС, 2007. – 320 с. 4. Полонский В.М. «Охрана воздушного бассейна». – М, 2006.-152с 5. Методика расчета выбросов загрязняющих веществ в атмосферу от животноводческих комплексов и звероферм, 2015. 6. Сальников В.Г. Мониторинг состояния атмосферы.–Алматы: Казак университети, 2007.

	<p>–166с.</p> <p>7. Садовникова Л.К., Орлов Д.С., Лозановская И.Н. Экология и охрана окружающей среды при химическом загрязнении. Учебное пособие.–М.: Высш. шк., 2006. – 344с.</p> <p>8. Экологический кодекс Республики Казахстан. –Астана, 2007.- 192с. С поправками 15.06.17.</p>
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8. The content of the discipline. 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 gineries) 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.

1. Basic information about the discipline:

Name of the discipline	Water resources protection
2. The number of credits	5
3. Prerequisites:	Environmental chemistry
4. Post requisites:	Environment Impact Assesment
5. Competencies:	<p>- to 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 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</p> <p>- 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,</p> <p>- to master the methods for determining the composition and properties of natural and wastewater, the rules for normalizing water quality and water consumption</p>
6. Course author	Utarbayeva A.Sh.
7. Basic literature	<p>1. Водный кодекс Республики Казахстан (с изменениями и дополнениями по состоянию на 15.06.2015 г.). http://adilet.zan.kz/rus/docs/K030000481</p> <p>2. Экологический кодекс Республики Казахстан (с изменениями и дополнениями по состоянию на 15.06.2015 г.) http://adilet.zan.kz/rus/docs/K070000212.</p> <p>3. Жапарова С.Б., Бекпергенова Ж.Б. Охрана водных ресурсов .Учебное пособие. Астана - 2013.</p> <p>4. Экологические индикаторы мониторинга и оценки окружающей среды. - Комитет по статистике, 2015.</p> <p>5. А.К. Стрелков, С.Ю. Теплых Охрана водных ресурсов: Учебник. Москва : Издательство АСВ 2015, 240 с.</p> <p>6. Ю.Л. Максименко, Г.Н. Кудряшова Охрана водных ресурсов: учебник - Москва: Издательство АСВ, 2015. - 256 с.</p>

8. The content of the discipline. 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.

1. Basic information about the discipline:	
Name of the discipline	Runoff, Erosion and Restoration
2. The number of credits	5
3. Prerequisites:	Environmental chemistry
4. Post requisites:	Environment Impact Assessment
5. Competencies:	<p>- to 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.</p> <p>- to 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.</p> <p>- to possess the skills for diagnosing soil erosion, assessing the erosion hazard of soil cover, and using methods to combat soil water erosion.</p>
6. Course author	Utarbayeva A.Sh.
7. Basic literature	<ol style="list-style-type: none"> 1. Алексеев, Л.С. Контроль качества воды / Л.С. Алексеев. М., 2010. 2. Ивчатов, А.Л. Химия воды и микробиология / А.Л. Ивчатов, В.И. Малов. М., 2009. 3. Беленков А.И. Защита почв от эрозии и дефляции, воспроизводство их плодородия/Беленков А.И., Плещачев Ю.Н., Николаев В. А., Кривцов И.В. - М.: НИЦ ИНФРА М: 2016, 224 с. 4. Гальперин М. В. Экологические основы природопользования: Учебник / М.В. Гальперин. - 2-е изд., испр. - М.: ИД ФОРУМ: НИЦ ИНФРА-М, 2014. - 256 с. 5. Другов Ю.С. Анализ загрязненной воды: прак. рук-во эл. издание М. БИНОМ. Лаборатория знаний. 2012. 678с. 6. Михайлова, С.И. Эрозия почв и сети оврагов [Электронный ресурс] : учебное пособие / С.И. Михайлова ; Поволжский государственный технологический университет. - Йошкар-Ола : ПГТУ, 2016. - 84 с.
8. The content of the discipline. 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 action of water flows. Factors of water erosion of soils. Methods of studying soil erosion. Methods of combating water soil erosion. 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.	

1. Basic information about the discipline:	
Name of the discipline	Urban ecology
2. The number of credits	5
3. Prerequisites:	General ecology
4. Post requisites:	Industrial Ecology, Radioecology
5. Competencies:	- to know: the theoretical issues of urban ecology, the main anthropogenic factors affecting the ecology of the urban 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

	<p>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.</p> <p>- to 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.</p> <p>- to master 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.</p>
6. Course author	Utarbayeva A.Sh.
7. Basic literature	<ol style="list-style-type: none"> 1. Биологический контроль окружающей среды : биоиндикация и биотестирование [Текст] : учеб. пособие для студ. вузов / Под ред. О. П. Мелеховой, Е. И. Егоровой. – М. : Академия, 2007. – 287 с. 2. Лештаев, А. А. Влияние урбанизации на окружающую среду и здоровье человека в условиях Крайнего Севера [Текст] : учебно-методическое пособие / А. А. Лештаев, А. В. Николаев. – Мурманск : МГПУ, 2005. – 34 с. 3. Мельников, А. А. Проблемы окружающей среды и стратегия ее сохранения [Текст] : Учеб. пособие для студ. вузов / А. А. Мельников. – М. : Академический Проект : Гаудеамус, 2009. – 720 с. 4. Тетиор, А.Н. Экология городской среды [Текст] : Учебник / А.Н. Тетиор. – М. : ИЦ «Академия», 2013. – 352 с. 5. Косицына Э.С. Экология городской среды : учебное пособие / Э.С. Косицына ; Волгогр. гос. архит.-строит. ун-т. - Волгоград: ВолгГАСУ, 2007. - 84 с.
8. The content of the discipline. 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 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.	

1. Basic information about the discipline:	
Name of the discipline	Agroecology
2. The number of credits	5
3. Prerequisites:	General ecology
4. Post requisites:	Agriculture and the Environment
5. Competencies:	<p>- to know: the structural organization of agroecosystems, the role of cultural populations plants in maintaining the stability of agroecosystems, the basic principles of regulation and optimization of agroecosystems;</p> <p>- to be able to: build phenospectra using data from phenological observations;</p> <p>- to carry out an indication of the ecological state of soils and vegetation, bioassay;</p> <p>- to master the skills to describe and account for soil and other environmental conditions plant growth; rational use of agroecosystems</p>
6. Course author	Zhanabergenov A.O.
7. Basic literature	<ol style="list-style-type: none"> 1. Агрэкологія : учеб / В. А. Черников [и др.] ; под ред. В. А. Черникова, А. И.Чекереса. - Москва : Колос, 2000. - 536 с. 2. Сельскохозяйственная экология : учеб. пособие / Н. А. Уразаев, А. А. Вакулин, А.В. Никитин. - 2-е

	изд., перераб. и доп. - Москва : Колос, 2000. – 304 с. 3. Черников, В. А. Экологически безопасная продукция : учеб. пособие / В. А. Черников, О. А. Соколов. - Москва : КолосС, 2009. - 438 с.
8. The content of the discipline. Agroecology as a science. Features of the functioning of agroecosystems. Agroecosystems. Types, structure and functions of agroecosystems. Types of organization of agroecosystems. Agroecological problems, ways to solve them, measures to prevent. Production of environmentally friendly products.	

1. Basic information about the discipline:	
Name of the discipline	Biological ecology
2. The number of credits	5
3. Prerequisites:	General ecology
4. Post requisites:	Agriculture and the environment
5. Competencies:	<p>- to know: the general laws of interaction between living organisms and their environment; general laws of spatial distribution of living organisms, changes and regulation of the number of organs, energy flow and circulation of substances flowing through living systems, the functioning of ecological systems and the entire biosphere; principles of rational Natural resource use; Actual problems of modern theoretical, classical ecology; socio-environmental consequences of anthropogenic activities.</p> <p>- to be able to: analyze the progress of environmental processes associated with anthropogenic impact on the environment; apply the acquired knowledge about the laws of interaction of living organisms and the environment in practice; to generalize knowledge about the laws of development of the biosphere, the conditions for maintaining its stability, as well as the implementation of the idea of sustainable development in various countries, including the Republic of Kazakhstan.</p> <p>- to master the skills to monitor the current state of environmental components (atmosphere, hydrosphere, lithosphere, biocenosis) using information about their environmental components (atmosphere, hydrosphere, lithosphere, biocenosis); analysis of natural and anthropogenic environmental processes and predicting possible ways to regulate them, using methods of safe human communication with the environment, when working independently, focus on searching, understanding data, analyze, formulate thoughts.</p>
6. Course author	Utarbayeva A.Sh.
7. Basic literature	<ol style="list-style-type: none"> 1. Вахненко Д.В. Биология с основами экологии: учебник для вузов/ Д. В. Вахненко, Т. С. Гарнизоненко, С. И. Колесников; под общ. ред. В. Н. Думбая. -Ростов н/Д:Феникс,2004.-506 с. 2. Мамонтов, С. Г. Биология: учеб. пособие для студентов вузов/С. Г.Мамонтов, В. Б. Захаров, Т. А. Козлова; под ред. С. Г. Мамонтова.-М. :Академия,2006.-568 с., с ил. 3. Родионов А. И. Защита биосферы от промышленных выбросов. Основы проектирования технологических процессов: учеб. пособие для студентов вузов/ А.И Родионов, Ю. П. Кузнецов, Г. С. Соловьев.- М.: Химия; КолосС,2005.-387 с 4. Бродский А. К. Общая экология: учебник. - 5-е изд., перераб. и доп. - М. : Издательский центр "Академия", 2010. - 256 с. 5. Смирнов А.А. Биология с основами экологии: учебное пособие. 2014. 175 с.
8. The content of the discipline. Issues of improving the environment, maintaining equilibrium in the biosphere, safe communication and the environment. The main laws of interaction between living organisms and the environment. The principles of functioning of ecological systems and the entire biosphere. The main laws of sustainable development of nature and society. Creation of safe and harmless living conditions and the environment. Analysis of natural and man-made environmental processes and prediction of possible ways to regulate them. The state of pollution of environmental components. Patterns of circulation of substances and energy through living systems.	

1. Basic information about the discipline:	
Name of the discipline	Nature Conservation Biology
2. The number of credits	5
3. Prerequisites:	General ecology
4. Post requisites:	Agriculture and the environment
5. Competencies:	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 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. to master: - independently determine the types of bioresources of local flora and fauna: - how 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
6. Course author	A.T. Kuvatbaev
7. Basic literature	1. Мұхитдинов Н.М., Есжанов Б.Е., Сатыбалдиева Г.Қ., Тыныбеков Б.М. Қазақстан биоресурстары. Оқу құралы. «Қазақ университеті». Алматы, 2016 ж. 322 б. 2. Мухитдинов Н.М., Паршина Г.Н. Лекарственные растения. Алматы. 2002. 213 с. 3. Б.Олжабекова, Б.Е.Есжанов Омыртқалылар зоологиясы. Оқулық. 2007. 1-2 том 4. К.Ә. Дәуітбаева Омыртқасыздар зоологиясы. Оқулық. Алматы. 5. Жұмалиев М., Бәйімбет А. Жануарлар әлемінің биоалуантүрлілігі. 1 бөлім, 2 бөлім, 3 бөлім. Алматы. 2005.
8. The content of the discipline. 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 using of bioresources of Kazakhstan. Synanthropic plants, anthropophytes. Comopolites, endemics and relicts. 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	

1. Basic information about the discipline:	
Name of the discipline	Rangelands: Ecology, Conservation and Restoration
2. The number of credits	5
3. Prerequisites:	Fundamentals of soil science
4. Post requisites:	Agriculture and the environment

5. Competencies:	As a result of studying the discipline, the student must: know: - structure of land resources; - classification of land by purpose and use; - characteristics of the soil cover of Kazakhstan; - land management structure; - 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 to master: - the skills in analyzing the state of pastures, choosing an effective method for restoring degraded pastures.
6. Course author	Zhaglovskaya A.A.
7. Basic literature	1. Насиев Б.Н., Жиенгалиев А. Мониторинг факторов и процессов деградации почвенного покрова кормовых угодий полупустынной зоны. Опустынивание Центральной Азии: оценка, прогноз, управление: мат. междунаучн. прак. конф. Институт географии, Назарбаев Университет. Астана, 2014. С. 374-378. 2. Огарь Н.П. Трансформация растительного покрова Казахстана в условиях современного природопользования. Институт ботаники и фитоинтродукции. Алматы, 1999. 131 с. 3. Шамсутдинов З.Ш. Долголетние пастбищные агрофитоценозы в аридной зоне Узбекистана. Ташкент: ФАН УзР, 2012. 167 с.
8. The content of the discipline. 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. Description 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.	

1. Basic information about the discipline:	
Name of the discipline	Conservation and rational using of bioresources
2. The number of credits	6
3. Prerequisites:	General Ecology, Ecosystem and Landscape Ecology
4. Post requisites:	Environmental Analysis
5. Competencies:	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 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. master:

	<ul style="list-style-type: none"> - 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.
6. Course author	A.T. Kuvatbaev
7. Basic literature	<ol style="list-style-type: none"> 1. Мұхитдинов Н.М., Есжанов Б.Е., Сатыбалдиева Г.Қ., Тыныбеков Б.М. Қазақстан биоресурстары. Оқу құралы. «Қазақ университеті». Алматы, 2016 ж. 322 б. 2. Мухитдинов Н.М., Паршина Г.Н. Лекарственные растения. Алматы. 2002. 213 с. 3. Б.Олжабекова, Б.Е.Есжанов Омыртқалылар зоологиясы. Оқулық. 2007. 1-2 том 4. К.Ә. Дәуітбаева Омыртқасыздар зоологиясы. Оқулық. Алматы. 5. Жұмалиев М., Бәйімбет А. Жануарлар әлемінің биоалуантүрлілігі. 1 бөлім, 2 бөлім, 3 бөлім. Алматы. 2005.
8. The content of the discipline. 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 using of bioresources 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.	

1. Basic information about the discipline:	
Name of the discipline	Agriculture and the environment
2. The number of credits	5
3. Prerequisites:	Biological ecology, Rangelands: Ecology, Conservation and Restoration
4. Post requisites:	Integrated Plant Protection
5. Competencies:	<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"> - predict the activities of the agricultural producer, taking into account direct and numerous indirect effects on the biosphere as a whole. <p>must have the ability:</p> <ul style="list-style-type: none"> - use 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
6. Course author	Zhanabergenov A.O.
7. Basic literature	<ol style="list-style-type: none"> 1. Трифонова Т.А. Прикладная экология / Т.А. Трифонова, Н.В. Селиванова, Н.В. Мищенко. - Москва: Акад. Проект: Традиция, 2005. - 381 с. 2. Агрэкология / В.А. Черников, И.Г. Грингоф, В.Т. Емцев и др. под ред. В.А. Черникова, А.И. Чекереса. - М., КолосС, 2004 - 400 с. 3. Вальков В. Ф. Почвоведение: учебник для бакалавров: для студентов высших учебных заведений / В. Ф. Вальков, К. Ш. Казеев, С. И. Колесников; Юж. федер. ун-т. 4-е изд.,

	перераб. и доп..Москва: Юрайт, 2013 .?527 с. 4. Стандарты качества окружающей среды: Учебное пособие / Н.С. Шевцова, Ю.Л. Шевцов, Н.Л. Бадукова; Под ред. проф. М.Г. Ясовеева - М.: НИЦ ИНФРА-М, 2014. - 156 с.: // http://znanium.com/bookread.php?book=436434
8. The content of the discipline. Ecological problems of agricultural production. Agriculture. Environmental regulation of anthropogenic pressures to maintain the ecological balance of natural ecosystems. Economic capacity of natural ecosystems.	

1. Basic information about the discipline:	
Name of the discipline	Environmental Analysis
2. The number of credits	5
3. Prerequisites:	Climate Change and the Green Economy
4. Post requisites:	Environmental documentation for companies
5. Competencies:	<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; - to master 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.
6. Course author	Ismailova A.A.
7. Basic literature	<ol style="list-style-type: none"> 1. Исмаилова А.А., Нурбаева Н.А., Мукиянова У.С. Экологический мониторинг: Учебник. - Астана, КАТУ им. С.Сейфуллина. - 2018. –178 с. 2. Ашихмина Т.А. Экологический мониторинг: Учеб. метод. пособие. -М.: АГАР, 2006. - 412 с. 3. Мейсурова А.Ф., Деметьев С.М. Мониторинг окружающей среды. -Ч. 2. Физико-химические методы оценки качества воды. - Тверь, 2006. – 30 с. 4. Мотузова Г.В., Безуглова О.С. Экологический мониторинг почв. – М.: 2007. - 237 с. 5. Ашихмина Т.А. Экологический мониторинг. –М.: 2008. - 416 с. 6. Прожорина Т.И., Каверин Н.В., Никольская А.Н. Эколого-аналитические методы исследования окружающей среды: учебное пособие. - Воронеж: Изд-во "Истоки", 2010. – 164 с. 7. Голицын А.Н. Промышленная экология и мониторинг загрязнения окружающей среды. – М.: 2010. – 336 с. 8. Тетельман В.В., Язев В.А. Основы экологического мониторинга: Учеб. пособие. – М.: Интеллект, 2013. – 256 с. 9. Айдарханова Г.А., Саспугаева Г.Е., Акшабакова Ж.Е. Экологический мониторинг: практикум для студентов специальности 5В060800-Экология. - Астана, КАТУ им. С.Сейфуллина. - 2015. – 115 с.
8. The content of the discipline. 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 Natural resource use and environmental safety.

1. Basic information about the discipline:	
Name of the discipline	Integrated plant protection
2. The number of credits	5
3. Prerequisites:	Methods of processing and recycling agricultural waste, Agriculture and the Environment
4. Post requisites:	Writing a thesis
5. Competencies:	<ul style="list-style-type: none"> - 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; - 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; - to master the 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; - 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.
6. Course author	Baybusenov K.S.
7. Basic literature	<ol style="list-style-type: none"> 1. Горбачев И.В., Гриценко В.В., Захваткин Ю.А. и др. Защита растений от вредителей: учебник / под ред. В.В. Исаичев. -М.: Колосс, 2002. - 472 с. 2. Шкаликов В.А., Белашапкина О.О., Букреев Д.Д. и др. Защита растений от болезней: учебник / ред. В.А. Шкаликов. - 3-е изд. - М.: КолосС, 2010. - 404 с.
8. The content of the discipline. 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.	

1. Basic information about the discipline:	
Name of the discipline	English Academic Language
2. The number of credits	4
3. Prerequisites:	Foreign language, English for special purposes
4. Post requisites:	Writing a thesis
5. Competencies:	<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 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.
6. Course author	Zhaglovskaya A.A.
7. Basic literature	<ol style="list-style-type: none"> 1. Савельев Л.А. Учебное пособие английского языка "EnglishfortheStudentsofEcology" для экологов. СПб: изд. РГГМУ, 2007 - 148 с. 2. Saspuayeva G.Y. Ecology. Textbook. S.Seifullin Kazakh agrotechnical university, 2015, 179 pages 3. Иванова Н.К. - Английский язык для химиков (фонетика), Иваново, "ИГХТУ", 2007, 100 с. (адрес в Интернете: http://main.isuct.ru/files/dept/ino/fonetika.pdf) 4. Кутепова М.М. - The world of chemistry / Английский язык для химиков: Учебник: Изд. 4-е. М.: КД Университет, 2006, 256 с. 5. Серебренникова Э.И., Круглякова И.Е. - Английский язык для химиков: Учебник: Изд. 3-е. М.: Альянс, 2009, 400 с. 6. Тимофеева Т.В., Поталуи Л.В. - Technical Correspondence: Учебное пособие по английскому языку, Воронеж: Изд-во ВГУ, 2005, 27 с. (адрес в Интернете: http://window.edu.ru/window/catalog/files/r40141/may05070.pdf) 7. К. Harding. English for Specific Purposes. Oxford University Press, 2009. 8. Акимова Т.А. Экология. Человек - Экономика - Биота - Среда.-М: ЮНИТИ, 2007.
8. The content of the discipline.	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.

1. Basic information about the discipline:	
Name of the discipline	Environmental mapping and GIS
2. The number of credits	5
3. Prerequisites:	Study about environmental resource using
4. Post requisites:	Writing a thesis
5. Competencies:	<p>Students should</p> <ul style="list-style-type: none"> - know the terminological apparatus and the basic concepts of discipline; theoretical and methodological foundations of mapping; the main properties and significance of ecological geographic maps, including topographic maps. 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. - master own methods for processing, analyzing and synthesizing field and laboratory environmental information and use theoretical knowledge in practice.
6. Course author	Zhanabergenov A.O.
7. Basic literature	<ol style="list-style-type: none"> 1. Геоэкологическое картографирование: учеб. пособие для студ. вузов /под ред. Б.И.Кочурова. - М.: Академия, 2009. -192 с. 2. Стурман В.И. Экологическое картографирование. учеб. пособие для студ. вузов. - М.: Аспект-Пресс, 2003. – 251 с. 3. Ципилева Т.А. Геоинформационные системы: Учебное пособие. – Томск: Томский межвузовский центр дистанционного образования, 2004. –162 с.
8. The content of the discipline	Environmental mapping and GIS. 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. 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.

1. Basic information about the discipline:	
Name of the discipline	Environmental documentation for companies
2. The number of credits	5
3. Prerequisites:	Environment Impact Assessment, Environmental Analysis
4. Post requisites:	Writing a thesis
5. Competencies:	<p>- to master the 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.</p> <p>- 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.</p> <p>- to master the methods for preparing environmental documentation for environmental review of various types of project analysis, environmental engineering 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>
6. Course author	Shupshibaev K.K.
7. Basic literature	<p>1. Уразаев Н.А., Вакулин А.А., Никитин А.В. и др. Сельскохозяйственная экология. - М.: Колос. 2000. - 304 с.</p> <p>2. Экологического кодекса Республики Казахстан. Январь 2007 года. –Астана. 2007. – 327 с.</p>
8. The content of the discipline. 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.	