Ф.7.02-10

MINISTRY OF SCIENCES AND HIGHER EDUCATION OF THE REPUBLIC OF KAZAKHSTAN
M.O. AUEZOVSOUTH KAZAKHSTAN UNIVERSITY

«APPROVED»
Chairman of the Board-Rector
_____ D.Zh.Ahmed-Zaki
«_____»_____2024

EDUCATION PROGRAMME

7M01550 – Biology and Natural Sciences

Registrationnumber	
Code and classification of the field of education	7M01-Pedagogicalscience
Code and classification of training areas	7M015-Training of teachers in natural science subjects
Group of educational programs	M014
Typeof EP	acting
ISCE level	7
NQF level	7
SQF of education level	7
Language of learning	Kazakh, Russian
Typical duration of study	120 credits
Distinctive features of EP	
University Partner (JEP)	-
University Partner (TDEP)	-
Social Partner	-

Shymkent, 2025

Developers:

Full Name	Position	Signature
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The OP was considered at a meeting of the Academic Quality Committee of the «Natural Sciences and Pedagogy» Higher School, Minutes № ___ «__» __ 2025 y.

Chairman of the Committee _____ A.Z.Tursynbayev

The EP was considered and recommended for approval at Educational-methodical meeting of M. Auezov SKU
Minutes # « » 2025 y.

Chairman of the UMS_____ K. Sarykulov

The EP was approved by the decision of the Academic Council of the University
Minutes # « » 2025 y.

CONTENT

1. CONCEPT OF THE PROGRAM

Mission of the University	We are focused on generating new competencies, training a leader who translates research thinking and culture.
University Values	– Openness - open to change, innovation and cooperation. – Creativity - generates ideas, develops them and turns them into values – Academic freedom - free to choose, develop and act. – Partnership - creates trust and support in a relationship where everyone wins. – Social responsibility - ready to fulfill obligations, make decisions and be responsible for their results.
Graduate Model	– Deep subject knowledge, their application and continuous expansion in professional activity – Information and digital literacy and mobility – Research skills, creativity and emotional intelligence – Entrepreneurship, independence and responsibility for their activities and well-being – Global and national citizenship, tolerance to cultures and languages
Uniqueness of the EP	• Orientation to the regional labor market and social order through the formation of professional competencies for graduates, adjusted to meet the requirements of stakeholders. • Practice orientation and emphasis on the development of critical thinking and entrepreneurship, the formation of a wide range of skills that will allow you to be functionally literate and competitive in any life situation and be in demand in the labor market.
Academic Integrity and Ethics Policy	The university has taken measures to maintain academic integrity and academic freedom, protection from any type of intolerance and discrimination: • Rules of academic integrity (order No. 212 of October 10, 2022); • Anti-corruption standard (order No. 221 n/a dated 12/07/2021). • Code of Ethics (Order No. 212 of October 10, 2022)
Regulatory and legal framework for the development of EP	1.Law of the Republic of Kazakhstan "On Education"; 2. Model rules for the activities of educational organizations implementing educational programs of higher and (or) postgraduate education, approved by order of the Ministry of Education and Science of the Republic of Kazakhstan dated October 30, 2018 No. 595 with amendments and additions dated December 29, 2021. No. 614 3. Standard rules for admission to training in educational organizations implementing educational programs of higher and postgraduate education, approved by order of the Ministry of Education and Science of the Republic of Kazakhstan dated October 31, 2018 No. 600 with amendments and additions dated 06/02/2023. No. 252 4. State mandatory standards for higher and postgraduate education, approved by order of the Ministry of Education and Science of July 20, 2022 No. 2; 5. Rules for organizing the educational process in credit technology of education, approved by order of the Ministry of Education and Science of the Republic of Kazakhstan dated April 20, 2011 No. 152; with changes and additions from 09/23/2022. No. 79 6. Qualification reference book for positions of managers, specialists and other employees, approved by order of the Minister of Labor and Social Protection of the Population of the Republic of Kazakhstan dated December 30, 2020 No. 553.

	7. Methodological recommendations for introducing ECTS principles into the educational process and expanding academic freedom. Appendix to the order of the Minister of Science and Higher Education. of the Republic of Kazakhstan dated February 12, 2024 No. 57 8. Guidelines for the development of educational programs for higher and postgraduate education, Appendix 1 to the order of the Director of the National Center for the Development of Higher Education of the Ministry of Education and Science of the Republic of Kazakhstan dated May 4, 2023 No. 601 n/k
Organization of the educational process	– Implementation of the principles of the Bologna Process – Student-centered learning – Availability – Inclusivity
Quality assurance of EP	– Internal quality assurance system – Involvement of stakeholders in the development of the EP and its evaluation – Systematic monitoring – Updating the content (updating)
Requirements for applicants	They are established in accordance with the Standard Rules for admission to training in educational organizations implementing educational programs of higher and postgraduate education by order of the Ministry of Education and Science of the Republic of Kazakhstan No. 600 dated October 31, 2018, with changes and additions dated June 2, 2023. No. 252
Conditions for the implementation of educational programs (EP) for persons with disabilities and special educational needs (SSN)	For students with SEN (special educational needs) and persons with disabilities (PSI), tactile PVC tiles, specially equipped toilets, a mnemonic diagram, and shower bars have been installed in educational buildings and student dormitories. Special parking spaces have been created. Crawler lift installed. There are desks for people with limited mobility (PLM), signs indicating the direction of movement, ramps. In the educational buildings (main building, building No. 8) there are 2 rooms with six working places adapted for users with disorders of the musculoskeletal system (DMS).For visually impaired users, the SARA™ CE Machine (2 pcs.) is available for scanning and reading books. The library website is adapted for the visually impaired. There is a special NVDA audio program with a service. The JIC website http://lib.ukgu.kz/ is open 24/7. An individual differentiated approach is provided for all types of classes and in the organization of the educational process.

2. PASSPORT OF THE EDUCATIONAL PROGRAM

Purpose of the EP	Preparation of highly qualified masters of pedagogical sciences for academic, research, scientific and methodological activities in the field of biology and natural sciences.
Tasks of the EP	- formation of socially responsible behavior in society, understanding the importance of professional ethical standards and following these standards; -Establishing conditions for the development of in-demand knowledge and skills, as well as a conscious attitude towards enhancing the welfare of society and conserving the planet within the framework of the SDGs
Harmonization of EP	• **7** level of the National Qualifications Framework of the Republic of Kazakhstan; • Dublin descriptors of the 6th level of qualification; • 1 cycle of a Framework for Qualification of the European Higher Education Area); • 7 Level of European Qualification Framework for Lifelong Learning).
Connection of EP with the professional sphere	• Professional standard: for teachers (teaching staff) of organizations of higher and (or) postgraduate education (Order of the Ministry of Education and Science No. 591 dated 11/20/2023) • Professional standard Teacher (Order of the Acting Minister of Education No. 500 dated November 20, 2022)
Name of the degree awarded	After successful completion of this OP, the graduate is awarded the degree of Master of Pedagogical Sciences in the educational program "7M01550-Biology and modern Natural Sciences".
List of qualifications and positions	- a researcher in research organizations. - university teacher; - College teacher; -teacher-moderator; - teacher-expert; -teacher-researcher; -teacher-master; - research associate.
Field of professional activity	• Science; • Education; • Management.
Objects of professional activity	• higher, secondary and secondary specialized educational institutions (universities, colleges, educational institutions of technical and vocational education, lyceums, high schools), • Management organizations: state education management bodies, Department of Education; • Research organizations.
Subjects of professional activity	• the educational process in the unity of its value-oriented orientations, content, methods, forms and results; • scientific and pedagogical, innovative, information and analytical activities in the field of biology and methods of teaching biology.
Types of professional activity	• Academic, • scientific research, • scientific and methodological • Social activities

Learning outcomes	LO1 Analyze the main ideological and methodological problems, including interdisciplinary ones, arising in science at the present stage of its development, evaluate various facts and phenomena based on the provisions and categories of the philosophy of science. PO2 Use knowledge of a foreign language in interpersonal communication, professional activity, and writing scientific papers. RO3 Evaluate the development and effective use of personnel in the organization, possess socio-psychological technologies for managing mass behavior. RO4 Conduct scientific and experimental research with the formulation of their tasks, developing and implementing new methodological approaches, discussing them with specialists and a wider audience RO5 To design and carry out comprehensive research using artificial intelligence in the field of biology, natural sciences and teaching methods based on a holistic systematic scientific worldview. RO6 Apply the methodology of pedagogical science in the organization of a holistic pedagogical process for the training, development, upbringing and socialization of students. RO7 To carry out the educational process at a professional level, to demonstrate knowledge of artificial intelligence in the creation of interactive educational materials and its application in educational activities. PO8 Explain the cause-and-effect relationships of environmental, evolutionary and natural phenomena, human influence on these phenomena. RO9 Apply modern achievements of science and education in teaching biology and natural sciences, describing biological processes observed in nature. RO10 Generalize and apply the results of modern research in biology and scientific achievements in teaching biology and natural sciences in educational institutions.

3. COMPETENCIES OF AN EP GRADUATE

GENERAL COMPETENCIES (SOFTSKILLS). Behavioral skills and personal qualities	
GC 1. Competence in managing one's literacy	OK 1.1 the ability to possess the skills of critical thinking, interpretation, creativity of analysis, drawing conclusions, evaluation; to have creativity and an active lifestyle; to make professional decisions in conditions of uncertainty and risk.
GC 2. Language competence	OK2.1 the ability to possess basic communication skills in native and foreign languages - understanding, expressing and interpreting concepts, facts and opinions in the professional field both orally and in writing (listening, speaking, reading, writing) in an appropriate range of social and cultural contexts, mastery of mediation skills and intercultural understanding.
GC 3. Mathematical competence and competence in the field of science	- the ability and willingness to apply the educational potential, experience and personal qualities acquired during the study of mathematical and natural science disciplines at the university, to determine ways to control and evaluate the solution of professional problems, the development of mathematical and natural science thinking.
GC 4. Digital competence, technological literacy	- the ability to confidently and critically use modern information and digital technologies for work, leisure and communication, to possess the skills of using, restoring, evaluating, storing, producing, presenting and exchanging information through a computer, communicating and participating in cooperating networks using the Internet in the field of professional activity.
GC 5. Personal, social and educational competencies	- the ability to possess socio-ethical values based on public opinion, traditions, customs, norms and to focus on them in their professional activities; to know the cultures of the peoples of Kazakhstan and observe their traditions; to be able to adequately navigate in various social situations; to be able to find compromises, correlate their opinion with the opinion of the team; to possess the norms of business ethics, ethical and legal norms of behavior; strive for professional and personal growth; work in a team, defend your point of view correctly, offer new solutions; demonstrate tolerance towards other individuals.
GC 6. Entrepreneurial competence	- the ability to know and understand the goals and methods of state regulation of the economy, the role of the public sector in the economy; possess the basics of economic knowledge; possess the skills of critical thinking, interpretation, creativity of analysis, drawing conclusions, evaluation; manage projects to achieve professional goals, manage personnel, demonstrate entrepreneurial skills.
GC 7. Cultural awareness and self-expression	the ability to know and understand the traditions and culture of the peoples of Kazakhstan, is tolerant to the traditions and culture of other peoples of the world, is aware of the attitudes of tolerant behavior; is not subject to prejudice, has high spiritual qualities, is formed as an intelligent person.
PROFESSIONAL COMPETENCIES (HARDSKILLS).	
Theoretical knowledge and practical skills specific to this field	PK1. The ability to independently set specific tasks for scientific research in biology and methods of teaching biology and solve them with the help of information technology and the use of the latest domestic and foreign experience.

	PK2. The ability to apply knowledge of the biology of innovative tasks, and apply the results of scientific research in innovative scientific and pedagogical activities.
	He is able to show professionalism, innovation, creativity, meritocracy and integrity.
	PK3. The ability to participate in the development of new methods and methodological approaches in scientific and innovative research and scientific and pedagogical activities
	PK4. The ability to plan, organize and conduct research, scientific seminars and conferences in the field of education and biology.
	PK5. The ability to compile and execute scientific and pedagogical documentation, scientific reports, reviews, reports and articles using artificial intelligence.
	PK6. The ability to lead students' research activities in the field of biology and methods of teaching biology.
	PK7. The ability to methodically competently build lesson plans for sections of academic disciplines in biology and publicly present theoretical and practical sections of these disciplines in accordance with approved teaching aids.

3.1 Matrix for correlating learning outcomes in the EP as a whole with the competencies being developed

	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
GC 1					+			+		
GC 2		+								
GC 3									+	
GC 4							+		+	
GC 5	+						+			
GC 6			+							
GC 7				+						
PC 1					+					
PC 2							+	+		
PC 3						+				
PC 4										+
PC 5						+				
PC 6							+			
PC 7									+	+

4 MATRIX OF THE INFLUENCE OF DISCIPLINES ON THE FORMATION OF LEARNING OUTCOMES AND INFORMATION ABOUT LABOR INTENSITY

The name of the module	Cycle	Compo nent	Component name	Short description of the discipline	Number of credits	The generated RO (codes)									
						RO1	RO2	RO3	RO4	RO5	RO6	RO7	RO8	RO9	RO10
Module Scientific and Pedagogical Training	BD	EC	History and Philosophy of Science	Purpose: Study of the problems of the phenomenon of science as a subject of special philosophical analysis, patterns and trends in the development of special activities for the production of scientific knowledge taken in a socio-cultural context. Identification of the specifics and relationship of the main problems of history and philosophy of science. Study of the laws of the development of science and the structure of scientific knowledge, methods of scientific research. Knowledge of the main concepts and directions of the non-classical and post-classical stage of the development of science. Analysis of the realities of modern theory and practice based on understanding the methodology of natural science, socio-humanitarian and technical knowledge. Critical thinking as a prerequisite for the development and functioning of modern society. Technologies for the development of critical thinking: consideration and study	4		✓								

				of the logic of arguments. Formation of critical reflexive thinking and metacognitive abilities.											
	BD	EC	Foreign Language (Professional)	The aimis systemic deepening of communicative competence within the framework of foreign language education's international standards based on the further skills and abilities' active language proficiency development in the professional activities of the future master's student The contents. Levels B2, C1 are presented in the form of a pragma-professional orientation for professional and academic aims at an advanced level: scientific information base, interpretation of scientific information, argumentation, persuasion, scientific controversy, academic writing. Use of innovative methods and technologies, and attraction of modern means (Internet resources). Demonstration of language material's knowledge in any related discipline	4	✓									
	BD	EC	Psychology of Management	Purpose: to ensure the competence of a psychologist by mastering his knowledge in the field of psychological management, developing skills in managing the organization's human resources. Content: methodological foundations of management psychology. Development of psychological theories of management. General theoretical questions of management psychology. Psychology of managerial communication. Psychological	4			✓							

				characteristics of the staff. Psychology of employee motivation. Technologies of human resource management of the organization. Psychological support of the personnel policy of the organization. Psychology of conflict in the organization. Technologies for preventing professional deformation of personality. Practical implementation in the form of creating diagnostic tools, developing digital methods for training leaders, and management consulting.											
	BD	EC	Higher School Pedagogy	The aim: formation of the foundations of the professional and pedagogical culture of a university teacher, general pedagogical competencies, familiarization of undergraduates with the theoretical and methodological foundations of higher education pedagogy, technologies for planning, organizing and managing the educational process at a university. Content. Modern paradigms of education, history and latest trends in the development of higher professional education in the world and in Kazakhstan. Genesis and methodology of pedagogy of higher education, the competence of a university teacher. Problems of university didactics, problems of organizing educational work with students, management of a modern university. Modern approaches and methods of teaching and organization of educational activities of	4				✓						

				students, evaluation of educational achievements.											
Cycle of basic disciplines/ Elective component															
Scientific and methodological foundations of teaching	PD	HsC	Teaching Methods of Special Disciplines	Purpose: Formation of professional and pedagogical competence and methodological preparation of undergraduates for future teaching activities in new socio-economic conditions. Content: Features of the construction of goals, content, application of modern methods, methodologies and organizational forms of teaching specialized disciplines. Student-centered learning. Methods of organizing and conducting various types of classes. The development of UMKD through the integration of education, science and innovation. Organization of research and educational work of students.	5				✓	✓					
	PD	HsC	New Educational Technologies in the Process of Teaching Biology	Purpose: Formation of readiness among undergraduates in the implementation of modern educational technologies as a resource for improving the quality of teaching biology. Content. A personality-oriented and developing educational paradigm. A systematic approach as an effective technology for developing learning. Development of systemic thinking, logical cognition skills, stimulation of students' activity. Continuity, logical sequence of educational material. Digital resources. Information and communication technologies. The quality of education through the integration of information and	5				✓			✓			

				pedagogical technologies. Modern learning technologies. Design technologies. Gaming technologies. Technology of blended learning. Problematic teaching methods. Technology for the development of critical thinking.											
	PD	HsC	Didactic Foundations of Natural Science Teaching Methods	Purpose: Formation of a holistic view of the methodology of teaching natural science, determining the principles of material selection and the content of the subject; formation of the ability to use effective methods, forms and means of teaching; Content. The history of the development of natural science as an academic subject. Characteristics of natural and social science concepts and concepts. Forms of organization of the study of natural science. Characteristics of natural science teaching methods. Didactic techniques and their application. Didactic possibilities of using ICT. Competence-based approach in natural science education.											✓
	PD	HsC	Scientific Aspects of the Educational Process Organization at the University	Purpose: To present the history and theory of higher education from the stages of its origin to the present. Content: The emergence and development of higher education abroad. the history of the development of higher education in Kazakhstan. Forms of education in higher education. Laws, patterns and principles of higher education. A competency-based approach. Structural components of the educational	5						✓				

				process at the University. Goals and objectives of higher professional education. The essence and scientific organization of the educational process in higher education. Psychological and pedagogical conditions for the effective organization of the educational process at the university. A teacher as an organizer of the educational process in higher education. Methods and means of teaching in higher education. Organizational forms of higher education.											
	PD	HsC	Innovative Trends in Higher Education	Purpose: To form knowledge about the trends characterizing the development of the theory and practice of higher professional education. Content. Theories and concepts of higher education. The main trends and directions of development of modern education are globalization, fundamentalization, humanization, technologization, standardization, computerization. The problems of the crisis of higher education in the modern world: general, special, singular. Actualization and the discrete nature of the humanization of higher education. Traditions and new paradigms of higher education. Educational innovations. Educational standards. The development of a unified educational space. The modern theory of pedagogical competence: problems of individual development.											
	PD	HsC	Interdisciplinary aspects of	Purpose: To examine and uncover interdisciplinary connections in biology teaching.	5							✓	✓		

			biology education	Content. Interdisciplinary connections as a principle of learning in modern education. Methodology for the implementation of interdisciplinary connections in biology teaching. Types of interdisciplinary connections. The importance of using interdisciplinary connections for a biology teacher. Planning and ways to implement interdisciplinary connections in biology teaching. Application of mathematics, physics, chemistry, geography in solving biological problems. Intra-disciplinary and interdisciplinary connections.											
	PD	HsC	Methodology and Technology of STEM Education	Purpose: Expanding professional competencies through the use of an integrated approach to STEAM training. Develop research and leadership skills to develop sustainable action plans for engaging in the learning process. Content: Concepts and current problems in STEAM education at the national and global levels. The modern STEM experience and its relationship to changing technological and social challenges. Integrated STEM learning strategies based on a critical review of the history, methods and theory of integrated STEM learning within the framework of modern research. Undergraduates will be able to make judgments in the field of prospects and directions of development of the STEM approach in education.											
	BD	HsC	Pedagogical Practice	Purpose: formation of practical skills in teaching and learning methods at the university.	4										

				Content: Organization and conduct of training sessions (except lectures) taking into account the principles of student-centered learning and assessment. Development of teaching materials in the disciplines taught, taking into account the integration of education, science and innovation. Establishing feedback with students using digital technologies.												
	BD	HsC	History and Methodology of Biology	Purpose: To familiarize with the basics of biological knowledge, the most important problems in the field of biology, as well as to form an idea of the historical retrospective of the formation of biology and the main trends in its development. Content. The history of biology from antiquity to the present day. Characteristics of the process of formation of individual biological sciences. Methodology of scientific knowledge. The structure of natural science cognition. Methods of natural science cognition. The interaction of the methodology of philosophical, general scientific and private scientific methodological levels. The main directions of the development of modern biology of the XX - XXI century.	4				✓				✓			
	BD	HsC	Modern Problems of Science and Education	Purpose: Formation of the ideological and methodological general scientific competence of the master in the field of educational activities in the system of professional education. Content:The interdisciplinary context of education. The context of the concept of "Education". The main ways of												

				organizing scientific knowledge. Scientific theory as a form of representation of scientific knowledge. The interpenetration of sciences in modern conditions. Trends in the development of higher education in the world at the beginning of the XXI century. Modern guidelines for the development of education. The essence of innovative processes in education. The theoretical foundations of the organization of research activities.											
Selected chapters of the Biology and Natural Science course	BD	HsC	Actual Problems and Prospects of Modern Biology	Purpose: Consideration of current problems of modern biology and promising directions for the development of biological research. Contents: Modern views on the origin of life; general patterns of development of biological science. The process of formation of principles and concepts of biology, the problems facing modern biological science. Stages of the development of biology, the logic of the development of biological science. The current state of the development of biology and its relationship with other branches of natural sciences and technologies. An interdisciplinary approach to understanding the essence of biological patterns in nature.	6								✓		✓
	BD	HsC	Applied Aspects of Modern Biology and Natural Science	Purpose: To get acquainted with modern trends and trends in the development of biological sciences, innovative aspects of biological research, problems of environmental and biosafety, effective use of biological resources.										✓	

				Content. Problems and prospects of applied areas of biology: in agriculture, industrial technologies, medicine, environmental protection. The current state and prospects of biosensor technology application. Methods of obtaining and directions of use of transgenic organisms. Modern problems of demography. Bioenergetic foundations for the stable functioning of ecosystems: theoretical and practical foundations for the rational use of plant and animal resources.												
	PD	EC	Algology	Goal. Familiarity with the specifics of plant habitat conditions in the urban environment, the peculiarities of urban flora and vegetation. Content. Features of urban flora in connection with their rational use and protection. Light and temperature conditions in the city. Soil environment: compaction, specificity of microbiological processes. Conditions of mineral nutrition of plants in the city. Pollution of the environment and plants. Recreation and plants. The influence of the urban environment on the physiological processes of plants and their morphology. The specifics of the composition and structure of urbanophytocenoses. The role of urban flora in solving environmental problems. Phyto-indications of the state of the environment in the urban environment.	4				✓	✓		✓			
	PD	EC	Mycology	Purpose: To study the characteristics, diversity and distribution of fungi.												

				Content. The structure of the vegetative body of fungi. Features of the structure of the fungal cell. The mechanism of vegetative, asexual and sexual reproduction. Characteristics of the main classes of fungi. The main representatives of ascomycete yeasts. Representatives of the family of sporobolomycetes and cryptococcal yeasts. Methods of isolation of pure cultures of micromycetes. Isolation of micromycetes by the Koch method. Methods for determining the number of micromycetes											
	BD	HsC	Territorial Planning and Environmental Management	Purpose: Systematization of knowledge in the field of environmental management, patterns and features of the territorial allocation of natural resources and their use, the impact of natural resource potential on the development of the territory. Content. Methodology and principles of territorial planning (TP). The main groups of factors for assessing the territory. Forecasting the main directions of nature management and environmental protection and their impact on the economic development of the territory. The modern territorial organization of Kazakhstan. Legal and methodological support of TP. The system of planning the rational use of natural resources. Water, soil and land resources, subsurface resources, plant and animal resources of the world, their location and possibilities of use.	5						✓		✓		

	BD	HsC	Natural Disasters and Geodynamic Processes	Purpose: The ideas of modern principles and methods of observation, description, explanation and forecasting of natural catastrophic processes are given. Content. Mechanisms, dynamics, local patterns of formation of natural and anthropogenic phenomena. Atmospheric cyclones. Tsunami. Tornadoes. Floods. Mudflow hazard. Abnormal heat and cold. Droughts. Dust storms. Avalanches. Whirlpools. Natural fires. Intra- and inter-population interactions. Infections. Mass extinctions. The problem of the existence of life.												
	PD	EC	Concept of Modern Natural Science	Purpose: The formation of a scientific worldview of a graduate student based on the assimilation of the most important natural science concepts and theories. Content. Philosophy of natural science. The place of natural science in the general system of science. Cognition and scientific cognition. Definition of mathematics. The role of mathematics in the natural sciences. Physics is the basis of natural science. Chemistry in the system of natural sciences. Conceptual systems of chemical science. Concepts of cognition at the level of biology. The philosophical foundations of the early concepts of the origin of life. A dialectical solution to the origin of life. Philosophical aspects of the main modern solutions to the problem of the origin of life. The main stages of the formation of the idea of	5				✓				✓		

				development in biology. The essence of the Darwinian solution to the problem of the development of the organic world. The main directions of the development of evolutionary theory and the ideological struggle against anti-Darwinism. Scientific forecasting of the future.												
	PD	EC	Plant and Animal Resources of the Republic of Kazakhstan, Rational Use, Protection	Purpose: To give an idea of the methods of determining the state of plant and animal resources in the Republic of Kazakhstan, ways to restore them and rational measures for their effective use. Content. The state of the plant and animal resources of Kazakhstan, the structure and levels of biodiversity, flora and fauna. Possibilities of protection and rational use of plant and animal resources of the Republic of Kazakhstan. Methods for assessing the state of plant and animal resources and ways to restore them. Sustainable use of animal and plant resources. Ecosystem change from human action. Specially protected natural areas and biodiversity.					✓	✓					
	PD	EC	Information Biology	Purpose: To form a holistic view of information, the specifics of information processes in biological and ecological systems, to gain experience in applying information approaches to the analysis of biological objects, processes and systems. Content: Scientific and information activities in biology and ecology. Information systems in biology and ecology. Information approaches (semantic, biocybernetic, semiotic) to the	6				✓			✓		✓	

				analysis of biological and ecological processes and systems. Biodiversicology, information aspects of studying the structure and dynamics of biological diversity. Information indexes. Computer biology.											
	PD	EC	Modern Ecology and Global Environmental Problems	Purpose: To form knowledge about the role of modern ecology in solving global problems of our time and trends in the further development of life on the planet. Content. Environmental problems are one of the global threats to international security. The main modern environmental problems are the destruction of the ozone layer, global warming, atmospheric pollution, the greenhouse effect, pollution of the oceans, and the reduction of biodiversity. Man-made environmental pollution, soil pollution, solid and hazardous waste, heavy metals, pesticides. Radiation pollution. The global environmental crisis. The dependence of the economy on the resources of the biosphere. Economic damage in the environment. The costs of protecting the environment and natural ecosystems. Global and macro-regional environmental problems arising from the disruption of the structural organization and sustainable functioning of natural eco- and geosystems. The basic principles of international environmental cooperation.				✓			✓			✓	
			Research Practice	Purpose: To consolidate the acquired theoretical knowledge and acquire practical skills and experience to identify and formulate a scientific	6			✓		✓	✓				

				problem, its research and substantiation of solutions. Content: Organization of scientific research in accordance with the modern methodology of science, compliance with the stages and logic of scientific research in accordance with the applied tasks of the master's project. Develops the ability to experiment and summarize the results of research work in the form of scientific publications, defend their position during the discussion and make professional decisions. Develops creativity, creativity and initiative.											
The cycle of core disciplines\ Component of choice															
Research methodology	PD	EC	Modern Research Methods of Biology	Purpose: To consider the main research methods in biology, with specific methods for studying natural quasi-natural biological systems and their components, the formation of theoretical foundations and the development of practical skills, techniques, research in the field of biology Content: Structure and organization of biological research. Means and methods of scientific research. Comparative method of flora and fauna research. Methods of geobotanical research. Microscopy as a method of studying cells and tissues: light and electron microscopy. Methods of cell and tissue research. Molecular research methods.	6						✓		✓		
	PD	EC	Research Methods and	Purpose: to develop undergraduates' skills of independent organization of work in terms of setting the task of research work,						✓	✓				

			Academic Writing	determining the stages and timing of scientific research. Contents: General methodological approaches in modern biological research. Setting up an experiment. Mathematical methods in biological research. A systematic approach in biology. Modeling in biology. Biological forecasting. Biological monitoring. Methodology of population studies. Methodology of system research. Methodology of biological monitoring. Methods of processing the results obtained. Scientific ethics and academic integrity.											
	PD	EC	Planning and Organization of Scientific Research	Purpose: to develop skills in the field of planning and organizing scientific research, to get acquainted with the principles and techniques of planning a scientific experiment. Content. Classification and branch structure of science. The scientific potential of the state and the effectiveness of its use. Methods of scientific research and their application in solving problems in biology. Information retrieval, design and presentation of research results. Methodology of theoretical and experimental research. Methods of mathematical and statistical planning and processing of experimental results. Modeling in scientific research. Patenting.	6					✓		✓			
	PD	EC	Management of Scientific and Pedagogical Research	Purpose: to form a system of competencies among undergraduates that provide an understanding of the nature, principles and logic of scientific and pedagogical research, and knowledge of							✓				

				the methodology of its organization in the context of developing the ability to successfully solve research tasks in an educational environment. Content. The concept of management in science. Methodology as the science of scientific cognition. Pedagogy as a science of education. Pedagogy in the system of modern scientific knowledge. The structure of the methodology of pedagogy. Scientific and pedagogical research: concept, general characteristics, types, principles of organization. Methodological characteristics of scientific and pedagogical research and their features. The logic of scientific and pedagogical research. Processing, analysis and interpretation of the results of scientific and pedagogical research. Approbation and registration of the results of scientific and pedagogical research.											
Scientific-research work and Final Certification			Research Work of a Master Student, Including Passing an Internship and Completing a Master's thesis	Content. Independent scientific search and solution of specific scientific problems on the topic of the selected research. Content: analysis and use of modern theoretical, methodological and technological achievements in biology. Familiarization with innovative technologies within the framework of the internship. The use of modern research methods. Conducting an assessment of the reliability of the results obtained and critically comparing them with similar results of domestic and foreign works. Analysis of the results, conclusions and suggestions.	24										✓

			Execution and Defense of Master`s Thesis	Content. to evaluate the achieved learning outcomes and acquired competencies upon completion of the study of the educational program Content: the design of the dissertation in accordance with the requirements for master's theses. Consideration of academic integrity requirements (plagiarism). Public defense with a demonstration of formed knowledge, skills and competencies.	8										✓

5 A SUMMARY TABLE SHOWING THE VOLUME OF CREDITS IN THE CONTEXT OF THE MODULES OF THE EDUCATIONAL PROGRAMME

Training course	Semester	Number of modules to be mastered	Number of subjects studied							Total hours	Total credits KZ	Number	
			VC	EC	Theoretical training	Pedagogical practice	Research. practice	Research work of a master's degree student	Final certification			exam	Differentiated credit
1	1	3	5	2	29		-	1	-	900	30	6	2
	2	3	1	4	22	4		4	-	900	30	4	2
2	3	3		2	11		6	3	-	600	20	2	2
	4	1		3	16		-	4	-	600	20	3	1
	5							12	8	600	20		1
total			6	12	78	4	6	24	8	3600	120	13	8

6 LEARNING STRATEGIES AND METHODS, MONITORING AND EVALUATION

Learning strategies	Student centred Approach in Education: learner – teaching center / learning and an active participant in the learning and decision-making process. Practice-oriented training: orientation to the development of practical skills.
Teaching methods	Conducting lectures, seminars, various types of practices: • using innovative technologies: problem-based learning; case study; work in a group and creative groups; discussions and dialogues, intellectual games; reflection methods, Bloom's taxonomies; presentations; • rational and creative use of information sources: multimedia training programs; electronic textbooks; digital resources. Organization of independent work of undergraduates, individual consultations.
Monitoring and evaluation of the achievability of learning outcomes	Current control on each topic of the discipline, control of knowledge in classroom and extracurricular classes (according to syllabus). Assessment forms: • survey in the classroom; • testing on the topics of the discipline; • control works; • protection of independent work; • discussions; • trainings; • colloquiums; • abstract, etc . Boundary control at least twice during one academic period within the framework of one academic discipline. Intermediate certification is carried out in accordance with the working curriculum, academic calendar. Forms of conducting: • exam in the form of testing; • oral examination; • written exam; • combined exam; • project protection; • protection of practice reports. Final state certification.

7 EDUCATIONAL AND RESOURCE SUPPORT OF THE EP

Educational Information Center	The structure of the Educational Information Center includes 6 subscriptions, 16 reading rooms, 2 electronic resource centers (ERC). The basis of the network infrastructure of the Educational and Information Center is 180 computers with Internet access, 110 workstations, 6 interactive whiteboards, 2 video doubles, 1 video conferencing system, 3 A-4 format scanners, JIC software - AIBS "IRBIS-64" under MS Windows (basic set of 6 modules), stand-alone server for uninterrupted operation in the IRBIS system. The library fund is reflected in the electronic catalog available to users on the site http: // lib.ukgu.kz on-line 24 hours 7 days a week. Thematic databases of their own generation: "Almamater", "Proceedings of SKSU scientists", "Electronic archive" have been created. Online access from any device 24/7 via the external link http://articles.ukgu.kz/ru/pps. Catalogs are processed electronically. EC consists of 9 databases: "Books", "Articles", "Periodicals", "Proceedings of the teaching staff of SKSU", "Rare Books", "Electronic Fund", "SKGU in Print", "Readers" and "SKU". The EIC provides its users with 3 options for accessing its own electronic information resources: from the “Electronic Catalog” terminals in the catalog hall and in the EIC subdivisions; through the information network of the university for faculties and departments; remotely on the library website http://lib.ukgu.kz/. Open access to international and republican resources: "SpringerLink", "Polpred", "Web of Science", "EBSCO", "Epigraph", to electronic versions of scientific journals in the public domain, "Zan", "RMEB", "Adebiet", Digital library "Aknurpress", "Smart-kitar", "Kitar.kz", etc. For people with special needs and disabilities, the library website has been adapted to the work of visually impaired users
Material and technical base	The department has the following classrooms with a total area of 342 m^2: The office of the head of the department, the Office of teachers – Educational and laboratory classrooms botany, plant physiology, teaching methods biology, human anatomy, zoology and the office of undergraduates (building No. 7, Baitursynova str.). Greenhouse with a total area of 3 hundred 60 m^2 Tauke khan No. 5

APPROVAL SHEET

According to the Educational program 7M01550 - "Biology and Natural Sciences"

Director of AID _____ Naukenova A.S.

Director of DCS_____Nazarbek U.B.

Director of the DEC _____ Bazhirov T.S.