

Ministry of Science and Higher Education of Republic of Kazakhstan
Karaganda University of the name of academician E.A. Buketov

«APPROVED»

By the decision of the Board
NLC «Karagandy University of the name of
academician E.A. Buketov»

Protocol no. 2 from «28» 05 2024 y.
Prof. N.O. Dulatbekov.



«APPROVED»

By the decision of the Board of Directors of
NLC «Karagandy University of the name of
academician E.A. Buketov»

Protocol no. 5 from «21» 06 2024 y.



EDUCATIONAL PROGRAM

7M01505 - Biology

Level: Master's

Karaganda
2024

AGREEMENT SHEET

EDUCATIONAL PROGRAM «7M01505-Biology»

«AGREED»

Director of the Nazarbayev Intellectual School of
Specialized Education in Biology in Karaganda



Yakupov R.M.
2024.

«AGREED»

Director of the Specialized boarding school Lyceum "Murager" of
Karaganda region education department



Utebayev N.G.

«AGREED»

Director of the Boarding school "Bilim - innovation No. 2"
of Karaganda region education department



Egenberdiev K.A.
2024

«AGREED»

Head of the State Institution
Department of Education of the Karaganda Region"



Zhunusova G.S..
2024

The educational program "«7M01505- Biology» is developed on the basis of:

- Law of the Republic of Kazakhstan dated July 27, 2007 No. 319-III "On Education"
- Order of the Ministry of Education and Science of the Republic of Kazakhstan No. 152 dated 04/20/2011 "On approval of the Rules for the organization of the educational process in credit technology"
- NRK dated 03/16/2016 The Republican Trilateral Commission on Social Partnership and Regulation of Social and Labor Relations
- Order of the Ministry of Education and Science of the Republic of Kazakhstan No. 569 dated 10/13/2018 "On approval of the Classifier of areas of training with higher and postgraduate education"
- The State mandatory standard of postgraduate education of the Republic of Kazakhstan, approved by Order of the Ministry of Education and Science of the Republic of Kazakhstan No. 2 dated 07/20/2022.
- The standard "Teacher", approved by Order of the Ministry of Education of the Republic of Kazakhstan No. 500 dated 12/15/2022.
- Order No. 591 of the Ministry of Science and Higher Education of the Republic of Kazakhstan dated November 20, 2023. On the approval of the professional standard for teachers (teaching staff) of organizations of higher and (or) postgraduate education

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Passport of the educational program

Form 1

	Name of the parameter	Description
1	Code and name of the educational program:	«7M01505 – Biology»
2	Code and classification of the field of education, areas of training:	7M01 – Pedagogical sciences, 7M015 – Teacher training in natural science subjects
3	Group of educational programs:	M014- Training of biology teachers
4	Volume of loans:	120 ECTS
5	Form of training:	full - time
6	Language of instruction:	Kazakh, Russian, English
7	Degree awarded:	Master of Pedagogical Sciences in the educational program "7M01505-Biology"
8	Type of EP:	current
9	Level according to ISCE	– Level 7;
10	Level according to NOF	– Level 7;
11	Level according to IQF	– Level 7;
12	Distinctive features of OP:	none
	Partner University (JEP)	
	Partner University (TDEP)	
13	Appendix number to the license for the direction of training:	KZ831AA00018495 dated 07/28/2020, No. 16
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	Educational program purposes	Training of highly qualified specialists with research and pedagogical competencies in the field of biology and teaching methods for the implementation of professional activities in the field of secondary and higher education.
16	Qualification characteristics of the graduate a) List of graduate positions	- teacher, specialist and laboratory assistant at universities.

b) The sphere and objects of professional activity

engineer, laboratory assistant at research institutes, sanitary and epidemiological stations;
- biology teacher in secondary schools, gymnasiums, colleges;
- specialist in yunnat stations, nature museums;
- specialist in state management organizations, education departments, akimats and other institutions.

c) Types of professional activity

The sphere of professional activity of graduates is the field of theoretical and practical methods of teaching biology
The objects of professional activity of masters under the educational program "7M01505-Biology" are:
higher educational institutions of medical and biological profiles, secondary and secondary specialized educational organizations, research organizations of various profiles requiring higher postgraduate education in accordance with the legislation of the Republic of Kazakhstan.

d) Functions of professional activity

a) educational (pedagogical): work as a biology teacher in various educational institutions (universities, schools, gymnasiums, lyceums, colleges, etc.), including teaching disciplines in English;
b) research: performing scientific research in specialized disciplines in various organizations (botany, zoology, anatomy, physiology, biochemistry, genetics, etc.);
c) project: implementation of general and specialized developments in design and engineering organizations (landscaping, watering, reconstruction, planning, for example, agrobiostations, yunnat stations);
d) expert consulting;
e) organizational and managerial

- educational (the correct application of the acquired knowledge in the pedagogical process, planning and conducting practical

	<p>work in biology, improving methods and technologies of teaching biology);</p> <ul style="list-style-type: none"> - educating (the implementation of the upbringing of the younger generation in the context of the development of the national idea "Mangilik el", ensuring the unity of education and upbringing, cultural and educational, sanitary and hygienic work among students); - methodological (organization and development of one's own pedagogical activity, expansion of skills in handling modern technology and the use of information technologies in the field of professional activity, planning, implementation, analysis of the results of pedagogical tasks in educational institutions, research, analysis and release of educational literature in the field of biology and methods of teaching biology); - research (conducting research on current areas of biology and teaching methods); - social and communicative (constant self-improvement and self-development through the use of reflexive techniques for professional and personal growth, maintaining the need and skills of independent creative mastery of new knowledge).
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Formulation of learning outcomes based on competencies

Form 2

Type of competencies	Learning result code	Learning outcomes (according to Bloom's taxonomy)
1. Behavioral skills and personal qualities (Soft skills)	LO1	Demonstrates stable knowledge and skills in the field of philosophy, pedagogy and psychology, in the practice of his own research.
	LO2	Applies a set of knowledge, skills and abilities for independent in-depth development of modern educational pedagogical technologies in the field of biology.
	LO3	Possesses the skills and abilities of independent effective creative and research activities; offers options for commercialization of the results of his scientific work.
	LO4	Collects and interprets information to fulfill its own research concept, followed by the development of ways to use the results of scientific activity in practice.
2. Digital competencies (Digital skills)	LO5	Expands the list of modern IT technologies used for conducting training sessions and educational process activities in their professional activities.
	LO6	Develops new ways of using ICT to enrich the learning environment and increase the motivation of students.
	LO7	Analyzes the molecular mechanisms of biological processes; selects informative experimental methods of working with biological objects in field and laboratory conditions using modern equipment.
3. Professional competencies (Hard skills)	LO8	Offers solutions to current problems in the field of scientific evolutionary biology; explains the role of animals in ecosystems.
	LO9	Evaluates the possibilities of practical implementation of the theoretical provisions of chronobiology and evolutionary biology; develops approaches to research activities based on modern value concepts of nature.
	LO10	Differentiates the main methods of teaching biology, selects innovative pedagogical technologies implemented in higher education and secondary specialized educational institutions for use in their professional activities.
	LO11	Explains the nuances of using biological terminology in English in professional communication.
	LO12	Deepens knowledge and expands the scope of skills in the field of theoretical and practical science for the successful assimilation of modern scientific achievements in various branches of biology.

Definition of discipline modules and compliance with learning outcomes

Form 3

Learning result code	Name of the module	Name of disciplines	Volume (ECTS)
LO1 LO2 LO4	Philosophical and historical aspects of social and humanitarian knowledge	History and philosophy of science	4
		Pregraduation	4
		Psychology of management	4
		Pedagogical practice	4
LO5 LO6 LO11 LO12	Professional languages	Foreign language (professional)	4
		Theory and practice of Biological education (in English) Teaching biology in a foreign language	4
LO3 LO4	Issues of modern science and technology	Commercialization of the results of scientific and scientific and technical activities Introduction of scientific research in education into practice	5
		Innovation in biology Modern applied methods in biology	5
LO7 LO12	Theoretical and practical aspects of biology	Theoretical biology	5
		Cell Biology	5
LO5 LO6 LO7 LO8 LO9 LO10 LO11 LO12	Theoretical and applied biology	Modern aspects of physiology	4
		Methods of teaching biological disciplines in higher education	4
		TRIZ technologies in biological education	5
		STEAM technologies in the modern educational space	5
		Conceptual Biology Training	6
		Chronobiology	6
		Cyclic processes in biological systems	5
		Evolution and the animal system	5
		Phylogeny of the animal world	4
		Experimental studies in zoology	4
Zoological methods of studying ecosystem dynamics	5		
LO6 LO7 LO8 LO9 LO10 LO11 LO12	Final certification	Research practice	14
		Preparation and defense of a master's thesis Undergraduate research work, including internships and the implementation of a master	8

Matrix of achievability of learning outcomes

Form 4

NN m/n	Name of disciplines	Brief description of the discipline (30-40 words)	Number of credits	Generated learning outcomes (codes)															
				LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10	LO11	LO12				
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	Pregraduation	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, SRQP. Methods of educational work with students.	4	+	+														
D4	Foreign language (professional)	The course is taken for developing the skills and abilities of foreign language speech activity in the subject area for effective communication in situations of professional interaction. The course is designed to teach how to work with specialized literature, to practice of oral and written bilingual translation. There are considered the issues of a foreign language for specific purposes and norms of professional speech.	4																+
Cycle of basic disciplines Component of choice																			
D5	Theory and practice of	It is studied in order to form the skills of teaching natural science subjects	5																+

		<p>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.</p>														
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Coordination of the planned learning outcomes with the methods of teaching and evaluation within the module

Form 6

Learning outcomes	Planned learning outcomes for the module	Teaching methods	Assessment methods
LO1	Demonstrates stable knowledge and skills in the field of philosophy, pedagogy and psychology, in the practice of his own research.	Problematic conversation	Presentation
LO2	Applies a set of knowledge, skills and abilities for independent in-depth development of modern educational pedagogical technologies in the field of biology.	Round table	Preparation of the poster
LO3	Possesses the skills and abilities of independent effective creative and research activities; offers options for commercialization of the results of his scientific work.	Discussion	Abstract message
LO4	Collects and interprets information to fulfill its own research concept, followed by the development of ways to use the results of scientific activity in practice.	Individual and group work on educational Internet resources	Presentation
LO5	Expands the list of modern IT technologies used for conducting training sessions and educational process activities in their professional activities.	Project on the organization of educational space	Presentation
LO6	Develops new ways of using ICT to enrich the learning environment and increase the motivation of students.	Practical work on educational platforms	Portfolio
LO7	Analyzes the molecular mechanisms of biological processes; selects informative experimental methods of working with biological objects in field and laboratory conditions using modern equipment.	Problematic conversation	Control and verification work
LO8	Offers solutions to current problems in the field of scientific evolutionary biology; explains the role of animals in ecosystems.	Brainstorming	"Map of concepts"
LO9	Evaluates the possibilities of practical implementation of the theoretical provisions of chronobiology and evolutionary biology; develops approaches to research activities based on modern value concepts of nature.	Research project	Writing an essay
LO10	Differentiates the main methods of teaching biology, selects innovative pedagogical technologies implemented in higher education and secondary specialized educational institutions for use in their professional activities.	Project on the organization of educational space	Planning of different types of classes
LO11	Explains the nuances of using biological terminology in English in professional communication.	Practical work on educational platforms	Portfolio
LO12	Deepens knowledge and expands the scope of skills in the field of theoretical and practical science for the successful assimilation of modern scientific achievements in various branches of biology.	Individual and group work on educational Internet resources	Presentation

Criteria for assessing the achievability of learning outcomes

Form 7

LO codes	Criteria
LO1	<p>Knows: basic epistemological models, the nature of transformations of the concept of rationality; forms and methods of pre-scientific, scientific and extra-scientific cognition, modern approaches to socio-humanitarian, natural science, pedagogical, psychological knowledge and their commensurability; pedagogy of higher education</p> <p>Can: use knowledge of psychology in management activities; organize research and professional pedagogical activities on the theoretical and methodological basis of pedagogical and psychological sciences.</p> <p>Owens: conceptual and categorical apparatus for solving research tasks and practical tasks; tools for applying knowledge of management psychology in professional activity;</p>
LO2	<p>Knows: features of the use of teaching tools in the educational process and methods of knowledge control in teaching biological disciplines</p> <p>Can: make notes and methodological developments of training sessions and other educational documentation that contribute to the organization and conduct of the educational process; organize and conduct training sessions and analyze them</p> <p>Owens: the skills of conducting various types of training sessions, compiling educational documentation and providing it to the educational process</p>
LO4	<p>Can: formulate and solve problems that arise in the course of research activities and require in-depth professional knowledge; choose the necessary research methods, modify existing and develop new methods based on the tasks of a specific study; analyze and comprehend the realities of modern theory and practice based on the methodology of socio-humanitarian, natural science, pedagogical and psychological knowledge</p> <p>Owens: skills of independent research and scientific and pedagogical activity requiring a broad multidisciplinary education; skills of applying methodological and methodological knowledge in conducting scientific research, pedagogical and educational work; skills of writing scientific articles, abstracts, speeches at conferences, symposiums, round tables, discussions and debates;</p>
LO3	<p>Knows: the basic biological laws, the etymology of biological terms, the history of their origin and authorship, the thesaurus of the biologist (lexical minimum), eponyms and bibliographic data of scientists whose names are associated with the names used in various fields of biology</p> <p>Can: able to explain the etymology of basic biological terms, use literature to increase the terminological stock, understands biological texts in English</p>
LO6	<p>Owens: translates biological information from English and vice versa, owns the basic technical means of searching for modern scientific and biological information, terminological and conceptual apparatus of basic and specialized biological disciplines</p> <p>Knows: basic biological laws, concepts, mechanisms of biological processes</p>
LO11	<p>Can: independently search and analyze the results of new biological research to deepen knowledge and expand the scope of professional skills in the field of theoretical and practical science in various branches of biology</p>
LO12	<p>Can: to carry out research activities in the relevant professional field using modern research methods and information and communication technologies in the process of forming a personal biological terminological apparatus - concepts and terms</p> <p>Knows: features of specialized biological software and platform training</p> <p>Owens: skills to develop new ways of using ICT to enrich the learning environment and increase the motivation of students</p>

LO4	<p>Can: to collect and interpret information for the formulation and implementation of their own research concept, followed by the development of ways of practical use of the results of scientific activity</p> <p>Owms: specific methods of scientific research in independent research work</p>
LO5	<p>Knows: about the possibilities of commercialization of the results of their scientific work; methodology of scientific knowledge; principles and norms governing the commercialization of scientific and scientific-technical activities, contributing to the integration of education, science, production and institutions of innovative development</p> <p>Can: effectively and efficiently organize their activities; operate with systematic knowledge in the field of commercialization of scientific and scientific-technical activities, assessment of achievement of targets and indicators of program implementation, determination of tasks for the development and improvement of programs</p> <p>Owms: skills of independent creative, research work; skills of registration of the results of scientific research and compliance with the ethics of scientific knowledge; implementation (use) of the results of scientific and (or) scientific and technical activities in the educational process, including using professional foreign terminology; analysis and use of innovative research approaches in the process of scientific development</p> <p>Knows: молекулярные механизмы биологических процессов</p> <p>Can: применять современные экспериментальные методы работы с биологическими объектами в полевых и лабораторных условиях</p> <p>Owms: basics of methods of working with modern equipment</p>
LO8	<p>Knows: ways of development and prospects of evolution and preservation of civilization; fundamentals of evolutionary processes, modern biospheric and evolutionary processes, the ability to assess them systematically</p> <p>Can: solve intellectual and personal problems (problems) in the field of scientific evolutionary biology and modern society</p> <p>Owms: methods of studying and classifying plants and animals, and their role in ecosystems</p>
LO9	<p>Knows: features of geopolitical and biospheric processes; mechanisms for predicting the consequences of the implementation of socially significant projects; new theories, research methods, new methodological approaches to biological research</p> <p>Can: plan, implement and analyze certain research activities based on modern value concepts of nature, evolutionary processes in it</p> <p>Owms: skills for the practical implementation of the theoretical provisions of evolutionary biology</p>
LO10	<p>Knows: features of the use of innovative pedagogical technologies for teaching biology; methodological possibilities of their use in their professional activities</p> <p>Can: apply innovative approaches to teaching in their profession; develop modern tools for implementing learning technologies; solve emerging problems as a teacher; find a compromise, correlate their opinion with the opinion of the team; comply with professional ethics, comply with ethical and moral standards of behavior.</p> <p>Owms: the skills of organizing the educational process using modern methods of teaching biology; the skills of generating new ideas for choosing methodological approaches in teaching; reflection with subsequent correction of their activities, teamwork, adequate orientation in pedagogical situations.</p>








The graduate model of the educational program

Types of competencies	Description of competencies
1. Behavioral skills and personal qualities (Soft skills)	Has an idea about ethical, spiritual and cultural values; about the basic laws and forms of regulation of social behavior; about sociological approaches to personality; knows the traditions and culture of the peoples of Kazakhstan; trends in the development of society; is able to adequately navigate in various social situations; think creatively; be tolerant of traditions; culture of other peoples of the world; has an active life position; knows basic communication technologies and communication strategies; has a competent and developed speech in native and foreign languages; the skills and abilities of constructive dialogue, communication in a multicultural, polyethnic and multi-confessional society; is capable of critical perception of information; self-development and self-improvement; performance of their professional duties; competitive; motivated to actively participate in the procedures of leadership in the educational process; institution
2. Digital competencies (Digital skills)	Understands the role of ICT in education; the basic principles of the use of ICT in the educational process; is able to expand the ICT used in professional activities; forms "technological literacy" among students and is able to develop new ways of using ICT to enrich the learning environment and the production of new knowledge; uses ICT to achieve educational results provided by educational standards; for evaluation activities; for the implementation of modern teaching methods; he is able to use ICT for current reporting and his professional development.
3. Professional competencies (Hard skills)	Possesses basic knowledge of fundamental pedagogical and psychological disciplines that contribute to the formation of a highly educated personality with a broad outlook and a culture of thinking; creates conditions for the development of creative potential; initiative; innovation; acquisition of knowledge, skills and abilities in fundamental and applied biological disciplines; possesses basic knowledge and skills in biology and biology teaching methods to determine and solve tasks in pedagogical and research orientation; uses modern scientific methods, methodological techniques and modern educational technologies in his professional educational, pedagogical and research activities

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

Members of the working group:

- Members of the working group:
- Head of the Department of Zoology
 A.Zh. Shaibek
- Associate Professor of the Department of Zoology, Cand. Sc. (Biology)
 G.O. Zhuzbayeva
- Associate Professor of the Department of Zoology, Cand. Sc. (Biology)
 O.L. Kovalenko
- Senior lecturer of the Department of Zoology
 G.Zh. Zhomartova
- M-BO-22-1k group master's student
 A. Zhumyrtova
- M-BO-22-2r group master's student
 I. Kasenova
- Biology teacher at Karaganda regional specialized boarding school "Daryn"
 E.N. Erken

The educational program was reviewed by the Faculty Council from 18.04.24 protocol No. 9

The educational program was reviewed at the meeting of the Academic Council from 29.04.24 protocol No. 5

The educational program was reviewed and approved at the meeting of the University Board from 24.05.24 protocol No. 8

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

 M.M. Umurkulova
 T.M. Khasenova
 S.A. Talzhanov

EDUCATIONAL PROGRAM DEVELOPMENT PLAN
7M01505– 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

Nº	Indicators	Unit of measurement	2024-2025	2025-2026	2026-2027	2027-2028
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	2	2	2	2
2.2	IAAR	Position	6	5	5	5
3.	Development of educational and scientific-methodical literature, electronic resources					
3.1	Textbooks	Number	1	-	-	-
3.2	Training manuals	Number	1	-	1	-
3.3	Methodological recommendations/instructions	Number	2	1	2	-
3.4	Electronic textbook	Number	-	1	1	-

3.5	Video/audio lectures	Number	-	-	-	-
3.6	Other	Number	2	2	2	2
4.	Development of educational and laboratory facilities					
4.1	Purchase of software products	Number	-	2	1	1
4.2	Purchase of equipment	Number	1	1	1	1
4.3	Other	Number	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



A.Zh. Shaibek