

MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE REPUBLIC OF KAZAKHSTAN

KARAGANDA UNIVERSITY NAMED AFTER ACADEMICIAN E. A. BUKETOV

«AGREED»



Director of "Karkaraly State
National Nature Park"


Darbayev A.Kh.
" 04 2023.

«CLAIM»



Chairman of the Board, rector of Karaganda
University named after Academician E.A. Buketov
N. O. Dulatbekov


" 30 2023.

«AGREED»



Head of the Karaganda Regional Territorial Inspectorate of Forestry and
Wildlife of the Forestry and Wildlife Committee of the Ministry of
Ecology, Geology and Natural Resources of the Republic of Kazakhstan
Baltabayev A.M.


" 20 2023.

EDUCATIONAL PROGRAM

in the field of training 7M051-Biological and related sciences

"7M05101-Biology"
Level: Master's Degree

Karaganda, 2023

Educational program in the direction of training "7M051 Biological and related Sciences" developed on the basis of:

- Law of the Republic of Kazakhstan dated July 27, 2007 № 319-III "On education"
- Law of the Republic of Kazakhstan dated July 11, 1997 No. 151-I. "On languages in the Republic of Kazakhstan",
- The State mandatory Standard of Postgraduate Education of Education No. 604 of August 31, 2018
- The National Qualifications Framework of March 16, 2016 by the Republican Tripartite Commission on Social Partnership and Regulation of Social and Labor Relations.
- Order of the Ministry of Education and Science of the Republic of Kazakhstan" On approval of the Rules for organizing the educational process on credit technology " dated October 2, 2018 No. 152
- Classifier of areas of training of personnel with higher and postgraduate education dated October 13, 2018 No. 569.
- Professional Standard " National Qualifications Framework (2016) "(Approved by the protocol of March 16, 2016 of the Republican Tripartite Commission on Social Partnership and Regulation of Social and Labor Relations)
- Industry Qualifications Framework "Industry Qualifications Framework for Education" (Approved by Protocol No. 2 of the meeting of the sectoral Tripartite Commission on Social Partnership and Regulation of Social and Labor Relations under the Ministry of Education and Science of the Republic of Kazakhstan dated November 23, 2016)

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Passport of the educational program

№	Name of the parameter	Description
1	Code and name of the educational program	7M05101- Biology
2	Code and classification of the field of education, areas of training	7M05 – Natural Sciences, Mathematics and Statistics 7M051 – Biological and related sciences
3	Group of educational programs	M080 – Biology
4	Volume of loans	120 ECTS
5	Form of training	full - time
6	Language of instruction	Kazakh, Russian, English
7	Degree awarded	Master of Natural Sciences in the educational program 7M05101 — "Biology"
8	Type of EP	current
9	Level according to ISCE	Level 7;
10	Level according to NQF	Level 7;
11	Level according to IQF	Level 7;
12	Distinctive features of EP	none
13	Appendix number to the license for the direction of training	KZ83LAA00018495, dated 28.07.2020; appendix No. 011
14	The name of the accreditation body and the validity period of the accreditation of the EP:	Independent Agency for Quality Assurance in Education (IQAA) (Certificate of International Accreditation of Educational Programs SA-A No.0193/1 dated November 09, 2020; certificate validity period November 09, 2020 – November 08, 2027)
15	The objectives of the educational program	Formation of a competitive specialist in the labor market of a biologist with a high level of theoretical and practical training and able to independently conduct scientific research in various fields of biology.
16	Qualification characteristics of the graduate a) List of graduate positions	- teacher, specialist and laboratory assistant in universities, engineer, laboratory assistant in research institutes, sanitary and epidemiological stations; - biology teacher in secondary schools, gymnasiums, colleges; - specialist in national parks, nature reserves, zoos, botanical gardens, yunnat stations, breeding and anti-plague stations, nature museums; - senior technician, technician of scientific and production, design and geobotanical organizations; - specialist in environmental services and organizations; -specialist in state management

<p>b) The scope and objects of professional activity of the graduate</p>	<p>organizations, akimats and other institutions</p> <p>The sphere of professional activity is the field of ecology and biology: ecology, toxicology, hygiene, botany, zoology, human anatomy and physiology, biochemistry, biophysics, microbiology, etc.; biological systems of various levels of organization, biological environmental technologies.</p> <p>The objects of professional activity of masters in the educational program "7M05101-Biology" are:</p> <ul style="list-style-type: none"> - research institutes; - nature reserves, zoos, plant protection stations; - sanitary-epidemiological and anti-plague stations; - departments and departments of ecology at district and regional akimats. - - botanical gardens, arboretums, nature museum; - research, production, medical, pharmaceutical, agricultural institutions, etc.
<p>c) Types of professional activity of the graduate</p>	<ul style="list-style-type: none"> - educational (teaching); - production and management; - organizational and technological; - scientific research; - environmental protection; - project
<p>d) Functions of the graduate's professional activity</p>	<ul style="list-style-type: none"> - collects and processes biological material in the field and in the laboratory; - performs analysis, classification of objects and registration of results; - performs scientific research; - implements the results of scientific research into production; - provides methodically competent formulation of experiments; - organizes information and search work in the chosen scientific direction; - attracts employers and partners to carry out scientific research; provides teaching of biological disciplines in secondary and secondary professional and higher educational institutions

Formulation of learning outcomes based on competencies

Type of competencies	Learning result code	Learning result (according to Bloom's taxonomy)
1. Behavioral skills and personal qualities: (Soft skills)	LO1	Demonstrates knowledge of the basic modern epistemic models and approaches of social and humanitarian, natural science, pedagogical and psychological Sciences in higher education and their comparability; knows and understands modern problems of history and philosophy of science, the laws of logical and scientific thinking, the main stages and logic of scientific research.
	LO2	He is able to use the basic provisions and methods of psychology and management in professional activities, applies psychological methods and techniques of regulation in the management sphere and in the field of conflict resolution between the subjects of interaction.
	LO3	Analyzes the results of modern research in biology and at the intersection of sciences for self-improvement, conducting independent research and scientific-pedagogical activities and professional mobility.
	LO4	Fluent in foreign languages at a level that allows effective interaction in the professional and scientific environment, using new information from various English-speaking biological scientific sources in the process of self-continuation of their training and research activities.
	LO5	Publicly presents the results of their own research in a foreign language, showing the skills of cooperation to improve skills in the global and scientific space, including abroad.
	LO6	He has practical skills, professional competencies and methods of strategic analysis in the field of organization of work on the commercial use of research results and evaluation of commercial potential.
2. Digital competencies: (Digital skills):	LO7	Understands the basic principles of using ICT in scientific research, applies computer methods of analyzing biological systems to solve natural science problems and to conduct evaluation activities and implement modern forms of critical thinking in the digital environment
	LO8	Evaluates the effectiveness of the results of his own scientific research when writing scientific articles and theses, using the skills of working with personal computing equipment, with graphic editors, with applied computer programs, with databases of natural science.
	LO9	Evaluates the reliability of scientific results using digital algorithms in order to effectively use the information for further work with the obtained biological data.
3. Professional competencies: (Hard skills)	LO10	Demonstrates the ability to identify and analyze the essence of the problems arising in the field of management and protection of endangered species and maintain the evolutionary potential of animal populations, and plan a strategy to solve them, based on advanced knowledge in the field of biology of nature protection, modern research methods, methods of regulation and inventory of animals.
	LO11	Solves problems arising in the course of independent research, scientific and pedagogical, organizational, social

		and environmental activities, based on an understanding of the peculiarities of animal population management, environmental principles of rational nature management and methods of environmental expertise.
	LO12	He owns methods and methods of management of innovative activity in the field of biology, demonstrating knowledge of modern trends, trends and patterns of development of domestic science in the context of globalization and internationalization.
	LO13	Formulates the provisions of the main modern theories and concepts of evolution to demonstrate his vision of the ways of development and prospects for the preservation of civilization and the connection of geopolitical and biospheric processes.
	LO14	Chooses the correct ethical position of a specialist biologist when performing his own research using the latest experimental research methods and information technologies in the field of genetics, cellular and evolutionary biology.

Determination of modules of disciplines in accordance with the results of training

Код результата обучения	Name of the module	Name of disciplines and practices	Volume in credits (ECTS)	
LO1	Philosophical and historical aspects of social and humanitarian knowledge	History and philosophy of science	4	
LO2		Higher school pedagogy	4	
LO3		Psychology of management	4	
LO4		Pedagogical practice	4	
LO8				
LO9				
LO1	Professional languages	Foreign language (professional)	4	
LO2		Scientific terminology in Biology (in English) Theory and practice of scientific communication in biology	5	
LO6				
LO7				
LO1	Issues of modern science and technology	Commercialization of the results of scientific and technical activities	5	
LO4		Introduction of scientific research in education into practice		
LO10		Innovative technologies in the course of biology Prospects for the development of biological science	5	
LO13				
LO14				
LO1	Methods of biological research	Field research methods	5	
LO4		Cytopathology Methods of teaching biological disciplines in higher education	5	
LO6				
LO14				
LO1	Theoretical and applied biology	Evolutionary Biology	4	
LO2		Zoological aspects of ecosystem service		
LO3		Wildlife Conservation (in English)	5	
LO4		Animals in the global community (in English)		
LO5		Epigenetics	5	
LO6		Genetic and Cellular Engineering		
LO10		Bioethics		
LO11		Ethics of biological research	5	
LO12		Test objects of the animal world in the bioindication of the environment	6	
LO13		Biomonitoring		
LO14		Research practice	14	
LO1		Final certification	Registration and defense of a master	8
LO5				
LO13				
LO14				

Matrix of achievability of learning outcomes

NN n/n	Name of disciplines	Brief description of the discipline (30-40 words)	Number of credits	Generated learning outcomes (codes)													
				L01	L02	L03	L04	L05	L06	L07	L08	L09	L010	L011	L012	L013	L014
Cycle of basic disciplines University component																	
D1	History and philosophy of science	It is studied with the aim of forming knowledge about the significance of scientific knowledge in its tendency to development and sociocultural profile. Questions about the philosophy, methodology of science, science as a cognitive activity and tradition are considered.	4	+		+											
D2	Higher school pedagogy	Studied to form ideas about the modern paradigm of higher education and the theory of scientific activity in higher education. The issues of pedagogy, education of professionals-specialists, professional skills of teaching in educational organizations, pedagogical control and evaluation of knowledge in higher education are considered.	4	+		+						+					
D3	Psychology of management	It is studied with the aim of forming knowledge about the psychological laws of managerial activity, skills in analysis of socio-psychological principles, the characteristics of the psychology of management, the personal characteristics of the leader.	4	+	+	+							+				
	Pedagogical practice	Methodology of conducting independent research and scientific and pedagogical activities that require a broad multidisciplinary education. Development and conduct of lectures, practical classes in the disciplines. Development of tasks for independent work of students, IWST. Methods of educational work with students.	4	+	+		+					+	+				
D4	Foreign language (professional)	The course is taken for developing intercultural and communicative competence in the process of foreign language education at the level of basic sufficiency of Common European competence. The course is designed to study vocabulary and foreign language features; formation of the ability for intercultural communication, skills of argumentation in a foreign	4				+	+									

		language and understanding of linguistic and cultural characteristics of their target language country.															
Cycle of basic disciplines																	
Component of choice																	
D5	Scientific terminology in Biology (in English)	It is studied in order to form knowledge about the basic biological laws, the etymology of biological terms, the history of their origin and authorship, the thesaurus of a biologist (lexical minimum), eponyms and bibliographic data of scientists whose names are associated with the names used in various fields of biology. The course is designed to study the basic technical means of searching for modern scientific and biological information, terminological and conceptual apparatus of basic and specialized biological disciplines.	5			+	+	+		+							
	Theory and practice of scientific communication in biology	It is studied in order to form the skills of scientific communication: interpersonal, group and mass; verbal and non-verbal; oral and written. The course is designed to study the basic models of communication, the structure of the communicative act and the features of the main types and types of communication. The issues of designing and organizing research activities in the information and communication subject environment are considered.				+	+	+			+						
D6	Commercialization of the results of scientific and technical activities	It is studied in order to form skills for the commercial application of intellectual activity results and the introduction of scientific developments and technologies into production, the preparation of scientific projects for funding, as well as for interaction in the knowledge-intensive high-tech sector.	5	+					+		+		+				+
	Introduction of scientific research in education into practice	It is studied in order to form the skills of introducing the results of scientific research into pedagogical activity. The issues of specificity and complexity of the implementation of the results of scientific and pedagogical research into practice, criteria for the degree of effectiveness of pedagogical experience and research, as well as mechanisms for the introduction of scientific research into practice in education: domestic and foreign experience are considered.			+				+		+		+				
D7	Innovative technologies in	It is studied in order to form knowledge about innovative technologies developed and applied in	5			+				+			+		+		

	the course of biology	biology. The issues and prospects of the development of environmentally safe biopesticides, biofertilizers for agro-industrial purposes, modern biosensor systems, biochips are considered. The course is designed to study the signs of product innovation, examples of innovation in various fields of biology, practical use of biology achievements.															
	Prospects for the development of biological science	It is studied in order to form ideas about the prospects for the development of biological science at the present stage. The course is designed to study modern achievements of fundamental biological sciences and biomedical technologies, problems of modern biological science, basic methods of research of biological systems, topical problems of biosphere conservation, features and prospects of nanotechnology application in biology and biomedicine.			+						+	+		+			+
Cycle of profile disciplines University component																	
D8	Field research methods	It is studied in order to form the skills of performing qualitative and quantitative accounting of animals in zoological research to monitor the state of natural systems. The issues of correlation between the concepts of "fauna" and "animal population" are considered.	5	+			+							+			+
D9	Cytopathology	It is studied in order to form knowledge about the pathways of cell pathology and the mechanisms of regulation. The course is designed to study the molecular and cellular mechanisms of necrosis and apoptosis, theories of carcinogenesis, morphophysiological manifestations of tumor cell transformation and new methodological approaches to biological research.	5														+
D10	Methods of teaching biological disciplines in higher education	It is studied in order to form knowledge of the general theoretical foundations of the methodology of teaching biological disciplines to the extent necessary to solve pedagogical, scientific, methodological, organizational and managerial tasks in the system of higher education. Modern pedagogical technologies in higher education are considered; skills are formed for the preparation of materials for lectures, seminars, practical classes, as well as for the organization of	4														+

		educational work with students.																	
Cycle of profile disciplines Component of choice																			
D11	Evolutionary Biology	It is studied in order to form knowledge about the causes and mechanisms of micro and macroevolutionary processes, and approaches to forecasting anthropogenic influence on the course of the evolutionary process. The course is designed to study the basic theories, concepts and modern principles of evolutionary theories, ways of development and prospects for the preservation of civilization, the connection of geopolitical and biospheric processes; innovative research methods and comparative analysis methodology for considering evolutionary phenomena of different scales and at different hierarchical levels of the organization of biosystems.	4																
	Zoological aspects of ecosystem service	It is studied in order to form knowledge about ecosystem services. The course is designed to study the production indicators of freshwater ecosystems and hunting farms, beekeeping and the role of pollinators in the production of agricultural crops, as well as the bio-productivity of soils. The issues of regulation of the number of alien and economically important organisms, diversity of genetic resources of species and populations, aesthetic and cognitive significance of zoological objects are considered.																	
D12	Wildlife Conservation (in English)	It is studied in order to form knowledge in the field of nature conservation biology in the context of studying the basics of inventory, management and protection of threatened species, solving problems of maintaining the evolutionary potential of animal populations. The concepts of wildlife resources, conservation of diversity, ecological imbalance, faunal collapse, thresholds of survival, extinction of animals in a broad interdisciplinary context, methods of conservation research and population restoration are considered.	5																
	Animals in the global community (in English)	It is studied in order to form ideas about the concept of biodiversity and its role in the system analysis of natural complexes. The course is designed to study approaches to optimizing relationships with wild fauna, general issues of integrated and ecosystem approaches to wildlife conservation, acclimatization and repatriation measures, features of alien species and regulation of the number of																	

		wildlife objects.																					
D13	Epigenetics	It is studied in order to form knowledge about the peculiarities of changes in the activity of genes that can affect the structure and functioning of chromosomes, both in mitosis and in meiosis. The course is designed to study the behavior of chromosomes throughout the life cycle of a cell. The issues of the influence of epigenetic mechanisms on the development of the organism are considered.	5																+	+			
	Genetic and Cellular Engineering	It is studied in order to form knowledge about plasmids, vectors, restriction enzymes, modification, and gene cloning. The course is designed to study the problems of plant genetic engineering, animal genetic engineering, processes of expression of foreign genes, transformation of bacterial and eukaryotic cells by cloned DNA, determination of the sequence of nucleic acids by sequencing methods, the possibility of using genetic engineering methods for gene diagnostics and gene therapy in medicine.					+													+	+	+	
D14	Bioethics	It is studied in order to form knowledge about the importance of observing the moral and ethical principles of human interaction with nature. The issues of legal aspects of bioethics, prerequisites for the emergence, principles, ideas and rules of bioethics as a science are considered. The course is designed to study deontology, ethical problems of new biomedical technologies, moral principles of attitude to life.	5																	+	+		
	Ethics of biological research	It is studied in order to form ideas about the peculiarities of the application of the rules and principles of ethics of biological research. The course is designed to study the concept of biological safety in laboratory conditions, the basic concepts of biosafety, the basics of biomedical ethics, international documents, standard operating procedures on research ethics.																			+	+	
D15	Test objects of the animal world in the bioindication of the environment	It is studied in order to form the skills of establishing the toxicity of the environment with the help of test objects that signal danger, regardless of which substances and in which combination cause changes in vital functions in test objects. The course is designed to study the features of test objects and methods of environmental monitoring in environmental research.	6																				
	Biomonitoring	It is studied in order to form knowledge about the basic																					+

		methods of bioecological monitoring and methods of selecting a suitable indicator underlying the principles of bioprognosis of environmental disasters. The course is designed to study the role of bioaccumulation effect, types of reactions of living organisms to environmental pollution, methods for assessing the quality of water, air and soil, basic methods of zoo-, phyto-indication and indication using microorganisms, methods of selection and analysis of biological samples.																
	Research practice	Organizational and preparatory stage. The research stage. Preparation and conduct of research on the profile of the master's thesis. Working with electronic databases. Creating a bibliography. Data processing, analysis and specification of results. Preparation of a scientific article and report. Preparation of a report on research practice with the reflection of research materials.	14	+				+		+	+	+					+	+

Coordination of the planned learning outcomes with the methods of teaching and evaluation within the module

Learning outcomes	Planned learning outcomes for the module	Teaching methods	Assessment methods
LO1	Demonstrates knowledge of the basic modern epistemic models and approaches of social and humanitarian, natural science, pedagogical and psychological Sciences in higher education and their comparability; knows and understands modern problems of history and philosophy of science, the laws of logical and scientific thinking, the main stages and logic of scientific research.	Round table	Preparation of the poster
LO2	He is able to use the basic provisions and methods of psychology and management in professional activities, applies psychological methods and techniques of regulation in the management sphere and in the field of conflict resolution between the subjects of interaction.	Project training	Presentation
LO3	Analyzes the results of modern research in biology and at the intersection of sciences for self-improvement, conducting independent research and scientific-pedagogical activities and professional mobility.	Case methods	Colloquium
LO4	Fluent in foreign languages at a level that allows effective interaction in the professional and scientific environment, using new information from various English-speaking biological scientific sources in the process of self-continuation of their training and research activities.	Laboratory work	Assessment using computer technology
LO5	Publicly presents the results of their own research in a foreign language, showing the skills of cooperation to improve skills in the global and scientific space, including abroad.	Project training	Presentation
LO 6	He has practical skills, professional competencies and methods of strategic analysis in the field of organization of work on the commercial use of research results and evaluation of commercial potential.	Practical work on educational platforms	Portfolio
LO7	He owns methods and methods of management of innovative activity in the field of biology, demonstrating knowledge of modern trends, trends and patterns of development of domestic science in the context of globalization and internationalization.	Interactive lecture	Testing
LO8	Formulates the provisions of the main modern theories and concepts of evolution to demonstrate his vision of the ways of development and prospects for the preservation of civilization and the connection of geopolitical and biospheric processes.	Discussion	Abstract message

LO9	Chooses the correct ethical position of a specialist biologist when performing his own research using the latest experimental research methods and information technologies in the field of genetics, cellular and evolutionary biology.	Problematic conversation	Control and verification work
LO10	Demonstrates the ability to identify and analyze the essence of the problems arising in the field of management and protection of endangered species and maintain the evolutionary potential of animal populations, and plan a strategy to solve them, based on advanced knowledge in the field of biology of nature protection, modern research methods, methods of regulation and inventory of animals.	Research project	Writing an essay
LO11	Solves problems arising in the course of independent research, scientific and pedagogical, organizational, social and environmental activities, based on an understanding of the peculiarities of animal population management, environmental principles of rational nature management and methods of environmental expertise.	Laboratory work	Assessment using computer technology
LO12	Understands the basic principles of using ICT in scientific research, applies computer methods of analyzing biological systems to solve natural science problems and to conduct evaluation activities and implement modern forms of critical thinking in the digital environment	Research project	Writing an essay
LO13	Evaluates the effectiveness of the results of his own scientific research when writing scientific articles and theses, using the skills of working with personal computing equipment, with graphic editors, with applied computer programs, with databases of natural science.	Laboratory work	Assessment using computer technology
LO14	Evaluates the reliability of scientific results using digital algorithms in order to effectively use the information for further work with the obtained biological data.	Research project	Writing an essay

Criteria for assessing the achievability of learning outcomes

Codes of LO	Criteria
LO 1	Knows: Demonstrates knowledge of the main modern epistemology models and approaches of social-humanitarian, natural science, pedagogical and psychological sciences in higher education and their commensurability; knows and understands modern problems of history and philosophy of science, laws of logical and scientific thinking, the main stages and logic of scientific research.
LO 2	Can: Able to use the basic principles and methods of psychology and management in professional activity, applies psychological methods and techniques of regulation in the management sphere and in the field of conflict resolution between the subjects of interaction.
LO 3	Knows: Demonstrates fundamental knowledge at the intersection of sciences and a high level of academic training to ensure broad horizons and guarantee professional mobility in the developing world.
	Owens: Proficient in methods of solving psychological and pedagogical problems in the educational process of higher education, defining approaches to conducting independent research and scientific and pedagogical activities based on a broad multidisciplinary education, and applying a variety of research methods and modern educational technologies.
LO 4	Owens: fluent in foreign languages at a level that allows effective interaction in the professional and scientific environment, using new information from various English-language biological scientific sources in the process of independently continuing his studies and carrying out research activities.
LO 5	Can: Publicly presents the results of his own scientific research in a foreign language, showing the acquired skills of cooperation for professional development in the world and scientific space, including abroad.
LO 6	Owens: Possesses practical skills, professional competencies and methods of strategic analysis in the field of organizing work on the commercial use of research results and conducting an assessment of commercial potential.
LO 7	Owens: Proficient in methods and methods of managing innovation activities in the field of biology, demonstrating knowledge of current trends, trends and patterns of development of domestic science in the context of globalization and internationalization.
LO 8	Knows: Knows and understands the basic theories, concepts and modern principles of evolutionary theories, ways of development and prospects for the preservation of civilization, the connection of geopolitical and biospheric processes, innovative research methods and comparative analysis methodologies for considering evolutionary phenomena of different scales and at different hierarchical levels of the organization of biosystems.
LO 9	Can: Able to plan and implement professional activities using various aspects of achievements in the field of genetics, cellular and evolutionary biology, understanding the importance and necessity of solving moral and ethical problems arising in the process of applying his knowledge and understanding at a professional level. He is able to analyze cytopathological mechanisms of cell biology, possess and reproduce cytological research methods in clinical laboratory diagnostics and in oncology.
	Owens: Carries out the correct ethical position of a biologist within the framework of interdisciplinary research arising in connection with the progress of biological science and the introduction of the latest experimental research methods and information technologies.

LO 10	Owns: Demonstrates the ability to identify and analyze the essence of the problems arising in the field of management and protection of threatened species and the maintenance of the evolutionary potential of animal populations, and plan a strategy to solve them, relying on advanced knowledge in the field of conservation biology, modern research methods, methods of regulation and inventory of animals.
LO 11	Knows: Demonstrates in-depth professional knowledge on animal population management, practical implementation of environmental principles of rational nature management, and environmental expertise
	Can: Able to solve problems arising in the course of independent research, scientific and pedagogical, organizational, social and environmental activities.
	Owns: Uses the results of the work to write scientific articles, theses, participate in conferences, symposiums, summer schools, round tables and discussions
LO 12	Knows: Knows and understands the basic principles of using ICT in conducting scientific research
	Can: Uses computer methods of analysis of biological systems to solve natural science problems and to conduct evaluation activities and implement modern forms of critical thinking in a digital environment
LO 13	Can: Sets research goals for emerging production tasks, selects solutions and means of self-development using digital technologies.
	Owns: Uses the skills of working with personal computing equipment with standard means of viewing and processing text and graphic information, with graphic editors, with general technical applied computer programs, with global networks and databases of natural science
LO 14	Can: Manages information and biological data, finds the necessary sources of scientific information
	Owns: Perceives, analyzes and transmits information using digital means, as well as using digital algorithms when working with the obtained biological data in order to effectively use the information obtained for scientific and industrial tasks.

Graduate Attributes

High professionalism in the implementation of the educational process in biology, Emotional stability, High intelligence
Adaptability to the global challenges of the modern world, Leadership, Strong citizenship, Understanding of the importance of principles and culture of academic integrity.

Form 8

The graduate model of the educational program

Types of competencies	Description of competencies
1. Behavioral skills and personal qualities (Soft skills)	Capable of positive cooperation; shows flexibility of perception and comfortable alignment of priorities; is fluent in verbal communication, academic writing skills; strives to encourage cooperation and stimulating communication to achieve common goals; builds professional relationships based on respectful interpersonal contacts; uses professional skills for team building, personal development and innovation, people and information management; applies analytical thinking, strategic approach and foresight
2. Digital competencies (Digital skills):	Capable of use the skills of working with personal computing equipment, standard means of viewing and processing text and graphic information, with graphic editors, with general technical applied computer programs, perform statistical processing of the obtained biological data using digital algorithms and models. Owns ICT methods for conducting scientific research; he is able to use computer methods of collecting and analyzing biological data to solve natural science problems, conduct evaluation activities and implement modern forms of critical thinking in a digital environment. He is able to use digital tools for corporate training, search for sources of scientific information; management of information about biological data in the structure of global information networks on biodiversity, monitoring, landscape mapping and forecasting.
3. Professional competencies (Hard skills)	Capable of apply the theoretical foundations and achievements of natural sciences to improve the basic and specialized level of knowledge; to carry out observations of processes and research in biological systems at all levels of the organization of life; has the basics of scientific planning, analysis and evaluation of the results of observations and experiments. He is able to assess the environmental, moral, ethical and socio-economic consequences of his actions during biological experiments. Understands the causes of ecological imbalance and the strategy of environmental protection. Possesses the skills of organizing and managing research activities in accordance with global trends in the development of biological science.

Members of the working group:

Head of the Department of Zoology
Associate Professor of the Department of Zoology, Candidate of Biological Sciences.
Lecturer of the Department of Zoology
Master's student of MBN-22-2r group
Master's student of MzBN-63k-22 group
Deputy Director of the KGKP "Karaganda State Zoological Park"



A.J. Shaibek
V.S. Abukenova
Zh. Zh. Blyalova
T. Ismailov
B. Turar
E.T. Baizhanov

The educational program was reviewed by the Faculty Council from 07.04.2023 protocol No. 9
The educational program was reviewed at the meeting of the Academic Council from 18.04.2023 protocol No. 5
The educational program was reviewed and approved at the meeting of the University Board from 30.05.2023 protocol No. 12

Board Member-Vice-Rector for Academic Affairs
Acting Director of the Academic Work Department
Dean of the Faculty of Biology and Geography



T. Z. Zhussipbek
S.A. Smailova
S.A. Talzhanov

**EDUCATIONAL PROGRAM DEVELOPMENT PLAN
7M05101– BIOLOGY**

The purpose of the Plan is to contribute to improving the quality of the conditions for the implementation of the educational program, taking into account the current requirements of the labor market and the achievements of modern science.

Target indicators

№	Indicators	Unit of measurement	2023-2024	2024-2025	2025-2026	2026-2027
1	Human resources development					
1.1	Increase in the number of teachers with academic degrees	Number of people	-	1	1	1
1.2	Advanced training in the teaching profile	Number of people	2	2	2	2
1.3	Involvement of practitioners in teaching	Number of people	-	1	1	1
1.4	Other	Number of people	1	1	1	1
2	Promotion of the EP in the ratings					
2.1	IQAA	Position	3	3	3	3
2.2	IAAR	Position	7	7	6	7
3.	Development of educational and scientific-methodical literature, electronic resources					
3.1	Textbooks	Number	-	1	-	1
3.2	Training manuals	Number		1	-	2
3.3	Methodological recommendations/instructions	Number	-	2	1	1
3.4	Electronic textbook	Number	-	-	1	-

3.5	Video/audio lectures	Number	-	-	-	1
3.6	Other	Number	2	2	2	2
4.	Development of educational and laboratory facilities					
4.1	Purchase of software products	Number	1	-	2	1
4.2	Purchase of equipment	Number	1	1	1	1
4.3	Other	Number	1	1	1	1
5.	Updating the content of the EP					
5.1	Updating the learning outcomes and the list of disciplines taking into account the requirements of the labor market, scientific achievements, professional standards	Year	+	+	+	+
5.2	Introduction to the EP of academic disciplines in foreign languages*	Year	+	+	+	+
5.3	Introduction of new teaching methods	Year	+	+	+	+
5.4	Opening of joint/two-degree program on the basis of the EP	Year	-	-	-	-
5.5	Other	Year				

Head of the department of zoology



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