

Module Handbook
Educational program
7M05206–Environmental protection and rational use of natural resources

Nur-Sultan
2022

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Module 1

Module code and name	EDUC 52003 Higher school pedagogy
Semester(s) in which this module is taught	2
The person responsible for the module	Kalkeeva K.R.
Language of instruction	Russian
Connection with the curriculum (cycle, component)	Basic (university component).
Teaching methods	Group work. Problematic discussion. Search method. Construction. Essay. Situational modeling. Text analysis. Creative writing.
Workload (incl. contact hours, hours of independent work)	Total workload: 120 hours. Lectures: 15 hours, practical: 22 hours, independent work of students: 83 hours.
Credit points (total by module)	4 ECTS
Necessary and recommended prerequisites for joining the module	Methods of studying private methods", Technologies of teaching at the university.
Module objectives / expected learning outcomes	The development of professional and pedagogical thinking of teachers, the formation of scientific and pedagogical knowledge and skills necessary both for teaching and for improving general professional competence and pedagogical culture.
Content	The proposed course is aimed at familiarizing undergraduates with scientific and pedagogical approaches in the organization of the pedagogical process, as well as with the principles of pedagogical activity carried out in the system of vocational education. The sphere of professional pedagogical activity of a teacher is: - higher educational institutions; - colleges and other educational institutions; - organizations and enterprises whose activities are related to various aspects of teaching. The presented discipline assumes the creation of pedagogical conditions that ensure the development of the pedagogical position of masters, the formation of which determines the manifestation of the subjective characteristics of the teacher's personality in the system of professional education.
Examination forms	Matrix test
Requirements for training and exams	Visiting the MOE platform. The study of materials offered on the basis of MPAS and PLATONUS, timely completion of tasks and according to the test schedule to pass tests on the main course and DEADLINES.
Technical, multimedia tools and software	Visiting the MOE platform. The study of materials offered on the basis of MPAS and PLATONUS, timely completion of tasks and according to the test schedule to pass tests on the main course and DEADLINES.
List of literature	1. Akhmetova G.K., Isaeva Z.A. Pedagogy: Textbook for master's degree of universities. – Almaty: Kazakh University, 2018 – 328 p. 2. Pedagogical technologies: a textbook for students of pedagogical specialties / edited by V. S. Kukushkin. — Rostov n/A: March, 2017. — 320 p. 3. Pedagogy of higher school: Textbook / Okolelov O.P. – M.:SIC INFRA-M, 2017. – 176 p. 4. Pedagogy of higher school: Textbook / K.R.Kalkeeva et al. – Astana-Master PO LLP, 2017. – 253 p. 5. Pedagogy of higher school: textbook / Sholpankulova G. K., Kalkeeva K.R., Nur-Sultan, 2021 -288

Module 2

Module code and name	PSYC 52004 Management Psychology
Semester(s) in which this module is taught	1/2
The person responsible for the module	Mambetalin A.S..
Language of instruction	Russian
Connection with the curriculum (cycle, component)	Basic (university component).
Teaching methods	Group work. Problematic discussion. Search method. Construction. Essay. Situational modeling. Text analysis. Creative writing.

Workload (incl. contact hours, hours of independent work)	Total workload: 120 hours. Lectures: 15 hours, practical: 22 hours, independent work of students: 83 hours.
Credit points (total by module)	4 ECTS
Necessary and recommended prerequisites for joining the module	Psychology
Module objectives / expected learning outcomes	<p>Objectives: to teach undergraduates the management basics that ensure the preservation of a certain structure, organized systems; maintaining the regime of management activities, program implementation and management goals in professional activities.</p> <p>Expected learning outcomes:</p> <p>To know: the essence of the subject management psychology; basic theories and concepts of management psychology in modern domestic and foreign science; methodological and technological features of management in the professional sphere.</p> <p>Skills: be able to: analyze the processes of managerial activity; identify psychological management schemes; develop management schemes taking into account psychological patterns; determine the features of psychological interaction in management</p> <p>to possess: modern methods of socio-psychological analysis and diagnostics of the content and forms of managerial activity; methods of implementation of basic management approaches in the field of public procurement.</p>
Content	<p>Introduction to Management psychology. The personality of the manager. Management styles, delegation, and the business career of a manager. Psychology of staff motivation. Socialization of personality as a social phenomenon.</p> <p>Characteristics of the process of adaptation of the subordinate to the conditions of the organization. The system of regulation of behavior and activity of the individual in the organization. Communication as a social phenomenon. Features of managerial communication. Communication of the manager with subordinates as information exchange, interaction and impact. Problems of interpersonal perception in managerial communication. Features of communication of the head in a modern organization. Social organization as an object of management. Psychology of conflict management in the activities of the head. Social intelligence in the activities of the head. Health of the manager. Prevention and overcoming of stresses and life crises.</p>
Examination forms	<p>It is necessary to participate in all types of control: current, intermediate, final, control of independent work of students.</p> <p>According to the discipline, the final score is determined, which consists of the results of the rating control and the exam, with 60% of the rating control, 40% of the exam result. The exam must score at least 50% to successfully complete the course.</p>
Technical, multimedia tools and software	Recording a video lecture accompanied by slides and movies. The study and feedback is carried out on the basis of the MOE and PLATONUS.

List of literature	<ol style="list-style-type: none"> 1. Bazarov, T.Y. Psychology of personnel management: Textbook and workshop for academic undergraduate / T.Y. Bazarov. - Lyubertsy: Yurayt, 2016. - 381 p. 2. Kozlov, V.V. Psychology of management: Textbook / V.V. Kozlov. - M.: Academy, 2016. - 240 p. 3. Maltseva Yu. A., Yatsenko O. Yu. Psychology of management. Yekaterinburg : Ural Publishing House. un-ta, 2016.— 92 p. 4. Litvak, M.E. To command or obey? Psychology of management / M.E. Litvak. - Ph/D: Phoenix, 2018. - 384 p. 5. Konovalenko, V. A. Psychology of personnel management: textbook for academic bachelor's degree / V. A. Konovalenko, M. Yu. Konovalenko, A. A. Solomatin. — M.: Yurayt Publishing House, 2015. — 477 p. — (Series: Bachelor. Academic course). 6. Bazarov T.Y. Psychology of personnel management: textbook and workshop for academic bachelor's degree. 2015, Publishing House Yurayt M. - 381 p. 7. Kozlov, V.V. Psychology of management / V.V. Kozlov. - M.: Academia, 2017. - 48 p. 8. Konovalenko, V.A. Psychology of personnel management: Textbook for academic bachelor's degree / V.A. Konovalenko, M.Yu. Konovalenko, A.A. Solomatin. - Lyubertsy: Yurayt, 2016. - 477 p. 9. Korolev, L.M. Psychology of management: Educational пособие / Л.М. Королев. - М.: Дашков и К, 2016. - 188 с.
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Module 3

Course code and name	ECOL 53001 Environment and conservation of biological diversity
Semester(s) when the course is taught	1
Person responsible for the module	Adilbektegi G.A. candidate of geographical sciences, associate professor
Language	English
Within the curriculum (cycle, component)	Basic discipline (elective component)
Teaching methods	<p>Lecture: Multimedia lecture. lecture developed by the author of the discipline.</p> <p>Questions and answers</p> <p>Show of short videos on the topic of the lecture</p> <p>Seminar assignments (practice): Divide the group into several subgroups. Each subgroup is prepared individually and each subgroup makes its own calculation on the topic of practical work</p> <p>SIW tasks: Each subgroup prepares scientific news on the topic for the last 3 years; videos on the topic of practical work, presentations, and debates on the topic will be organized</p>
Workload (incl. contact hours, self-study hours)	lecture -30, seminar -15, private study-105, total - 150
Credit points (total by discipline)	5 ECTS
Required and recommended prerequisites for joining the course	Ecology of animals and plants, biodiversity of biocenoses, protection of natural resources.
Course objectives/intended learning outcomes	<p>The student must:</p> <p>Know: structure and levels of biodiversity; biodiversity measurement methods; biodiversity change; the role of biodiversity in human life; the threat of loss of biodiversity;</p> <p>To be able to: apply in practice basic general professional knowledge of theory and research methods; the ability to use modern methods of processing, analysis and synthesis of information; acquire new knowledge using modern information educational technologies;</p> <p>Possess: the technique of obtaining up-to-date information on various problems of biodiversity; methods of analysis and forecasting of the influence of factors of natural and technogenic environment for biodiversity; practical methods of studying biodiversity.</p>

Content of the course	Types of biocenotic relationships within ecosystems and the preservation of biological diversity. National strategy for the balanced use of biodiversity. Comparative analysis of the degree of biodiversity of the Earth and the Republic of Kazakhstan, the botanical-geographical and zoogeographical division of the Republic of Kazakhstan territory by the degree of originality of flora and fauna Tool: creating an analogy, developing a biodiversity model.
Examination forms	During the academic semester, two intermediate controls are held (the first after the seventh week of study and the second after the fifteenth week before the exam) to test students' knowledge orally. Time for intermediate control is 50 minutes. The exam is conducted orally. Each exam ticket has three questions and the student is given 30 minutes to prepare.
Study and examination requirements	The exam on the subject "Environment and Biodiversity Conservation" is taken orally. As: First of all, in order to fully test the knowledge of students, a deep definition of their speech skills, the ability to express their thoughts is determined only by oral communication. Secondly, exam questions in a given discipline can be graded in the form of examples. Thirdly, only the oral examination method allows you to fully assess the knowledge of students (for example, ask additional questions).
Technical and electronic learning tools	Computer, projector, interactive whiteboard
Reading list	1. Brodsky A.K. Introduction to biodiversity issues. - SPb, 2002 - 144 p. 2. Geography and monitoring of biodiversity // Conservation of biodiversity - Minsk: Publishing house of NUMTs, 2002. - 438 p. 3. Lebedeva N.V., Drozdov N.N., Krivolutsky D.A. Biodiversity and methods for its assessment. M.: Publishing house Mosk. University: 1999.95 p. 4. Primak R. Basics of biodiversity conservation / Per. from English O.S. Yakimenko, O. A. Zinovieva. M.: Publishing house of Nuchny and educational-methodical center. 2002.256 p.

Module 4

Course code and name	ECOL 53002 Ecological epidemiology and ecopathology
Semester(s) when the course is taught	1
Person responsible for the module	Meiramkulova K.S., doctor of biological sciences, professor
Language	English
Within the curriculum (cycle, component)	Basic discipline (elective component)
Teaching methods	Lecture: Multimedia lecture. Questions and answers. Show of short videos on the topic of the lecture. Seminar assignments (practice): Divide the group into several subgroups. Each subgroup is prepared individually and each subgroup makes its own calculation on the topic of practical work. SIW tasks: each subgroup prepares scientific news on the topic for the last 3 years; videos on the topic of practical work, presentations, and debates on the topic will be organized.
Workload (incl. contact hours, self-study hours)	lecture -30, seminar -15, private study-105, total - 150
Credit points (total by discipline)	5 ECTS
Required and recommended prerequisites for joining the course	Environmental toxicology
Course objectives/intended learning outcomes	Knowledge: master students know that they learn how to assess the quality of various environmental components, food products, as well as to assess the risk of adverse chemical and physical factors. Skills: students know how to apply methods of planning and conducting ecological and epidemiological knowledge. Competences: students are able to use basic knowledge of the course sections, methods of quantitative information processing.
Content of the course	Environmental factors and risk assessment of the population morbidity. Dependence of some diseases of the population on environmental conditions, environmental conditions, and hazards that may pose a health risk.

Examination forms	During the academic semester, two intermediate controls are held (the first after the seventh week of study and the second after the fifteenth week before the exam) to test students' knowledge orally. Time for intermediate control is 50 minutes. The exam is conducted orally. Each exam ticket has three questions and the student is given 30 minutes to prepare.
Study and examination requirements	Passing an oral exam has certain advantages since it creates a possibility to prepare the answer in the most complete justified and detailed form with examples and explanations. It forms the student's creative approach to the subject, contributes to the development of skills in analysis and synthesis of the studied material, which in turn leads to a deep understanding and the formation of a comprehensive, holistic and interrelated view of the studied discipline.
Technical and electronic learning tools	Computer, projector, interactive whiteboard
Reading list	1. Karabalin S. K. Ecological epidemiology 2017, 420 pages 2. Shuralev E. A., Mukminov M. N. Ecological epidemiology / Textbook on the course "Ecological epidemiology". - Kazan: Kazan University, 2018. – 364p. 3. B. A. Revich, S. L. Avaliani, G. I. Tikhonova. Environmental epidemiology Textbook for higher education institutions Edited by B. A. Revich M., Publishing Center "Academy", 2019, 384 p.

Module 5

Course code and name	ECOL 53003 Environmental assessment and examination of design documentation
Semester(s) when the course is taught	1
Person responsible for the module	Beisenova R.R., doctor of biological sciences, professor
Language	English
Within the curriculum (cycle, component)	Basic discipline (elective component)
Teaching methods	Lecture: Multimedia lecture. lecture developed by the author of the discipline. Questions and answers. Show of short videos on the topic of the lecture. Seminar assignments (practice): Divide the group into several subgroups. Each subgroup is prepared individually and each subgroup makes its own calculation on the topic of practical work. SIW tasks: Each subgroup prepares scientific news on the topic for the last 3 years; videos on the topic of practical work, presentations, and debates on the topic will be organized.
Workload (incl. contact hours, self-study hours)	lecture -30, seminar -15, private study-105, total - 150
Credit points (total by discipline)	5 ECTS
Required and recommended prerequisites for joining the course	Environmental regulation and expertise
Course objectives/intended learning outcomes	Examination of the pre-project stage of the development of the facility, at the stage of design documents to clarify technical solutions to reduce environmental impact and develop other environmental measures. Determination of the potential harm of the projected facility for the environment, assessment of pre-project and pre-investment documentation justifying the planned economic or other activity. Tool: data analysis, charting. Be competent: in formulating problems, tasks and method of scientific research; obtaining new reliable facts based on observations, experiments, scientific analysis of empirical data; in the use of modern methods of processing and interpreting environmental information in scientific and industrial research; in diagnosing the problems of nature protection and developing practical recommendations for its protection and sustainable development.
Content of the course	Examination of the pre-project stage of the development of the facility, at the stage of design documents to clarify technical solutions to reduce environmental impact and develop other environmental measures. Determination of the potential harm of the projected facility for the environment, evaluation of pre-project and pre-investment documentation, project documentation substantiating the planned economic or other activity. Tool: data analysis, charting.

Examination forms	During the academic semester, two intermediate controls are held (the first after the seventh week of study and the second after the fifteenth week before the exam) for oral testing of students' knowledge. Time for intermediate control 50 minutes. The exam is conducted orally. Each exam ticket consists of three questions and the student is given 30 minutes to prepare.
Study and examination requirements	The exam is taken orally. Firstly, in order to comprehensively test the knowledge of students, to deeply determine their speaking skills, the ability to express their thoughts, only oral communication is determined. Secondly, the third question of the examination questions in this discipline can be evaluated in the form of calculations, and it can be evaluated only by giving the meaning of oral formulas. Thirdly, only the oral examination method allows you to fully assess the knowledge of students (for example, ask additional questions).
Technical and electronic learning tools	Computer, projector, interactive whiteboard
Reading list	1. Ecological expertise, environmental impact assessment, A.A. Skibinskaya, V. Fedorovich, 2013 2. Ecological expertise of investment and construction projects: textbook / E.A. Dobroserdova; Kazan State University of Architecture and Civil Engineering, 2012, 63 p. 3. Fundamentals of environmental regulation: Textbook / Yu.A. Leykin. - M.: Forum: NIC INFRA-M, 2014. - 368 p. 4. Gamm T.A. Ecological expertise of investment projects, etc. documentation: Proc. - Orenburg: OGU, 2003 - 200 p. https://adilet.zan.kz/rus/docs/K2100000400 https://adilet.zan.kz/rus/docs/V1500011021

Module 6

Course code and name	ECOL 53004 Ecological aspects of security in the energy sector
Semester(s) when the course is taught	1
Person responsible for the module	Saspugayeva G.Y., PhD, associate professor
Language	English
Within the curriculum (cycle, component)	Basic discipline (elective component)
Teaching methods	Lecture: Multimedia lecture. Questions and answers Show of short videos on the topic of the lecture Seminar assignments (practice): brainstorming, works in group, communicative method, method of 6 hats. SIW tasks :each subgroup prepares scientific news on the topic for the last 3 years; videos on the topic of practical work, presentations, and debates on the topic will be organized
Workload (incl. contact hours, self-study hours)	lecture -30, seminar -15, private study-105, total – 150
Credit points (total by discipline)	5 ECTS
Required and recommended prerequisites for joining the course	Climate change and the «green» economy
Course objectives/intended learning outcomes	Knowledge: master students know on prospects and directions of development of the global energy system, clean energy, main regulatory documents that control the impact of energy facilities on the environment, and public health. Skills: students know how to determine by calculation environmental characteristics of atmospheric air, hydrosphere, and soil in the territory affected by the enterprise. Competences: master students are able to make environmental decisions
Content of the course	National concept of energy security of Kazakhstan. Expanding the use of local and alternative energy sources, reducing greenhouse gas emissions in the energy sector of Kazakhstan, the effectiveness of energy-saving and energy efficiency programs of the national economy, the analysis of tasks for the development of nuclear energy.

Examination forms	During the academic semester, two intermediate controls are held (the first after the seventh week of study and the second after the fifteenth week before the exam) to test students' knowledge orally. Time for intermediate control is 50 minutes. The exam is conducted orally. Each exam ticket has three questions and the student is given 30 minutes to prepare
Study and examination requirements	Passing an oral exam has certain advantages since it creates a possibility to prepare the answer in the most complete justified and detailed form with examples and explanations. It forms the student's creative approach to the subject, contributes to the development of skills in analysis and synthesis of the studied material, which in turn leads to a deep understanding and the formation of a comprehensive, holistic and interrelated view of the studied discipline.
Technical and electronic learning tools	Technical teaching aids - a set of technical devices and special didactic materials for them. There are various groupings of traditional technical teaching aids: - audio (audio); - screen (visual); - screen-sound (audiovisual). Sound means are sound channels of information provided through technical teaching aids. These include radio, tape recorder, etc. Screen aids include technical training aids that transmit information through visual channels. These are: overhead projector or overhead projector; epidiascope, overhead projectors, etc. Screen and audio means are means of transmitting information through visual and audio channels simultaneously. These include: film projector, television, etc. Modern technical teaching aids include: - video projectors; - video camera and video recorder; - frame grabber, etc.
Reading list	1.Kurlyandskaya, O. G. Ecological threat: hydrocarbon energy and man-made disasters in water areas 2019.- 640 p. 2.Energy Ecology: Training manual / Under the general editorship of V. Ya. Putilov. - M.: MEI Publishing House, 2018 – 716 p. 3. Baskakov, A. P. Non-traditional and renewable energy sources: a textbook / A. P. Baskakov. M.: "Bastet", 2017– 368 p. 4. Adamenko, O. Alternative fuels and other non-traditional sources of energy / O. Adamenko [et al.]. - Ivano-Frankivsk, 2016. -256 p. 5. Kashkarov, A. P. Wind generators, solar panels and other useful structures /A. P. Kashkarov. - M.: DMK Press, 2018. -144 p. https://www.microsoft.com/

Module 7

Course code and name	ECOL 53005 Mutagenesis, teratogenesis, carcinogenesis under the influence of environmental conditions
Semester(s) when the course is taught	1
Person responsible for the module	Akbaeva L.Kh., Candidate of biological sciences, professor
Language	English
Within the curriculum (cycle, component)	Basic discipline (elective component)
Teaching methods	Lecture: Multimedia lecture. Video lecture developed by the author of the discipline. Questions and answers Show of short videos on the topic of the lecture Seminar assignments (practice): Divide the group into several subgroups. Each subgroup is prepared individually and each subgroup makes its own calculation on the topic of practical work Master`s independent work tasks: brainstorming, works in group, communicative method.
Workload (incl. contact hours, self-study hours)	lecture -30, seminar -15, private study-105, total – 150
Credit points (total by discipline)	5 ECTS

Required and recommended prerequisites for joining the course	Mutagenesis and environment
Course objectives/intended learning outcomes	<p>Mutagens, carcinogens and teratogens in the environment. The main patterns of human interaction and the environment, the functional relationships between them, the mechanisms of mutagenic, carcinogenic and teratogenic substances on the human body.</p> <p>Tool: charting, illustration</p>
Content of the course	<p>The discipline deals with: issues of the level of toxic exposure the content of heavy metals in environmental objects is considered. The reactions of the systems of the organism level are presented as the primary toxic effects resulting in changes in the population and biocenotic parameters. The problem of adaptation of biological systems to environmental pollution by pollutants is discussed.</p> <p>Objectives of the study of the academic discipline:</p> <p>When studying the course, undergraduate's must know: the basic concepts and laws of environmental toxicology as one of the branches of fundamental ecology based on the laws of mutagenesis, teratogenesis, and carcinogenesis under the influence of environmental conditions;</p> <p>possess: systematic and integrated approaches to the analysis of ecotoxicological problems from the standpoint of the ideology of sustainable development of the biosphere.;</p> <p>be competent: in matters of knowledge of the properties, laws and principles of functioning of ecological systems and the distinctive features of technogenic systems; existing scientific ideas about the limits of the stability of the biosphere and their violation in the conditions of technogenesis; ecotoxicological effects arising under the influence of factors of technogenic nature at different levels of the organization of living things: molecular-genetic, cellular-tissue, ontogenetic, population-species, biocenotic.</p>
Examination forms	<p>During the academic semester, two intermediate controls are held (the first after the seventh week of study and the second after the fifteenth week before the exam) to test students' knowledge orally.</p> <p>Time for intermediate control is 50 minutes.</p> <p>The exam is conducted orally. Each exam ticket has three questions and the student is given 30 minutes to prepare</p>
Study and examination requirements	<p>The exam in this subject is given orally. Because:</p> <p>First of all, in order to fully test the knowledge of students, a deep definition of their speaking skills, the ability to express their thoughts is determined only by oral communication.</p> <p>Second, the third question of the exam questions of this discipline can be assessed in the form of calculations, and it can be assessed only by asking the meaning of oral formulas.</p> <p>Thirdly, I think that only the oral exam method allows you to fully assess the knowledge of students (for example, to ask additional questions).</p>
Technical and electronic learning tools	<p>Technical teaching aids - a set of technical devices and special didactic materials for them. There are various groupings of traditional technical teaching aids:</p> <ul style="list-style-type: none"> - audio (audio); - screen (visual); - screen-sound (audiovisual). <p>Sound means are sound channels of information provided through technical teaching aids. These include radio, tape recorder, etc.</p> <p>Screen aids include technical training aids that transmit information through visual channels. These are: overhead projector or overhead projector; epidiascope, overhead projectors, etc.</p> <p>Screen and audio means are means of transmitting information through visual and audio channels simultaneously. These include: film projector, television, etc.</p> <p>Modern technical teaching aids include:</p> <ul style="list-style-type: none"> - video projectors; - video camera and video recorder; - frame grabber, etc.

Reading list	<p>1. Ecological toxicology: a textbook and a practical course for undergraduate and graduate studies / T. V. Zhuikova, V. S. Bezel. - M.: Yurayt Publishing House, 2018 — - 362 p. - (Series: Bachelor and Master. Academic course).</p> <p>2. Alekseenko, V. A. Chemical elements in urban soils / V. A. Alekseenko, A.V. Alekseenko — - M.: Logos, 2014.</p> <p>3. Korniszewski L. Dziecko z zespołem wad wrodzonych. Diagnostyka dysmorfologiczna. Wydawnictwo lekarskie PZWL. — Warszawa, 2005. — S.260</p> <p>4. Nikitin A. I. Harmful environmental factors and the human reproductive system (responsibility to the future generation). St. Petersburg: LBI., 2005. - p. 245</p> <p>5. Ecological monitoring of hazardous production facilities: experience of creation and prospects of development (on the example of environmental control and monitoring systems for the destruction of chemical weapons): monograph / under the general editorship of prof. V. N. Chupis. - M.: Scientific Book, 2010.</p> <p>Google (Google Class/ Google Forms)</p>
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Module 8

Course code and name	ECOL 53006 Management of ecological safe processes and production
Semester(s) when the course is taught	1
Person responsible for the module	Akbaeva L.Kh., Candidate of biological sciences, professor
Language	English
Within the curriculum (cycle, component)	Basic discipline (elective component)
Teaching methods	<p>Lecture: Multimedia lecture. Video lecture developed by the author of the discipline. Questions and answers</p> <p>Show of short videos on the topic of the lecture</p> <p>Seminar assignments (practice): Divide the group into several subgroups. Each subgroup is prepared individually and each subgroup makes its own calculation on the topic of practical work</p> <p>SIW tasks: brainstorming, works in group, communicative method.</p>
Workload (incl. contact hours, self-study hours)	lecture -30, seminar -15, private study-105, total – 150
Credit points (total by discipline)	5 ECTS
Required and recommended prerequisites for joining the course	Ecological safety and forecasting
Course objectives/intended learning outcomes	Environmental management in accordance with international standards ISO 14000 and OHSAS 18000. Analysis of existing strategies and governance structures in the field of environmental safety. Proposals to improve the environmental safety management system. Tool: write an essay, come up with a new model.

Content of the course	<p>The discipline deals with: issues of creating low-waste, resource-saving technologies, ways to solve problems of rational use of natural resources, concepts of waste-free production, basic principles and ways of creating waste-free and low-waste technologies and industries, intensive, legislative mechanisms of environmentally safe processes, issues of environmental standardization, ISO 14000 standards and assessment of the state of work on the implementation of management systems in the Republic of Kazakhstan</p> <p>Objectives of the study of the academic discipline:</p> <p>When studying the course, undergraduates must be able to: to describe the types of environmental safety in production and energy, to compare their impact on the environment, to model modern methods of control of the environmental service.</p> <p>facts: organizational, managerial, economic, legal mechanisms for the management of environmentally safe processes and production; methods and techniques of resource saving, modern technologies of project management; regulatory and legal requirements in the field of resource saving, the organization of processes; be able to: select the appropriate administrative, economic, apply appropriate methods of project management;</p> <p>to possess skills application of regulatory and legislative requirements in the field of resource saving processes; be competent: in matters of legislative management mechanisms to ensure the environmental safety of specific processes and industries; in assessing the environmental risk of production technologies.</p>
Examination forms	<p>During the academic semester, two intermediate controls are held (the first after the seventh week of study and the second after the fifteenth week before the exam) to test students' knowledge orally.</p> <p>Time for intermediate control is 50 minutes.</p> <p>The exam is conducted orally. Each exam ticket has three questions and the student is given 30 minutes to prepare</p>
Study and examination requirements	<p>The exam in this subject is given orally. Because:</p> <p>First of all, in order to fully test the knowledge of students, a deep definition of their speaking skills, the ability to express their thoughts is determined only by oral communication.</p> <p>Second, the third question of the exam questions of this discipline can be assessed in the form of calculations, and it can be assessed only by asking the meaning of oral formulas.</p> <p>Thirdly, I think that only the oral exam method allows you to fully assess the knowledge of students (for example, to ask additional questions).</p>
Technical and electronic learning tools	<p>Technical teaching aids - a set of technical devices and special didactic materials for them. There are various groupings of traditional technical teaching aids:</p> <ul style="list-style-type: none"> - audio (audio); - screen (visual); - screen-sound (audiovisual). <p>Sound means are sound channels of information provided through technical teaching aids. These include radio, tape recorder, etc.</p> <p>Screen aids include technical training aids that transmit information through visual channels. These are: overhead projector or overhead projector; epidiascope, overhead projectors, etc.</p> <p>Screen and audio means are means of transmitting information through visual and audio channels simultaneously. These include: film projector, television, etc.</p> <p>Modern technical teaching aids include:</p> <ul style="list-style-type: none"> - video projectors; - video camera and video recorder; - frame grabber, etc.

Reading list	<p>Oranova T. I. Fundamentals of the development of non-waste and low-waste technologies Nalchik: Kab. - Balk. un-t., 2004. - 56 p.</p> <p>The program for the development of the mining and metallurgical industry in the Republic of Kazakhstan for 2010-2014 was approved by the Government Decree Republic of Kazakhstan dated October 30, 2010, No. 1144</p> <p>https://whiteboard.fi/</p> <p>https://kahoot.com/</p> <p>https://www.microsoft.com/</p> <p>https://www.socrative.com/</p>
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Module 9

Module code and name	PHIL 52001 History and philosophy of science
Semester(s) in which this module is taught	1/2
The person responsible for the module	
Language of instruction	Russian
Connection with the curriculum (cycle, component)	Basic (university component).
Teaching methods	Traditional. Active and interactive teaching methods
Workload (incl. contact hours, hours of independent work)	Total workload: 120 hours. Lectures: 15 hours, practical: 22 hours, independent work of students: 83 hours.
Credit points (total by module)	4 ECTS
Necessary and recommended prerequisites for joining the module	World History, Political Science, Sociology.
Module objectives / expected learning outcomes	<p>The main purpose of the course is to develop undergraduates' interest in fundamental knowledge, to stimulate the need for philosophical assessments of the formation and development of sciences, critical analysis of modern scientific achievements, to develop a methodological culture of research work</p> <p>Expected learning outcomes: Analyze the main ideological and methodological problems, including interdisciplinary ones, studied in science at the present stage of its development and use the results professionally; understanding the dynamics of science development, its impact on the development of society, the formation of a holistic image of science, mastering the theory of method, mastering the logic and methodology of science; mastering in-depth skills analysis of texts on philosophical problems of various sciences; critical understanding of various concepts of the growth of scientific knowledge; mastering the methodological culture of research work and the ability to use the acquired skills in their own professional activities.</p>
Content	<p>The relationship between the philosophy of science and the history of science. Philosophical ideas as a heuristic of scientific search. The problem of demarcation in the philosophy of science. The genesis of science. Discussions about the emergence of science. The problem of scientific rationality. Classical science. The scientific picture of the world. The ethos of classical science. Non-classical science and post-non-classical science. The scientific picture of the world. The ethos of science. Philosophy of Science: basic meanings. Problems of the boundaries of scientific knowledge in the philosophy of I. Kant. Positivist tradition Analytical philosophy and its influence on the philosophy of science. The transition from the logic of science to the history of science. The structure of scientific knowledge. The main types of sciences. Types of cognitive procedures. Philosophy of natural Sciences. The range of problems of the philosophy of natural science. Philosophy of Engineering and Technical Sciences. The role of technology in science. Information and computer technologies in non-classical technical sciences. Environmental aspects of the social assessment of technology. The specifics of socio-humanitarian knowledge. The problem of the formation of social theory. The theme of the "death of the subject" in postmodern philosophy. Time, space, chronotope. The problem of values. Postcolonial studies.</p>
Examination forms	Oral exam.

Requirements for training and exams	To successfully pass the final control, a master's student needs to know the terminology, theories and concepts of the discipline. Know the personalities and their works. The Code of Conduct and Ethics must comply with the requirements of the university. In this regard, scores from 0 to 100 points are given.
Technical, multimedia tools and software	Computer, projector. https://mooc.enu.kz/ , https://moodle.enu.kz/
List of literature	<ol style="list-style-type: none"> 1. Kanke V.A. Basic philosophical directions and concepts of science. Moscow, 2013 2. Kohanovsky V.A. History and philosophy of science.-M., - 2010 3. Klyagin N. Modern scientific map of the world [Electronic resource]: textbook / N. Klyagin.- 1, 02 MB.- Moscow: Logos, 2017.- 186 s 4. Kuhn T. The structure of scientific revolutions. -M. AST.- 2015 ISBN 978-5-17-089239-6 http://www.psylib.ukrweb.net/books/kunts01/index.htm 5. Philosophy Sciences: a general problem of knowledge. Methodology natural wawringhe and gumanitarn wawringhe science: chrestomania-M.: Progress-tradition: MPSI: Flinta, 2005. - 992 PP. 6. Nurmanbetova, D.N. History and philosophy of science [text]N. Nurmanbetova.- Astana: ENU, 2012

Module 10

Module code and name	ENGL 52002 Foreign language (professional)
Semester(s) in which this module is taught	1/2
The person responsible for the module	Sagimbayeva D.E.
Language of instruction	Russian
Connection with the curriculum (cycle, component)	Basic (university component).
Teaching methods	Group work. Problematic discussion. Search method. Construction. Essay. Situational modeling. Text analysis. Creative writing.
Workload (incl. contact hours, hours of independent work)	Total workload: 120 hours. Practical: 37 hours, independent work of students: 83 hours.
Credit points (total by module)	5 ECTS
Necessary and recommended prerequisites for joining the module	Foreign language B2
Module objectives / expected learning outcomes	<p>The purpose of the discipline: The acquisition and improvement of competencies in accordance with international standards of foreign language education, allowing the use of a foreign language (the level of super-basic standard (C1) as a means of communication for successful professional and scientific activities of the future master, able to compete in the labor market.</p> <p>Expected learning outcomes:</p> <ul style="list-style-type: none"> - to know the functional and stylistic characteristics of the scientific presentation of the material in the studied foreign language; - be able to use general scientific terminology and terminological sublanguage of the relevant specialty in a foreign language; - freely read, translate original literature on the chosen specialty with subsequent analysis and evaluation of the extracted information; - to make a presentation of scientific research (at seminars, conferences, symposiums, forums); - to perceive by ear and understand public speeches in direct and indirect communication (lectures, reports, TV and Internet programs); - have the skills to prepare written forms of presentation of information material in the specialty (scientific report, communication, theses, abstract, abstract); - have the skills to work with lexicographic sources in a foreign language (traditional and online).
Content	Introduction to the course. Developing a focus. How to write master's dissertation (introductory course). Sourcing information for your project. Developing your project. Using evidence to support your ideas. Avoiding plagiarism. Paraphrasing and summarizing. Academic Style – some guidelines (Part I). Academic styles (Part II). Writing introductions. Incorporating data and illustrations. Writing conclusions. Presentation skills. Preparing for conference presentation. Preparing for a conference presentation.

Examination forms	Oral exam.
Requirements for training and exams	Undergraduates are required to attend practical classes in a foreign language and take an active part in performing tasks on CPM, the results of which are accepted by the teacher online or in the classroom of the university, depending on the type and form of the task.
Technical, multimedia tools and software	Databases: https://library.enu.kz/MegaPro/Web https://englishforacademicstudy.com https://garneteducation.com http://presentationexpressions.com http://wiki.ubc.ca/Presentation_Skills https://global.oup.com/?cc=kz https://www.macmillanyounglearners.com/macmillanenglish/ https://www.britishcouncil.kz/kk https://edpuzzle.com/
List of literature	<ol style="list-style-type: none"> 1. Sagimbayeva J.E., Moldakhmetova G.Z., Kurmanayeva D.K. Tazhitova G.Z., Kassymbekova N.S. English course book for Master programme students of "Governmental audit and Financial control" specialty (from extended reading to academic writing) - Astana: L.N. Gumiloyv Eurasian National University, 2018. – 357p. 2. Sagimbayeva J.E., Kurmanayeva D.K., Tazhitova G.Z., Kassymbekova N.S. Электронное пособие - English course book "Environment and Natural Resources Protection" for Master students of "Management and Engineering in the field of Environmental Protection educational programs" – Nur-Sultan, 2022 3. English for Academic Study Joan McCormack and John Slaght -Extended Writing and Research Skills, University of Reading, 2012 – 152 p. 4. Tamzen Armer - Cambridge English for Scientists – Cambridge University Press, 2013 – 128 p. 4. Martin Hewings – Cambridge Academic English – Upper Intermediate- Cambridge University Press, 2012 – 176 p. 5. Dorothy E. Zemach, Lisa A. Rumisek - Academic Writing: from paragraph to essay. – London: Macmillan Education, 2016 - 130 p. 6. Academic Writing. A Handbook for International students. Stephen Bailey. Routledge. 2011

Module 11

Course code and name	ECOL 52001 Environmental education and worldview
Semester(s) when the course is taught	2
Person responsible for the module	Saspugayeva G.Y., PhD, associate professor
Language	English
Within the curriculum (cycle, component)	Profile discipline (elective component)
Teaching methods	<p>Lecture: Multimedia lecture. Video lecture developed by the author of the discipline. Question-answer, interactive method, differentiated method, project method, lecture-conference, "hot seat" method, model method (real-world modeling).</p> <p>Workshop tasks (practice): Divide the group into several subgroups. Each group prepares individually on the topic of practical work, and each group prepares its own report.</p> <p>Objectives of IWS: Each subgroup prepares scientific news on the topic for the last 3 years; Practical works, presentations, videos on the topic will be organized. Presentation of each lesson on a computer, projector, interactive whiteboard.</p>
Workload (incl. contact hours, self-study hours)	lecture -30, seminar -15, private study-105, total - 150
Credit points (total by discipline)	5 ECTS
Required and recommended prerequisites for joining the course	Rational use of natural resource, Basics of ecology and life safety, Social ecology

Course objectives/intended learning outcomes	<p>The objectives of the study of the academic discipline: students should master the system of environmental knowledge - about the relationships between the body and the environment, about the fitness of organisms, about populations, species, biogeocenoses, the biosphere, their structures and functions that are inherent in their laws. This knowledge forms the basis for the formation of a responsible attitude among students and the natural environment, their understanding of the need for careful and rational use of the wealth of nature by humanity, which is an invaluable public domain.</p> <p>The course environmental education and worldview plays a large role in the education system, in the development and upbringing of the younger generation.</p>
Content of the course	"Environmental education and worldview" is a discipline that pay attention to environmental education and upbringing of students, which aims to shape the public attitude of schoolchildren to nature, to supplant consumer approaches and nature by a rational attitude
Examination forms	<p>Course policy and procedures</p> <ul style="list-style-type: none"> -be on lectures/seminars in time; -attendance of classrooms; -active participation in discussion of issues; -preliminary preparation for lectures and seminars on basic literature; -qualitative and timely performance of master`s independent work; <p>participation in all types of assessments (current assessments, master`s independent work, intermediate assessments, final assessment)</p> <p>Oral examination</p> <p>Oral examination with choosing tickets. Because in oral examination students can show their knowledge by talking, discussing and analysing the questions. In test exam they can't show this ability</p> <p>During the academic semester, two intermediate controls are held (the first after the seventh week of study and the second after the fifteenth week before the exam) to test students' knowledge orally.</p> <p>Time for intermediate control is 50 minutes.</p> <p>The exam is conducted orally. Each exam ticket has three questions and the student is given 30 minutes to prepare</p>
Study and examination requirements	<p>Checking the learning outcomes in a specific discipline of the educational program is carried out by taking an exam. The forms of exam is determined by the lecturer or leading teacher. The forms of the exams can be oral, written, combined, computer testing or matrix testing.</p> <p>A lecturer and a teacher for practical training develops a set of theoretical questions covering the content of the entire course, and practical tasks to determine the formation of skills and abilities.</p> <p>Depending on the form of exams the lecturer prepares the examination materials which include exam tickets (where at least two questions are included) or tests. Examination tickets are revealed only on the day of exam, though the students are given the list of approximate questions beforehand to get ready for exams. The questions cover all taught material. The exam tickets may consist of at least one theoretical question and one practical (applied). Usually one discipline demands 25 examination tickets.</p> <p>Tests are prepared according to the taught material and are huger in amount. They can also include theoretical and practical questions, they can have answer options or demand fulfilling the gaps.</p> <p>In addition, the lecturer develops criteria for assessing knowledge, skills and abilities. These criteria take into account the specifics of the discipline. The assessment criteria are available to all students in the syllabus of the disciplines.</p>

Technical and electronic learning tools	<p>Electronic textbook. Battalkhanov E. Formation of the ecological worldview of student youth/"Higher School, Kazakhstan". 2002</p> <p>Electronic textbook. S.D. Deryabo, V.A.Yasvin Ecological Pedagogy and Psychology. R.-n/Don: Phoenix, 1996</p> <p>Electronic textbook NV Moiseev Ecology and education. M.: Yunisam, 1996</p> <p>Video materials on the discipline and other technical teaching aids</p> <p>https://edpuzzle.com/</p> <p>https://whiteboard.fi/</p> <p>https://kahoot.com/</p> <p>https://www.microsoft.com/</p> <p>https://www.socrative.com/</p>
Reading list	<p>1.State compulsory standards of secondary general education of the Republic of Kazakhstan.</p> <p>2.General methodology for teaching biology. Verzilin N.M., Korsunskaya V.M. 2017</p> <p>3.Korobkin V.I. Ecology, 2018</p> <p>4.Alisheva K.A. Ecology, 2017</p> <p>5.I.E. Suleimenov et al. Sustainable development. Environmental education. A guide for the prep. universities and teaches. Schools. Almaty: Kazakh University. 2017</p> <p>6.Shetty K., Sarkar D. Advancing ethnic foods in diverse global ecologies through systems-based solutions is essential to global food security and climate resilience – integrated human health benefits, 2018.</p> <p>Microsoft teams</p>

Module 12

Course code and name	ECOL 53007 Integrated water resources management
Semester(s) when the course is taught	2
Person responsible for the module	Akbaeva L.Kh., Candidate of biological sciences, professor
Language	English
Within the curriculum (cycle, component)	Profile discipline (elective component)
Teaching methods	<p>Informational or problematic lecture</p> <p>Seminar assignments (practice): Case study, brainstorming, works in group, communicative method, method of 6 hats, cinquain method</p> <p>SIW tasks: performing tasks on the topic of the lecture: essays, watching videos, reading special literature</p>
Workload (incl. contact hours, self-study hours)	lecture -30, seminar -15, private study-105, total – 150
Credit points (total by discipline)	5 ECTS
Required and recommended prerequisites for joining the course	To effectively master the content of the discipline, it is necessary to know the basics of geography, chemistry, physics, as well as related disciplines bioecology, Complex monitoring of water objects
Course objectives/intended learning outcomes	<p>Purpose: to form students' system of knowledge and skills in management based on taking into account all types of water resources (surface, ground and return waters) within hydrographic boundaries, which links the interests of various industries and levels of the water use hierarchy, involves all stakeholders in decision-making, promotes the efficient use of water, land and other natural resources in the interests of sustainable provision of the requirements of nature and society in water.</p> <p>The student must learn to identify the problems of the water sector and solve practical problems The student must learn to identify the problems of the water sector and solve practical problems</p>

Content of the course	<p>Water resources management is carried out within hydrographic boundaries, in accordance with the morphology of a particular river basin;</p> <p>management provides for the accounting and use of all types of water resources (surface, ground and return waters), taking into account the climatic characteristics of the regions;</p> <p>close coordination of all types of water use and all organizations involved in water management horizontally between sectors and vertically between the levels of the water management hierarchy (basin, sub-basin, irrigation system, economy);</p> <p>public participation not only in management, but also in financing, maintenance, planning and development of water infrastructure;</p> <p>priority of natural requirements in the activities of water management bodies;</p> <p>focus on water saving and combating unproductive water losses of water management organizations and water users; water demand management, along with resource management;</p> <p>information support, openness and transparency of the water resources management system;</p> <p>economic and financial stability of management.</p>
Examination forms	<p>During the academic semester, two intermediate controls are held (the first after the seventh week of study and the second after the fifteenth week before the exam) to test students' knowledge orally.</p> <p>Time for intermediate control is 50 minutes.</p> <p>The exam is conducted orally. Each exam ticket has three questions and the student is given 30 minutes to prepare.</p> <p>Oral examination, The assessment of knowledge in the discipline provides for the formulation of additional questions, for which the student gives oral explanations in the conversation.</p>
Study and examination requirements	<p>Milestone 1 The student must pass 5 essays, write a test, participate in seminars, defend 1 presentation.</p> <p>Milestone 2 The student must pass 4 essays, write a test paper, participate in seminars, defend 1 presentation.</p> <p>Final: The student is obliged to submit lecture notes, self-study notes, take an oral survey on the topics studied.</p> <p>The undergraduate must demonstrate the ability to determine the effectiveness of water resources management, to be guided in the choice of means of solving environmental problems.</p> <p>Compulsory attendance at classrooms, active participation in the discussion of issues, preliminary preparation for lectures and seminars on the teaching aid and basic literature, high-quality and timely completion of IWS assignments, participation in all types of control (current control, IWS control, midterm control, final the control).</p>
Technical and electronic learning tools	<p>Technical teaching aids - a set of technical devices and special didactic materials for them. There are various groupings of traditional technical teaching aids:</p> <ul style="list-style-type: none"> - audio (audio); - screen (visual); - screen-sound (audiovisual). <p>Sound means are sound channels of information provided through technical teaching aids. These include radio, tape recorder, etc.</p> <p>Screen aids include technical training aids that transmit information through visual channels. These are: overhead projector or overhead projector; epidiascope, overhead projectors, etc.</p> <p>Screen and audio means are means of transmitting information through visual and audio channels simultaneously. These include: film projector, television, etc.</p> <p>Modern technical teaching aids include:</p> <ul style="list-style-type: none"> - video projectors; - video camera and video recorder; - frame grabber, etc.

Reading list	<ol style="list-style-type: none"> 1. CapNet (February 2008). Performance and Capacity of River Basin Organizations. Cross-case Comparison of Four RBOs. UNDP/CapNet. Gleick, P. H. (2020). 2. Dirty Water: Estimated Deaths from Water-Related Diseases 2000-2020. 3. Pacific Institute for Studies in Development, Environment, and Security. GWP TAC (2000), Background Paper No. 4. Integrated Water Resources Management. Global Water Partnership, Stockholm, Sweden. GWP TEC (2017). 4. Catalyzing Change: Handbook for Developing Integrated Water Resources Management (IWRM) and Water Efficiency Strategies. Global Water Partnership, Stockholm, Sweden. Hooper, B. P. (2015). 5. Adoption of Best Management Practices for Dryland Salinity. The Need for an Integrated Environmental Management Approach. Results of a Study in the Goran Catchment. Centre for Water Policy Research, N.S.W. University of England, Armidale, Australia. Hooper, B. P. (2015). 6. Integrated River Basin Governance: Learning from International Experience. IWA Publishing, London, United Kingdom. Margerum, R. D. and Born, S. M. (2020). <p>https://www.socrative.com/</p>
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Module 13

Course code and name	ECOL 53008 Vegetative and endocrine mechanisms of adaptation
Semester(s) when the course is taught	2
Person responsible for the module	Meiramkulova K.S., doctor of biological sciences, professor
Language	English
Within the curriculum (cycle, component)	Profile discipline (elective component)
Teaching methods	Informational or problematic lecture Seminar assignments (practice): Case study, brainstorming, works in group, communicative method, method of 6 hats, cinquain method SIW tasks: performing tasks on the topic of the lecture: essays, watching videos, reading special literature
Workload (incl. contact hours, self-study hours)	lecture -30, seminar -15, private study-105, total – 150
Credit points (total by discipline)	5 ECTS
Required and recommended prerequisites for joining the course	Medical Ecology.
Course objectives/intended learning outcomes	<p>Objectives - - formation of theoretical and methodological competencies in the basic theoretical and practical knowledge and skills in the field of physiology, social ecology. To develop basic skills of setting ecological problems related to human health, developing strategies and projects for sustainable development.</p> <p>Know – the description of the endocrine system, the autonomic nervous system (ANS), a concise explanation of how the endocrine system, hormone signaling pathways and ANS are affected by environmental conditions and how the effects of synthetic chemical exposure on hormone signaling are dependent on environmental context;</p> <p>Be able to – to activities for the study ability of independent research and analysis of information in the field of nervous system and endocrine mechanisms of adaptation for use in the process of scientific and practical activities.</p> <p>Have skills – know how to apply knowledge in the field of biology for the development of general professional disciplines and solving professional problems.</p>
Content of the course	The environmental factors of climate, nutrition, and management are considered major stressors on human health and reproduction. There is no doubt that there is a certain correlation between environmental stressors and disrupt of the endocrine system. Moreover, respiratory illnesses, gastrointestinal and hormonal diseases are among ubiquitous ones in Kazakhstan

Examination forms	<p>During the academic semester, two intermediate controls are to be held (the first after the 7th week of study and the second in the 15th week before the exam) to test students' knowledge in oral form.</p> <p>Time for intermediate control is 50 minutes. Time for preparation is 30 minutes per student. Students select an examination paper with three questions based on the studied topics.</p>
Study and examination requirements	<p>During lectures and practice we have to get immediate feedback and/or answer. Students are also motivated to ask questions, share their knowledge at the lecture and practice classes. It is one of the important ways to evaluate students' knowledge and skills. It will be more helpful to communicate messages to groups of people, like a sort of brain storm, at assembly meetings in future.</p> <p>The form of examination control is oral.</p> <p>The main grounds for it, as follows:</p> <p>Oral form of examination is more effective, as there can be personal contact and communication. It is the best way to evaluate knowledge on subject, communication skills, to judge how students mastered specific terms, how deep their understanding of definitions, basic concepts and principles of the subject. During oral examinations it is more convenient to ask additional questions to students, which will help to control the depth of students' knowledge and understanding of the discipline.</p>
Technical and electronic learning tools	<p>Technical teaching aids - a set of technical devices and special didactic materials for them. There are various groupings of traditional technical teaching aids:</p> <ul style="list-style-type: none"> - audio (audio); - screen (visual); - screen-sound (audiovisual). <p>Sound means are sound channels of information provided through technical teaching aids. These include radio, tape recorder, etc.</p> <p>Screen aids include technical training aids that transmit information through visual channels. These are: overhead projector or overhead projector; epidiascope, overhead projectors, etc.</p> <p>Screen and audio means are means of transmitting information through visual and audio channels simultaneously. These include: film projector, television, etc.</p> <p>Modern technical teaching aids include:</p> <ul style="list-style-type: none"> - video projectors; - video camera and video recorder; - frame grabber, etc.
Reading list	<ol style="list-style-type: none"> 1. Ozernuk N.D. Mechanisms of adaptation – M.Nauka 2000-270 p. 2. The problems of adaptation of biological systems M.Nauka 2001-295p . 3. Smirnov A.N. Elements of endocrines regulation. GEOTAP- Media,2008, 352 p. 4.Sea C.lema,27.04.2017 Enviromental Endocrinology. doi:10.1093/obo/9780199363445-0066 https://www.microsoft.com/ https://www.socrative.com/

Module 14

Course code and name	ECOL 53009 Environmental Service
Semester(s) when the course is taught	2
Person responsible for the module	Beisenova R.R., doctor of biological sciences, professor
Language	English
Within the curriculum (cycle, component)	Profile discipline (elective component)
Teaching methods	<p>Lecture: Multimedia lecture. Questions and answers.</p> <p>Show of short videos on the topic of the lecture.</p> <p>Seminar assignments (practice): Case study, brainstorming, works in group, communicative method, method of 6 hats, cinquain method.</p> <p>Master`s independent work tasks: brainstorming, interactive method, differentiated approach, project method, lecture-conference, “hot chair” method, model method (real situation modelling).</p>

Workload (incl. contact hours, self-study hours)	lecture -30, seminar -15, private study-105, total - 150
Credit points (total by discipline)	5 ECTS
Required and recommended prerequisites for joining the course	To effectively master the content of the discipline, it is necessary to know the basics of geography, chemistry, physics, as well as related disciplines Ecological safety and forecasting
Course objectives/intended learning outcomes	<p>Purpose: to give students the basics of the structure of the environmental service of the enterprise. To teach the skills of environmental service management in accordance with the types of functional features. The undergraduate must be able to organize at the enterprise the procedure for environmental protection, to understand the issues of environmental audit of environmental management systems, environmental assessment and environmental certification. Distinguish between the basic principles of environmental labeling of products. Is the acquisition of special knowledge by students on the rational use of natural resources for the organization and management of the greening of production at the enterprise.</p> <p>The main objectives of the discipline are:</p> <ul style="list-style-type: none"> - formation of a complex of knowledge in the field of principles of rational nature management; - acquisition of skills in analyzing the state of the natural environment of the region and enterprises; - formation of principles, methods and approaches for organizing greening production processes and the release of environmentally friendly products; - the development of students' stable views on the greening of the production of enterprises as on the basis of the economic and social prosperity of society.
Content of the course	<p>Administrative structure and distribution of responsibility in the environmental service. Environmental management, including industrial environmental control. The territory of the sanitary protection zone of the enterprise. Activity of environmental service of the enterprise - nature user on the basis of the current annual and quarterly (monthly) plans. Tool: write an essay, come up with a new model.</p> <p>Environmental support of economic activities. Legal framework for environmental support of economic activities. Stages of economic activity. Environmental impact assessment as a tool for environmental management. The concept and meaning of environmental impact assessment (EIA). The use of ISO standards in the organization of environmental management systems at the enterprise. State ecological expertise as a tool for environmental management. The purpose of the environmental impact assessment. Objects and subjects of environmental expertise. Environmental audit as a tool for environmental management.</p> <p>Environmental monitoring as a tool for environmental management. Eco-labeling and advertising as a tool for environmental management.</p>
Examination forms	During the academic semester, two intermediate controls are held (the first after the seventh week of study and the second after the 15th week before the exam) to test students' knowledge. Time for intermediate control is 50 minutes. The exam is conducted orally. The ticket for each exam consists of three questions and is issued to the student for 30 minutes.
Study and examination requirements	Taking an oral exam has certain advantages, as it allows you to prepare an answer in the most complete, reasonable and detailed form with examples and explanations. Forms a creative approach of students to the subject, contributes to the development of skills in analyzing and generalizing the material being studied, which, in turn, leads to a deep understanding and the formation of a complex, holistic and interrelated understanding of the subject. the discipline is being studied.

Technical and electronic learning tools	Video materials on the discipline and other technical teaching aids https://edpuzzle.com/ https://whiteboard.fi/ https://kahoot.com/ https://www.microsoft.com/ https://www.socrative.com/
Reading list	1. Lopatin V.N. Reader on the course "Management and Marketing in ecology. - M.: 2021.- 544 p. 2. Pakhomova N.V., Richter K., Enders A., Environmental management. Uch. for universities. SPb.: Peter, 2004.- 352 p. 3. Pakhomova N.V., Richter K.K. Environmental Economics and environmental management. Uch. for universities. SPb: Publishing house of SP6GU, 2020 - 488 p. 4. Svitkin M.Z., Matsuta V.D., Rakhlin K.M. Environmental systems management. SPb.: Publishing house VSEGEI, 2021 - 242 p. 5. Griedl T.E., Allenby B.R. Industrial ecology. Uchb. Allowance for universities / Per. from English ed. prof. E.V. Girusova. - M.: UNITI- DANA, 2017.-- 527 p. (series "Foreign textbook).

Module 15

Course code and name	ECOL 53010 Medical and ecological bases of sustainable development
Semester(s) when the course is taught	2
Person responsible for the module	Saspugayeva G.Y., PhD, associate professor
Language	English
Within the curriculum (cycle, component)	Profile discipline (elective component)
Teaching methods	Lecture: Multimedia lecture. Video lecture developed by the author of the discipline. Questions and answers. Show of short videos on the topic of the lecture. Differentiated approach, project method, lecture-conference, "hot chair" method, model method (real situation modelling). Seminar assignments (practice): Divide the group into several subgroups. Each subgroup is prepared individually and each subgroup makes its own calculation on the topic of practical work. SIW tasks: each subgroup prepares scientific news on the topic for the last 3 years; videos on the topic of practical work, presentations, and debates on the topic will be organized.
Workload (incl. contact hours, self-study hours)	lecture -30, seminar -15, private study-105, total - 150
Credit points (total by discipline)	5 ECTS
Required and recommended prerequisites for joining the course	Medical Ecology, fundamentals of ecology and life safety

Course objectives/intended learning outcomes	<p>Objectives: Formation of students' understanding of the relationship between the quality of the environment and human health, providing a comprehensive, systematic approach to the analysis of human relations with the environment and to solving problems of sustainable development.</p> <p>Know – basic terms and concepts of the medical and environmental foundations of sustainable development; theoretical foundations and laws of geochemistry and geophysics, the environment; fundamentals of environmental management and economics of environmental management in the framework of the medical and environmental foundations of sustainable development;</p> <p>Be able to at a high level possess knowledge of the basics of environmental management, environmental economics, and sustainable development; use various knowledge and information resources and apply them within the framework of the medical and environmental foundations of sustainable development; explain the main relationships and patterns of medical and environmental and geographical processes;</p> <p>Have skills – to master the methodological basis for a comprehensive assessment of the state and dynamics of the medical and environmental situation and sustainable development of the territory; apply the knowledge gained to justify measures to improve the medical and environmental situation, environmental protection and sustainable development of regions; analyze and model medical and environmental situations, factors of their formation and development.</p>
Content of the course	<p>The discipline «Medical and environmental foundations of sustainable development» is a variable discipline in the structure of the educational program. This discipline will give a complete understanding of the inextricable link between health protection and the goals of sustainable development; about the spatial and temporal features of the development of relationships in the human – environment system at the global, regional and local levels; understanding the priority of preserving health as the main task of environmental policy and a necessary condition for achieving sustainable development. The discipline deals with the formation of students' ideas of the historical unity of the quality of the environment and human health, providing a comprehensive, systematic approach to the analysis of human relationships with the environment and to solving problems of sustainable development</p>
Examination forms	<p>During the academic semester, two intermediate controls are held (the first after the seventh week of study and the second after the 15th week before the exam) to test students' knowledge. Time for intermediate control is 50 minutes. The exam is conducted orally. The ticket for each exam consists of three questions and is issued to the student for 30 minutes.</p>
Study and examination requirements	<p>The exam on the subject of Medical and environmental foundations of sustainable development is taken orally.</p> <p>Because:</p> <ol style="list-style-type: none"> 1. It involves a conversation with a teacher who immediately reveals the true depth of the student's knowledge of the material. 2. The teacher will be able to assess the level of theoretical training and the formation of practical skills of the student. 3. The student can be asked additional questions both on the content of the exam ticket and on any sections of the discipline that will allow to the examinees to find out the level of knowledge of information on the subject
Technical and electronic learning tools	<p>Video materials on the discipline and other technical teaching aids</p> <p>https://edpuzzle.com/ https://whiteboard.fi/ https://kahoot.com/ https://www.microsoft.com/ https://www.socrative.com/</p>

Reading list	<p>1. Kozhagulov S.O. Ecology and sustainable development: - Almaty, 2016.</p> <p>2. Sustainable development: people, ecology, economy: recommended bibliographic index/ SSEU Scientific Library. – Samara, 2017. – 120 p.</p> <p>3. Ecology and sustainable development. Fundamentals of general ecology: a textbook/ A.T. Oralova, A. Zh. Auelbekova Karaganda State Technical University. – Karaganda: Publishing House KarSTU, 2016 – 100 p.</p>
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Module 16

Course code and name	ECOL 52002 New technologies and sustainable use of biological raw materials
Semester(s) when the course is taught	3
Person responsible for the module	Akbaeva L.Kh., Candidate of biological sciences, professor
Language	English
Within the curriculum (cycle, component)	Profile discipline (elective component)
Teaching methods	<p>Informational or problematic lecture. Interactive method, differentiated approach, project method, lecture-conference, “hot chair” method, model method (real situation modelling).</p> <p>Seminar assignments (practice): Seminar in the form of a conference, debate, oral survey</p> <p>SIW tasks: performing tasks on the topic of the lecture: essays, watching videos, reading special literature</p>
Workload (incl. contact hours, self-study hours)	lecture -30, seminar -15, private study-105, total - 150
Credit points (total by discipline)	5 ECTS
Required and recommended prerequisites for joining the course	To effectively master the content of the discipline, it is necessary to know the basics of geography, chemistry, physics, as well as related disciplines bioecology, Complex monitoring of water objects
Course objectives/intended learning outcomes	<p>It is important for an environmental specialist to study this discipline, since knowledge of the latest technologies for the use of raw materials will allow him to skillfully carry out production and management activities in the relevant enterprises. Associated with the use of natural raw materials.</p> <p>The purpose of studying the discipline.</p> <p>To give the undergraduate the basic theoretical and practical knowledge and skills in the field of industrial ecology on the use of biological and raw materials.</p> <p>The tasks of studying the discipline.</p> <ul style="list-style-type: none"> - To give undergraduates the theoretical knowledge underlying technological processes for the rational use of raw materials - To acquaint undergraduates with the latest technologies and methods of their implementation in the production process. - To instill in undergraduates the skills of solving practical problems in the production process of using, processing raw materials.
Content of the course	<p>The academic discipline "New technologies for the rational use of biological and raw materials" is a complex applied discipline that includes both theoretical foundations from a number of natural science disciplines such as bioecology, geology, geochemistry, and the basic principles of nature management, specific technologies for processing raw materials, waste management, etc. The academic discipline sets out:</p> <ul style="list-style-type: none"> - principles of rational use of natural resources - modern efficient technologies for the use of natural resources: biotechnology, low-waste technologies for processing mineral raw materials, their secondary use, closed cycles in the chemical and metallurgical industries and the use of water resources. - Unconventional methods of using raw materials.

Examination forms	<p>During the academic semester, two intermediate controls are held (the first after the seventh week of study and the second after the fifteenth week before the exam) to test students' knowledge orally.</p> <p>Time for intermediate control is 50 minutes.</p> <p>The exam is conducted orally. Each exam ticket has three questions and the student is given 30 minutes to prepare.</p> <p>Oral examination, The assessment of knowledge in the discipline provides for the formulation of additional questions, for which the student gives oral explanations in the conversation.</p>
Study and examination requirements	<p>Milestone 1 The student must pass 5 essays, write a test, participate in seminars, defend 1 presentation.</p> <p>Milestone 2 The student must pass 4 essays, write a test paper, participate in seminars, defend 1 presentation.</p> <p>Final: The student is obliged to submit lecture notes, self-study notes, take an oral survey on the topics studied.</p> <p>The undergraduate must demonstrate the ability to determine the environmental efficiency of technologies, to be guided in the choice of means of solving environmental problems. Compulsory attendance at classrooms, active participation in the discussion of issues, preliminary preparation for lectures and seminars on the teaching aid and basic literature, high-quality and timely completion of IWS assignments, participation in all types of control (current control, IWS control, midterm control, final the control).</p>
Technical and electronic learning tools	<p>Video materials on the discipline and other technical teaching aids</p> <p>https://edpuzzle.com/</p> <p>https://whiteboard.fi/</p> <p>https://kahoot.com/</p> <p>https://www.microsoft.com/</p> <p>https://www.socrative.com/</p>
Reading list	<ol style="list-style-type: none"> 1. Laskorin B.N., Gromov B.V., Tsygankov A.P., Senin V.N. Problems of the development of waste-free production. –M.: Stroyizdat, 2020 2. Encyclopedic dictionary-reference book "Environment" // Ed. Goncharova E.M. –M.: Progress, 2018 3. Gusev R.K. Environmental law: Textbook. -M.: Legal firm "Contract": "Infra-M", 2021, -208 p. 4. Blinov L.N., Orkina T.N., Tantsura N.P. Fundamentals of Environmental Chemistry. Part 1: Tutorial. –SPb: Publishing house of St. Petersburg State Pedagogical University, 2015, - 76 p. 5. Korobkin V.I., Peredelsky L.V. Ecology in questions and answers. Rostov on Don: publishing house "Phoenix", 2019, 383 p. 6. Ksenzenko V.I., Kuvshinnikov I.M., Skorobogatov V.S. and other General chemical technology and foundations of industrial ecology. Textbook for universities / Under. ed. IN AND. Ksenzenko.-M.: Chemistry, 2021.-328 p.

Module 17

Course code and name	ECOL 53011 Strategy for protection the environment from pollution
Semester(s) when the course is taught	3
Person responsible for the module	Beisenova R.R., doctor of biological sciences, professor
Language	English
Within the curriculum (cycle, component)	Profile discipline (elective component)
Teaching methods	<p>Informational or problematic lecture</p> <p>Seminar assignments (practice): Case study, brainstorming, works in group, communicative method, method of 6 hats, cinquain method</p> <p>SIW tasks: performing tasks on the topic of the lecture: essays, watching videos, reading special literature</p>
Workload (incl. contact hours, self-study hours)	lecture -30, seminar -30, private study-120, total – 180
Credit points (total by discipline)	6 ECTS

Required and recommended prerequisites for joining the course	Environmental studies
Course objectives/intended learning outcomes	<p>Purpose: formation of the ability to organize the rational use and reproduction of natural resources, environmental protection, as well as to ensure the rule of law in environmental and economic relations.</p> <p>Master`s must know: the strategy of protecting the environment from pollution at the global level, at the level of the state, industrial corporation, industrial and agricultural enterprise.</p> <p>Students are able to make Environmental protection models. Tool: creating models. population health indicators, factors shaping human health; diseases associated with adverse climatic conditions, social factors; basics of preventive medicine.</p>
Content of the course	The main components of environmental protection and the organization of environmental protection, the implementation of environmental monitoring, the development of scenarios for changes in environmental components to achieve sustainable development goals. Describes the formation of the ability to organize the rational use and reproduction of natural resources, environmental protection, as well as to ensure the rule of law in environmental and economic relations, contributing to the technological and socio-cultural development of society.
Examination forms	The main components of environmental protection and the organization of environmental protection, the implementation of environmental monitoring, the development of scenarios for changes in environmental components to achieve sustainable development goals. Describes the formation of the ability to organize the rational use and reproduction of natural resources, environmental protection, as well as to ensure the rule of law in environmental and economic relations, contributing to the technological and socio-cultural development of society.
Study and examination requirements	Taking an oral exam has certain advantages, as it allows you to prepare an answer in the most complete, reasonable and detailed form with examples and explanations. Forms a creative approach of students to the subject, contributes to the development of skills in analyzing and generalizing the material being studied, which, in turn, leads to a deep understanding and the formation of a complex, holistic and interrelated understanding of the subject. the discipline is being studied.
Technical and electronic learning tools	<p>Technical teaching aids - a set of technical devices and special didactic materials for them. There are various groupings of traditional technical teaching aids:</p> <ul style="list-style-type: none"> - audio (audio); - screen (visual); - screen-sound (audiovisual). <p>Sound means are sound channels of information provided through technical teaching aids. These include radio, tape recorder, etc.</p> <p>Screen aids include technical training aids that transmit information through visual channels. These are: overhead projector or overhead projector; epidiascope, overhead projectors, etc.</p> <p>Screen and audio means are means of transmitting information through visual and audio channels simultaneously. These include: film projector, television, etc.</p> <p>Modern technical teaching aids include:</p> <ul style="list-style-type: none"> - video projectors; - video camera and video recorder; - frame grabber, etc.

Reading list	1. Ecological Codex RK 2. Melnikov A.A. Environmental Problems and Strategy for Its Preservation / A.A. Melnikov // M.: Gaudeamus, 2009.-712s. 3. Stepanovskikh A.S. Environmental protection / A.S. Stepanovskikh // Kurgan, 2005 4. Collection of legislative acts on environmental protection https://edpuzzle.com/ https://whiteboard.fi/ https://kahoot.com/ https://www.microsoft.com/ https://www.socrative.com/
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Module 18

Course code and name	ECOL 53012 Ecological microbiology and biotechnology
Semester(s) when the course is taught	3
Person responsible for the module	Beisenova R.R., doctor of biological sciences, professor
Language	English
Within the curriculum (cycle, component)	Profile discipline (elective component)
Teaching methods	Informational or problematic lecture Seminar assignments (practice): Case study, brainstorming, works in group, communicative method, method of 6 hats, cinquain method Master`s independent work tasks: performing tasks on the topic of the lecture: essays, watching videos, reading special literature
Workload (incl. contact hours, self-study hours)	lecture -30, seminar -30, private study-120, total – 180
Credit points (total by discipline)	6 ECTS
Required and recommended prerequisites for joining the course	Environmental biotechnology

Course objectives/intended learning outcomes	<p>The purpose of the discipline is to acquire a system of knowledge about the spread of microorganisms in the environment, the use of living organisms and systems to solve environmental problems, including waste processing and pollution control, and the acquisition of skills and skills to use the knowledge gained to solve practical problems in the field of ecology and nature protection.</p> <p>Upon completion of this course, the master's student must know:</p> <ul style="list-style-type: none"> - basic theoretical foundations of the physiological and biochemical characteristics of microorganisms to the extent necessary to understand the role of the microbiota in maintaining ecological balance in the biosphere. - theoretical foundations of the use of microorganisms in biotechnologies aimed at reducing environmental pollution. - theoretical foundations of the ecology of microorganisms and the nature of the impact of environmental factors on microbiological activity, ecological niches for various microorganisms - how to use specific forms of bacteria for their application in environmental biotechnologies. <p>be able to:</p> <ul style="list-style-type: none"> - regulate microbial processes of waste transformation in metateks in order to ensure the continuous formation of biogas. - to identify and describe the biological diversity of microorganisms functioning in contaminated soils, and to assess its change in the process of reclamation and to evaluate it with modern methods of quantitative information processing. - use theoretical knowledge in the practical activities of solid and liquid waste treatment. Use bioreactors, metateks and biofilters used to clean liquid waste released by animals, to produce biogas and fertilizers. - observe the succession of microbes occurring in the reactors and when the qualitative composition of the microorganisms involved in the processes changes, take appropriate measures (changes in pH, temperature) <p>own:</p> <ul style="list-style-type: none"> - methods of sampling from environmental objects and methods for determining the number and activity of microorganisms that have the ability to biodegrade xenobiotics and their derivatives. - basic knowledge of the course of microbial succession during the biodegradation of various pollutants. - techniques for optimizing microbiological activity and directed regulation of microbiological processes in waste processing, soil bioremediation, and wastewater treatment - knowledge of changes in the physiological characteristics of microbes during the operation of the reactor that purifies liquid waste.
Content of the course	<p>The course covers the basics of microbial genetics and genetic engineering, agricultural microbiology, and environmental biotechnology. Technological issues related to the use of microorganisms and microbiological methods in solving environmental problems that pollute industrial premises and the environment are described in detail. The technologies of bio-treatment of livestock effluents, processing of agricultural waste and processing industry are considered. Further prospects for the use of biotechnology for integrated environmental protection and restoration of soil fertility are shown.</p>
Examination forms	<p>During the academic semester, two intermediate controls are held (the first after the seventh week of study and the second after the fifteenth week before the exam) to test students' knowledge orally.</p> <p>Time for intermediate control is 50 minutes.</p> <p>The exam is conducted orally. Each exam ticket has three questions and the student is given 30 minutes to prepare</p>

Study and examination requirements	<p>The exam on the subject of Industrial ecology is taken orally.</p> <p>Because:</p> <p>First of all, in order to fully test the knowledge of students, a deep definition of their speaking skills, the ability to express their thoughts is determined only by oral communication.</p> <p>Second, the third question of the exam questions of this discipline can be assessed in the form of calculations, and it can be assessed only by asking the meaning of oral formulas.</p> <p>Thirdly, I think that only the oral exam method allows you to fully assess the knowledge of students (for example, to ask additional questions).</p>
Technical and electronic learning tools	<p>Technical teaching aids - a set of technical devices and special didactic materials for them. There are various groupings of traditional technical teaching aids:</p> <ul style="list-style-type: none"> - audio (audio); - screen (visual); - screen-sound (audiovisual). <p>Sound means are sound channels of information provided through technical teaching aids. These include radio, tape recorder, etc.</p> <p>Screen aids include technical training aids that transmit information through visual channels. These are: overhead projector or overhead projector; epidiascope, overhead projectors, etc.</p> <p>Screen and audio means are means of transmitting information through visual and audio channels simultaneously. These include: film projector, television, etc.</p> <p>Modern technical teaching aids include:</p> <ul style="list-style-type: none"> - video projectors; - video camera and video recorder; - frame grabber, etc.
Reading list	<p>Emtsev V. T., Mishustin E. N. Microbiology, Bustard, 2005, 2006. -441 p.</p> <p>Kuznetsov A. E., Gradova N. B. Scientific bases of ecobiotechnology. - M.: Mir, 2006. - 504 p.</p> <p>Kuznetsov A. E., Gradova N. B., Lushnikov S. V., Engelhart M., Weisser T., Chebotaeva M. V. Applied ecobiotechnology: in 2 t. - M.: BI-NOM.Laboratory of Knowledge, 2010. - 629 p., 485 p.</p> <p>https://www.microsoft.com/</p> <p>https://www.socrative.com/</p>

Module 19

Course code and name	ECOL 53013 Rational use of land resources
Semester(s) when the course is taught	3
Person responsible for the module	Adilbektegi G.A. candidate of geographical sciences, associate professor
Language	English
Within the curriculum (cycle, component)	Profile discipline (elective component)
Teaching methods	<p>Informational or problematic lecture</p> <p>Seminar assignments (practice): Case study, brainstorming, works in group, communicative method, method of 6 hats, cinquain method</p> <p>Master`s independent work tasks: performing tasks on the topic of the lecture: essays, watching videos, reading special literature</p>
Workload (incl. contact hours, self-study hours)	lecture -30, seminar -15, private study-105, total – 150
Credit points (total by discipline)	5 ECTS
Required and recommended prerequisites for joining the course	<p>Lecture: Multimedia lecture.</p> <p>Seminar assignments (practice): Case study, brainstorming, works in group, communicative method, method of 6 hats, cinquain method. Independent work of the student: Development of a project for the choice of students (land reclamation, introduction of natural technologies of agriculture, etc.).</p>

Course objectives/intended learning outcomes	<p>The objectives of the study of the discipline: the study of the current state, methods, techniques and technologies for the restoration and protection of land resources during their development and operation.</p> <p>Objectives of the study of the discipline:</p> <ul style="list-style-type: none"> - to form an idea of land resources as a natural object; - to form an idea of the existing variants of pollution and violations of land resources and their consequences during the construction and operation of an industrial facility; - to consider the main directions of restoration of disturbed lands and the requirements for their implementation; - to study the technique and technology of work at the stage of the mining stage of reclamation; - to study the ecological basis of the biological stage of land reclamation disturbed by industry;
Content of the course	<p>Theoretical foundations of rational use of land resources</p> <p>The functional role of soil in natural and artificial ecosystems.</p> <p>General features of the use of land resources</p> <p>Environmental aspects of the impact of industrial production on land resources</p> <p>Agricultural production and its impact on the state of the land fund.</p> <p>Chemicalization of agricultural production and the environment.</p> <p>Ecological problems of agricultural mechanization.</p> <p>Socio-economic systems and their impact on land use</p> <p>Agrochemical monitoring</p> <p>Information support for the rational use of land resources</p> <p>Current state of the Land fund of the Republic of Kazakhstan</p> <p>Theoretical foundations of environmental sustainability of land ownership and land use</p> <p>Ecological and economic problems of rational land use.</p> <p>Land restoration works</p> <p>Alternative land-use systems and their ecological significance.</p>
Examination forms	<p>During the academic semester, two intermediate controls are held (the first after the seventh week of study and the second after the fifteenth week before the exam) to test students' knowledge orally.</p> <p>Time for intermediate control is 50 minutes.</p> <p>The exam is conducted orally. Each exam ticket has three questions and the student is given 30 minutes to prepare</p>
Study and examination requirements	<p>The exam on the subject of Industrial ecology is taken orally.</p> <p>Because:</p> <p>First of all, in order to fully test the knowledge of students, a deep definition of their speaking skills, the ability to express their thoughts is determined only by oral communication.</p> <p>Second, the third question of the exam questions of this discipline can be assessed in the form of calculations, and it can be assessed only by asking the meaning of oral formulas.</p> <p>Thirdly, I think that only the oral exam method allows you to fully assess the knowledge of students (for example, to ask additional questions).</p>

Technical and electronic learning tools	<p>Technical teaching aids - a set of technical devices and special didactic materials for them. There are various groupings of traditional technical teaching aids:</p> <ul style="list-style-type: none"> - audio (audio); - screen (visual); - screen-sound (audiovisual). <p>Sound means are sound channels of information provided through technical teaching aids. These include radio, tape recorder, etc.</p> <p>Screen aids include technical training aids that transmit information through visual channels. These are: overhead projector or overhead projector; epidiascope, overhead projectors, etc.</p> <p>Screen and audio means are means of transmitting information through visual and audio channels simultaneously. These include: film projector, television, etc.</p> <p>Modern technical teaching aids include:</p> <ul style="list-style-type: none"> - video projectors; - video camera and video recorder; - frame grabber, etc.
Reading list	<p>Golovanov A. I.: Land recultivation. - M.: "Kolos", 2009.</p> <p>Chernikov V. A. et al. Agroecology. - M., "Kolos", 2000.</p> <p>Bakanina F. M. Agroecology.- Nizhny Novgorod, 2002.</p> <p>Aidarkhanova G. S. Agroecology: Textbook / G. S. Aidarkhanova, M. B. Khusainov, A. T. Khusainov - tipografiya Akademii "Kokshe" - Kokshetau, 2015. - 190 p.</p> <p>Nature management: studies. manual / edited by A. I. Golovanov. - M.: Kolos, 2008. - 346 p.</p> <p>https://www.microsoft.com/</p> <p>https://www.socrative.com/</p> <p>Google (Google Class/ GoogleForms)</p>

Module 20

Course code and name	ECOL 53014 Environmental policy and legal basis for environmental management
Semester(s) when the course is taught	3
Person responsible for the module	Beisenova R.R., doctor of biological sciences, professor
Language	English
Within the curriculum (cycle, component)	Basic discipline (elective component)
Teaching methods	<p>Lecture: Multimedia lecture, interactive method, differentiated approach, project method, lecture-conference, "hot chair" method, model method (real situation modelling).</p> <p>Seminar assignments (practice): Divide the group into several subgroups. Each subgroup is prepared individually and each subgroup makes its own calculation on the topic of practical work</p> <p>SIW tasks: each subgroup prepares scientific news on the topic for the last 3 years; videos on the topic of practical work, presentations, and debates on the topic will be organized.</p>
Workload (incl. contact hours, self-study hours)	lecture -30, seminar -30, private study-120, total – 180
Credit points (total by discipline)	6 ECTS
Required and recommended prerequisites for joining the course	Ecological safety and forecasting

Course objectives/intended learning outcomes	<p>Knowledge: master students know the main aspects of environmental policy; the content of the basic concepts, categories and institutions of the science of environmental law; normative legal acts regulating relations in the field of environmental protection and rational use of natural resources.</p> <p>Skills: students know how to independently interpret and apply the norms of environmental legislation, analyze and assess various situations in the field of environmental protection and nature management, assess the patterns of judicial practice; apply methods of working with published and electronic sources on environmental policy issues, be able to analyze them.</p> <p>Competences: students are able to treat nature and natural resources with care, respect the law, and, consequently, comply with the norms of environmental legislation.</p>
Content of the course	Stages of environmental law formation and features of the separation process and integration of resource branches of law. Features of the object and subject of environmental law, with the basics of the system of environmental law. The main source of environmental relations and laws of environmental legislation. Features of the right of private ownership of natural resources. The rights and obligations of natural resources.
Examination forms	<p>During the academic semester, two intermediate controls are held (the first after the seventh week of study and the second after the fifteenth week before the exam) to test students' knowledge orally.</p> <p>Time for intermediate control is 50 minutes.</p> <p>The exam is conducted orally. Each exam ticket has three questions and the student is given 30 minutes to prepare</p>
Study and examination requirements	Passing an oral exam has certain advantages since it creates a possibility to prepare the answer in the most complete justified and detailed form with examples and explanations. It forms the student's creative approach to the subject, contributes to the development of skills in analysis and synthesis of the studied material, which in turn leads to a deep understanding and the formation of a comprehensive, holistic and interrelated view of the studied discipline.
Technical and electronic learning tools	Computer, projector, interactive whiteboard
Reading list	<p>1.Environmental Code of the Republic of Kazakhstan</p> <p>2. Volkov A.M. Environmental law. Textbook. Moscow: KnoRus, 2020. 344 p.</p> <p>3. Potapova A. A. Environmental law. Lecture notes. Moscow: Prospekt, 2018. 104 p.</p> <p>4.International environmental Law: textbook /T. G. Avdeeva, A. I. Aliev, R. R. Amirova, et al.; ed. by R. M. Valeev. M.: Statute, 2012. 639 p.</p> <p>5.Pavlenko S. A. Dictionary of environmental terms in legislative normative legal and instructional and methodological documents. Moscow: Lan, 2018. 320 p.</p> <p>https://www.microsoft.com/</p> <p>https://www.socrative.com/</p>

Module 21

Course code and name	ECOL 53015 Environmental biotechnology in agriculture and mining industry
Semester(s) when the course is taught	3
Person responsible for the module	Beisenova R.R., doctor of biological sciences, professor
Language	English
Within the curriculum (cycle, component)	Profile discipline (elective component)
Teaching methods	<p>Lecture: Multimedia lecture. Questions and answers.</p> <p>Show of short videos on the topic of the lecture.</p> <p>Seminar assignments (practice): Divide the group into several subgroups. Each subgroup is prepared individually and each subgroup makes its own calculation on the topic of practical work</p> <p>SIW tasks: brainstorming, works in group, communicative method, method of 6 hats, cinquain method, interactive method, differentiated approach, project method, lecture-conference, "hot chair" method, model method (real situation modelling).</p>

Workload (incl. contact hours, self-study hours)	lecture -30, seminar -30, private study-120, total – 180
Credit points (total by discipline)	6 ECTS
Required and recommended prerequisites for joining the course	Environmental Biotechnology
Course objectives/intended learning outcomes	Environmental biotechnology in agriculture and mining industry is a discipline that studies the biotechnological methods in relation to environmental protection in agricultural production and extractive industries, biological objects, microbial cultures, communities, their metabolites and preparations used in biotechnological processes in agriculture and their inclusion in the natural cycles of substances, elements, energy and information.
Content of the course	familiarize students with the methods of research using the basic methods of environmental biotechnology and environmental safety, biotechnological methods of environmental protection in agriculture and in industrial production. And also teach students to use microorganisms and biological objects for waste processing, wastewater treatment and atmospheric air.
Examination forms	During the academic semester, two intermediate controls are held (the first after the seventh week of study and the second after the 15th week before the exam) to test students' knowledge. Time for intermediate control is 50 minutes. The exam is conducted orally. The ticket for each exam consists of three questions and is issued to the student for 30 minutes.
Study and examination requirements	Taking an oral exam has certain advantages, as it allows you to prepare an answer in the most complete, reasonable and detailed form with examples and explanations. Forms a creative approach of students to the subject, contributes to the development of skills in analyzing and generalizing the material being studied, which, in turn, leads to a deep understanding and the formation of a complex, holistic and interrelated understanding of the subject. the discipline is being studied.
Technical and electronic learning tools	Computer, projector, interactive whiteboard
Reading list	1. Ualikhanova G. Zh. Plant biotechnology: textbook. - Almaty, 2009 .-- 336 2. Esimova A.M., Kedelbaev B. Sh. Technology of production of biological preparations: textbook. 2009 .-- 136 3. Esimova A.M., Prikhodko N.A., Nadirova Zh.K. Fundamentals of bioengineering: a tutorial. 2010 .—148 https://edpuzzle.com/ https://whiteboard.fi/ https://kahoot.com/ https://www.microsoft.com/

Module 22

Course code and name	ECOL 53016 Assessment of the status and dynamics of the human impact on the environment
Semester(s) when the course is taught	3
Person responsible for the module	Saspugayeva G.Y., PhD, associate professor
Language	English
Within the curriculum (cycle, component)	Profile discipline (elective component)
Teaching methods	Lecture: Multimedia lecture. Questions and answers. Show of short videos on the topic of the lecture. Seminar assignments (practice): brainstorming, works in group, communicative method, method of 6 hats, cinquain method, interactive method, differentiated approach, project method. SIW tasks: Each subgroup prepares scientific news on the topic for the last 3 years; videos on the topic of practical work, presentations, and debates on the topic will be organized.
Workload (incl. contact hours, self-study hours)	lecture -30, seminar -15, private study-105, total – 150
Credit points (total by discipline)	5 ECTS

Required and recommended prerequisites for joining the course	Environmental impact assessment
Course objectives/intended learning outcomes	Familiarize students with the process of environmental assessment and assessment of the dynamics of human impact on the natural environment.
Content of the course	Assessment of the status and dynamics of the human impact on the environment is a discipline that studies methods of forecasting of the environmental state in assessing the quality of various components of the environment, assessment of the level of anthropogenic impact on the environment, the main sources of anthropogenic impact on the environment, the intensity of industry and traffic, automobile gases and other gases released into the environment.
Examination forms	During the academic semester, two intermediate controls are held (the first after the seventh week of study and the second after the 15th week before the exam) to test students' knowledge. Time for intermediate control is 50 minutes. The exam is conducted orally. The ticket for each exam consists of three questions and is issued to the student for 30 minutes.
Study and examination requirements	<p>Course policies and procedures</p> <p>Necessary conditions for undergraduates in the educational process:</p> <ul style="list-style-type: none"> - compulsory attendance of classes; - activity during practical (laboratory) classes; - preparation for classes, homework and self-regulatory organizations. - timely execution and delivery of master's independent work tasks <p>Unacceptable: being late and leaving classes; using cell phones during classes; deception and plagiarism; late delivery of tasks.</p> <p>Types of control of educational achievements:</p> <p>Linear 1. Linear control - colloquium.</p> <p>Linear 2. Linear control - colloquium.</p> <p>Final: oral exam</p> <p>conducting an oral exam is necessary to enable the undergraduate to reveal the knowledge gained and express his thoughts in more detail and get a complete picture of the student's preparation</p>
Technical and electronic learning tools	Computer, projector, interactive whiteboard
Reading list	<p>1. Musatova, OV General and global ecology. "Voronezh State University named after P.M. Masharov", 2010</p> <p>2. S.I. Rozanov General ecology: a textbook for students of higher educational institutions on the discipline "Ecology" for technical areas and specialties / Sergey Ivanovich Rozanov. - Ed. 4th, revised. - St. Petersburg; Moscow; Krasnodar: Doe, 2014</p> <p>3. Farmer G.T. Climate change science. A modern synthesis / G.T. Farmer, J. Cook. - New York; London: Springer Science + Business Media, 2013</p> <p>https://www.microsoft.com/</p> <p>https://www.socrative.com/</p>

Module 23

Code and name of the module	EDUC 62008 Practice oriented module. Teaching internship
Semester (s) in which this module is taught	3
Person responsible for the module	Khusainov M. B., Candidate of Agricultural Sciences, Associate Professor
Language of instruction	English
Connection with curriculum (cycle, component)	Basic discipline (university component)
Training methods	Undergraduates attend classes of the supervisor and other teachers and share their experience. Conducts lectures, practical classes, laboratory classes and study hours according to the plan. Prepares lesson plans. Conducts open lessons.
Workload (incl. contact hours, self-study hours)	Total work load: 120 hours. Practical applications: 120 hours.
Credit points (total modulo)	4 ECTS
Required and recommended items prerequisites to join the to the module	<ul style="list-style-type: none"> - Higher school pedagogy - Management psychology - History and philosophy of science - Environmental education and worldview

Module objectives / expected learning outcomes	<p>The main goal of teaching practice is to develop a high level of pedagogical culture, skills in organizing the pedagogical process in higher education and innovative activities in the field of education.</p> <p>A master's student should know:</p> <ul style="list-style-type: none"> - theoretical foundations and regularities of the functioning of reforms in the field of education and science, the main directions and trends in the development of higher education in the modern world; - legislative and regulatory legal acts that carry out the activities of educational institutions; state standards of education; basic functions of standard and curricula; fundamentals of labor legislation; standards of the unified system of organizational and administrative documentation; - the main functions of the theoretical provisions of the fundamentalization of education; problems of humanitarization and humanization of education; issues of management of educational structural divisions of higher education;; <p>be able to:</p> <ul style="list-style-type: none"> - apply theoretical knowledge in order to combine the cultural, scientific, technical and practical spheres of civilization and, as a result, in organic connections of natural, humanitarian and technical sciences;
Content	<ol style="list-style-type: none"> 1. study of psychological and pedagogical literature on the problem of teaching in higher education; 2. familiarization with the methods of preparing and conducting lectures, laboratory and practical classes, seminars, consultations, tests, exams, course and diploma design; 3. mastering innovative educational technologies; 4. familiarization with existing computer-based training programs, capabilities of technical training tools, etc.
Exam forms	<p>PRACTICE MONITORING FORM</p> <p>Control form-report. Certification of practice results is carried out on the basis of:</p> <ol style="list-style-type: none"> 1. Diary of teaching practice with an individual plan and notes on its implementation. 2. Feedback from the head of teaching practice; 3. Report on teaching practice; 4. Defense of the report at the final conference. <p>After defending the report, the members of the commission make a conclusion and assign credit according to the following rating scale: "excellent", "good", "satisfactory", "unsatisfactory".</p>
Training and exam requirements	<p>When evaluating a master's student's teaching practice, the following criteria are taken into account::</p> <ul style="list-style-type: none"> - the level of theoretical understanding of undergraduates of their practical activities (its goals, objectives, content, methods); - degree of completion of the internship program and individual tasks; - the degree of solving problems of pedagogical practice by master's students; - content and quality of reporting documentation submitted by master's students-interns; - the level of knowledge shown during the defense of reports on pedagogical practice before the department commission. - exchange of experience and impressions gained during the practice. - discussion of difficulties and problems faced by undergraduates-interns during the internship.
Technical, multimedia tools and software	Interactive whiteboard, multimedia equipment, electronic library.
List of literature	<ol style="list-style-type: none"> 1. Postgraduate education in the SES of the Republic of Kazakhstan. Master's degree No. 1080 dated 23.08.2012. 2. Smirnov V. I. Obshchaya pedagogika: uchebnoe posobie [General pedagogy: a textbook].- M.: Logos, 2003. - 304s. 3. Nikitina N. N. Introduction to teaching: theory and practice. / N. N. Nikitina, N. V. Kislinkaya. Moscow: Akademiya Publ., 2004, 224 p. (in Russian) 4. Egorov V. V., Erakhten I. I., Udartseva S. M. Interactive teaching methods in engineering education. - Almaty: Bilim, 2009.

Module 24

Code and name of the module	EDUC 62009 Practice oriented module. Research practice
Semester (s) in which this module is taught	4
Person responsible for the module	Khusainov M. B., Candidate of Agricultural Sciences, Associate Professor
Language of instruction	English
Connection with curriculum (cycle, component)	Profile discipline (university component)
Training methods	<ul style="list-style-type: none"> - search for materials for summarizing and critically evaluating the results obtained by domestic and foreign researchers in various fields of environmental science, identifying promising areas, - preparation of materials for the future master's thesis in accordance with the requirements of, - preparation of scientific reports for presentation at conferences, scientific seminars, forums, writing scientific articles and abstracts for publication in collections of scientific papers and conference materials.
Workload (incl. contact hours, self-study hours)	<p>Total work load: 360 hours.</p> <p>Practical applications: 360 hours.</p>
Credit points (total modulo)	12 ECTS
Required and recommended items prerequisites to join the to the module	<ul style="list-style-type: none"> - Environment and conservation of biological diversity - Environmental epidemiology and ecopathology - Mutagenesis, teratogenesis, carcinogenesis under the influence of environmental conditions - Management of environmentally friendly processes and production - New technologies for the rational use of biological and raw materials resources - Assessment of the state and dynamics of anthropogenic impact on the environment
Module objectives / expected learning outcomes	<p>The objectives of the research practice are:</p> <ul style="list-style-type: none"> - consolidation, expansion and deepening of theoretical knowledge in the disciplines of EP 7M05206 - Environmental protection and rational use of natural resources. - conducting independent research in accordance with the developed program; further collection, systematization, processing of factual material on the topic of the master's thesis. <p>A master's student should know:</p> <ul style="list-style-type: none"> - specifics of scientific research in the field of "Environmental education"; - general scientific and special research methods in accordance with the direction and profile of the master's program; - principles of organization of research activities; content of research tools; technology of research activities; - master the basic methods of protecting production personnel and the public from the consequences of possible accidents, catastrophes, and natural disasters;; <p>Be able to:</p> <ul style="list-style-type: none"> - be able to analyze and critically evaluate the results of their own scientific research, as well as leading experts and scientists in the relevant field of scientific research;; - be able to identify scientific priorities, as well as formulate current scientific tasks and problems;; <p>Acquire skills:</p> <ul style="list-style-type: none"> - ability to present research results in the form of a scientific report, article, report or separate sections of a dissertation.
Content	<ol style="list-style-type: none"> 1. Development of the content of 3 chapters and paragraphs of the dissertation. 2. Development of the content of conclusions and practical recommendations based on the results of the dissertation work. 3. Check references to used research sources for all chapters of the scientific work. 4. Submission of research materials for publication. 5. Proofreading the content of the dissertation, checking references to the sources used. 6. Submission of the commission's work for preliminary defense.

	<p>7. Analysis of the research results.</p> <p>8. Preparation of the practice report</p> <p>9. Report Protection</p>
Exam forms	<p>PRACTICE MONITORING FORM</p> <p>Control form-report. Certification of practice results is carried out on the basis of::</p> <ol style="list-style-type: none"> 1. A research practice diary with an individual plan and notes on its implementation. 2. Feedback from the Head of research practice from the company (organization) about the student's activities during the internship; 3. research practice report; 4. Defense of the report at the final conference. <p>After defending the research practice report, the members of the commission make a conclusion and assign credit on the following rating scale: " excellent", " good", " satisfactory", "unsatisfactory".</p>
Training and exam requirements	<p>When evaluating a master's student's research practice, the following criteria are taken into account::</p> <ul style="list-style-type: none"> - the level of theoretical understanding of undergraduates of their practical activities (its goals, objectives, content, methods); - degree of completion of the internship program and individual tasks; - the degree of solving research practice tasks by master's students; - content and quality of reporting documentation submitted by master's students-interns; - the level of knowledge shown during the defense of reports on professional practice before the department commission. - exchange of experience and impressions gained during the practice. - discussion of difficulties and problems faced by undergraduates-interns during the internship.
Technical, multimedia tools and software	Interactive whiteboard, multimedia equipment, electronic library.
List of literature	<ol style="list-style-type: none"> 1. Postgraduate education in the SES of the Republic of Kazakhstan. Master's degree No. 1080 dated 23.08.2012. 2. Afanasyev Yu. A., Fomin S. A. Monitoring and methods of ecological control / Textbook, Moscow: MNEPU Publishing House, 1998, 468 p. 3. Dyakonov K. N., Doncheva A.V. Ecological design and expertise. - M.: Aspect Press, 2002. - 198 p. 4. Engineering ecology and nature management / Textbook for universities, Moscow: Logos Publishing House, 2002, 528 p.

Module 25

Course code and name	EDUC 53004 Methodology The Master Training. Scientific-research work of graduate students
Semester(s) when the course is taught	1,2,3,4
Person responsible for the module	Zandybai A.
Language	English
Within the curriculum (cycle, component)	-
Teaching methods	-
Workload (incl. contact hours, self-study hours)	720
Credit points (total by discipline)	24 ECTS
Required and recommended prerequisites for joining the course	-

Course objectives/intended learning outcomes	The goal is to prepare the undergraduate for independent research work (the end result of which is the defense of a dissertation). As a result of the research work, the undergraduate must know the research issues, the history of the development of the specific problem under study, its role and place in the research direction; have specific knowledge on the problem under study; be able to carry out scientific and experimental work in a particular area of ecology; be able to work with specific equipment, devices, Internet resources, databases; possess the skills of public presentation of the results of the study, search for the necessary information
Content of the course	Fulfillment of tasks in accordance with the approved individual work plan of the undergraduate. Implementation of research on an urgent environmental problem within the framework of a master's thesis. Preparation of publications (reports, abstracts, articles) and presentations at national and international conferences. Preparation and defense of a master's thesis.
Examination forms	Report
Study and examination requirements	implementation of an individual work plan
Technical and electronic learning tools	https://edu.enu.kz/ , https://www.microsoft.com/ , https://fen.enu.kz/subpage/material-no-tehnicheskaya-baza-kaf-obg
Reading list	https://enu.kz/downloads/noyabr-2021/polozhenie-o-magistrature-2021.pdf https://enu.kz/downloads/materials/ktpo.pdf https://enu.kz/downloads/may/pr%20enu%2018-17%20pravila%20oformleniya%20magisterskoi%20dissertatsii%20proekta.pdf Law of the Republic of Kazakhstan "On Science" https://adilet.zan.kz/rus/docs/Z1100000407 «On state support for industrial and innovative activities» https://adilet.zan.kz/rus/docs/P1100001007 Патентование изобретений и полезных моделей https://kazpatent.kz/ru/faq/2068

Module 26

Course code and name	MFA 62010 Module of final assessment
Semester(s) when the course is taught	4
Person responsible for the module	Beisenova R.R.
Language	English
Within the curriculum (cycle, component)	-
Teaching methods	-
Workload (incl. contact hours, self-study hours)	360
Credit points (total by discipline)	12 ECTS
Required and recommended prerequisites for joining the course	-
Course objectives/intended learning outcomes	The purpose of the final attestation of a master's student is to assess the learning outcomes and key competencies achieved upon completion of the study of the master's educational program.
Content of the course	Defense of a master's thesis is carried out in the presence of: - positive feedback from the supervisor; - at least one publication on the topic of the dissertation in scientific journals or speech at an international or republican scientific conference; - extracts from the minutes of the meeting of the graduating department on the recommendation for defense; - an opponent's review containing a comprehensive description of the dissertation work and a reasoned conclusion on the possibility of awarding an academic master's degree.
Examination forms	Master's thesis defense
Study and examination requirements	Students who have completed the educational process in accordance with the requirements of the educational program, the working curriculum, as well as those who have passed the preliminary defense (extended session) based on the results of the dissertation research, are allowed to the final certification.

Technical and electronic learning tools	https://edu.enu.kz/ , https://www.microsoft.com/ , https://fen.enu.kz/subpage/material-no-tehnicheskaya-baza-kaf-obg
Reading list	https://enu.kz/downloads/noyabr-2021/polozhenie-o-magistrature-2021.pdf https://enu.kz/downloads/materials/ktpo.pdf https://enu.kz/downloads/may/pr%20enu%2018-17%20pravila%20oformleniya%20magisterskoi%20dissertatsii%20proekta.pdf https://adilet.zan.kz/rus/docs/

Considered and approved at the meeting of the department
date 02.03.2022 Record № 8__

Head of Department

Beisenova Raykhan Rymbaevna



(signature)

02.03.2022

(date)