Ministry of Sciences and Higher Education of the Republic of Kazakhstan
M. Auezov South Kazakhstan University

«APPROVED»
Acting Chairman of the Board-Rector
_____ K. Nurmanbetov
_____ 2024 y.

EDUCATIONAL PROGRAM

6B05410-Mathematics

Registration Number	6B05400001
Code and Classification of Education	6B05 Natural sciences, Mathematics and Statistics
Code and Classification of Areas of Training	6B054 Mathematics and Statistics
Group of Educational Programs (EP)	B055 Mathematics and Statistics
Type of EP	Acting EP
ISCE level	6
NQF level	6
IQF level	6
Language learning	Kazakh, Russian
The complexity of EP	240 Credits
Distinctive features of EP	
Partner University (JEP) -	-
University partner (DDEP) -	-

Shymkent, 2024 y.

Developers:

Full Name	Position	Signature
Sh. Altynbekov	Acting Head of the Department of Mathematics, PhD	
Zh. Aimenov	Director of the Scientific Research Institute of Natural Sciences, Doctor of Technical Sciences, Professor 16.02.24	
E. Kultayev	Head of the Department of the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan for the Shymkent, RSI 15.02.24	
G. Kuntuganova	Head of the Department of the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan for the Turkestan Region, RSI 14.02.24	
B. Karymsakov	Head of the State Revenue Department for the Shymkent city 14.02.24	
A. Sarsenbi	Director of the Scientific Center «Theoretical and Applied Mathematics», Doctor of Physical and Mathematical Sciences, Professor 14.02.24	
E. Musrepova	Senior Lecturer of the Department of Mathematics, PhD	
I. Almakhanbet	Student of the EP-23-11r group	

The Educational Program was reviewed at a meeting of the Academic committee for quality assurance of Educational Programs in Natural Sciences, Mathematics and Statistics
Minutes № 4 « 23 » 02 2024 y.

Chairman of the Committee _____ A. Tursynbaev

The Educational Program was considered and recommended for approval at Educational-methodical meeting of M. Auezov SKU,
Minutes № 4 « 28 » 02 2024 y.

Chairman of the EMM _____ K. Sarykulov

The Educational Program was approved by the decision of the Academic Council of the University,
Minutes № 10 « 28 » 03 2024 y.

Content

1. CONCEPT OF THE EDUCATIONAL 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 of the graduate, adjusted to the requirements of stakeholders - Practical orientation and emphasis on the development of critical thinking and entrepreneurship, the formation of a wide range of skills that will allow 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 Educational Program	Preparation of bachelors-mathematicians, able to work in scientific and educational institutions
Tasks of the Educational Program	• Providing high-quality professional training of future specialists in the field of mathematics in accordance with the social order of the society • Formation of basic knowledge, key, general professional and professional competencies, development of cognitive flexibility, functional literacy necessary for the implementation of professional activities in the field of mathematics • Formation of students' readiness to organize and conduct research and experimental activities in the field of mathematics, the introduction of innovative technologies • Mastering methods of physical, spiritual and intellectual self-development, formation of psychological literacy, culture of thinking and behavior -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 the Educational Program	• 6th 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); • 6th Level of European Qualification Framework for Life long Learning).
Connection of EP with the professional sphere	-
Name of the degree awarded	After successful completion of this Educational Program, the graduate is awarded the degree: Bachelor of Natural Sciences in the Educational Program 6B05410-Mathematics
List of qualifications and positions	-specialist, leading specialist, leading mathematician; -researcher, mathematician-researcher in research organizations and computing centers; -mathematician-programmer, mathematician-economist, mathematician-actuary in organizational and managerial structures; -mathematician-analyst -statistics
Field of professional activity	- mathematics; -actuarial mathematics; -mathematics and applied mathematics; -mathematics and system programming; -mathematical and computer modeling; -financial, economic, managerial
Objects of professional activity	-research activities (works) in institutes and laboratories; -work at enterprises and associations in order to ensure production and technological processes, production and management processes at firms and companies; -state institutions, organizations of all forms of ownership
Subjects of professional activity	-research work in areas related to the use of mathematics; -development of a mathematical model of processes and phenomena in the field of natural sciences, engineering;

	-practical experiments of the computational process; -computer and computing technology; -mathematical economics; -actuarial mathematics; -statistical accounting
Types of professional activity	-research activities, working as junior researchers in research institutes, laboratories and computer centers, and firms using modern computer technologies; -organizational and managerial activity, working as mathematicians-analysts, mathematicians-economists, mathematicians-actuaries -organization and conduct of statistical observations
Learning outcomes	LO1-To communicate freely in the professional environment and society in Kazakh, Russian and English, taking into account the principles of academic writing and the culture of academic honesty LO2-To demonstrate socio-cultural, professional development based on the formation of ideological, civic, spiritual and social responsibility, methods of scientific and experimental research LO3-Possess information and computing literacy, the ability to generalize, analyze and perceive information, set goals and choose ways to achieve it LO4- The study of advanced achievements in the field of science, knowing the basic theories, provisions and methods of mathematics LO5-Solve actual problems of fundamental mathematics using scientific argumentation, demonstrating critical and logical thinking. LO6-To apply mathematical methods, innovative information and digital technologies in solving mathematical problems of an applied nature. LO7-To investigate physical, economic and other processes using the methods of scientific and mathematical research, taking into account the principles of academic ethics. LO8-To use research, entrepreneurial skills and skills of working in conditions of uncertainty to solve applied problems of mathematics. LO9-Ability to work in a team, demonstrating self-study skills throughout life

3. COMPETENCIES OF THE EDUCATIONAL PROGRAM GRADUATE

GENERAL COMPETENCIES (SOFT SKILLS): Behavioral skills and personal qualities	
GC 1. Competence in managing one's literacy	GC1.1. The ability to self-study, self-develop and constantly update their knowledge within the chosen trajectory and in an interdisciplinary environment. GC1.2. The ability to express thoughts, feelings, facts and opinions in the professional sphere. GC1.3. The ability to mobility in the modern world and critical thinking.
GC 2. Language competence	GC2.1. The ability to express and understand concepts, thoughts, feelings, facts and opinions in the field of education and exact sciences, in written and oral forms (listening, speaking, reading and writing). GC2.2.Interact linguistically appropriately and creatively in all variety of social and cultural contexts: during studies, at at work, at home and at leisure.
GC 3. Mathematical competence and competence in the field of science	GC3.1.The ability and willingness to apply the educational potential, experience and personal qualities acquired during the study of mathematical, natural science, technical 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	GC4.1.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	GC5.1.The ability to possess the skills of critical thinking, interpretation, creativity of analysis, drawing conclusions, evaluation; to have creativity and an active life position; to make professional decisions in conditions of uncertainty and risk. GC5.2. The ability to possess social and 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 observe the basics of the legal system and legislation of Kazakhstan, to know the trends of social development of society; to be able to adequately navigate in various social situations; be able to find compromises, correlate their opinion with the opinion of the team; possess 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. GC5.3.To successfully carry out research activities; to know the patterns of psychological and physiological development of students, including those with special needs and their manifestations in the educational process at different age periods, to use knowledge of pedagogy, psychology and methods of teaching mathematics in professional activities, taking into account criteria assessment, pedagogical innovation and technology, to be capable of innovation, strive to develop their pedagogical skills.
GC 6. Entrepreneurial competence	GC6.1. 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 objectives, manage personnel, demonstrate entrepreneurial skills.
GC 7. Cultural awareness and self-expression	GC7.1. 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. GC7.2. The ability to be tolerant of the traditions and culture of other peoples of the world, to possess high spiritual qualities, to show ideological, civic and moral positions.
PROFESSIONAL COMPETENCIES (HARD SKILLS):	
Theoretical knowledge and practical skills specific to this field	PC1. Knowledge of general forms, patterns and tools of fundamental and applied mathematics and other mathematical disciplines.
	PC2. The ability to use basic knowledge from mathematics, physics and other natural sciences in cognitive and professional activities.
	PC3. Conduct scientific research in the professional field.
	PC4. Master the techniques of computer modeling and methods of theoretical analysis of the results of observations and experiments.
	PC5. The ability to study and apply innovative pedagogical experience, the desire for self-education and self-realization.

3.1. MATRIX FOR CORRELATING LEARNING OUTCOMES IN THE EDUCATIONAL PROGRAM AS A WHOLE WITH THE COMPETENCIES BEING DEVELOPED

	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9
GC1	✓	✓	✓		✓		✓	✓	✓
GC2			✓	✓		✓			
GC3	✓					✓		✓	✓
GC4	✓			✓		✓	✓		
GC5		✓			✓			✓	
GC6			✓	✓			✓		
GC7	✓			✓	✓				
PC 1	✓	✓						✓	✓
PC 2			✓		✓	✓			
PC 3		✓			✓	✓			✓
PC 4				✓	✓		✓		
PC 5		✓	✓				✓		

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

№	Name of the module	Cycle	Component	Name of the discipline	Brief description of the discipline	Number of credits	Generated learning outcomes (codes)								
							LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9
1	Fundamentals of the Public Sciences	GED	RC	History of Kazakhstan	The purpose of the discipline isformation of an objective idea of the history of Kazakhstan based on a deep understanding and scientific analysis of the main stages, patterns and originality of the historical development of Kazakhstan. Ancient people and the formation of nomadic civilization. Turkic civilization and the great steppe. Kazakh Khanate. Kazakhstan in the era of modern times. Kazakhstan as part of the Soviet administrative-command system. Declaration of Independence of Kazakhstan. State system, socio-political development, foreign policy and international relations of the Republic of Kazakhstan. Methods and techniques of historical description for the analysis of the causes and consequences of events in the history of Kazakhstan	5	✓								
		GED	RC	Philosophy	Purpose: The formation of a holistic idea among students about philosophy as a special form of knowledge of the world, about its main sections, problems and methods of studying them in the context of future professional activity. And also the formation of philosophical reflection, introspection and moral self-regulation among students. Contents. Emergence of a culture of thinking. Subject and method of philosophy. Fundamentals of philosophical understanding of the world: questions of	5	✓								

					consciousness, spirit and language. Being. Ontology and metaphysics. Cognition and creativity. Education, science, technology and technology. Human philosophy and the world of values. Ethics. Philosophy of values. The subject of aesthetics as a field of philosophical knowledge. Philosophy of freedom. Philosophy of art. Society and culture. Philosophy of history. Philosophy of religion. "Mangilik El" and "Modernization of Public Consciousness" are a new Kazakhstan philosophy.										
2	Socio-Political knowledges	GED	RC	Sociology and Political Science	The goal of forming knowledge about social and political activities, explaining social and political processes and phenomena. Consideration of the system of socio-ethical values of the society. Ways to use social, political, cultural, psychological institutions, features of youth policy in the modernization of Kazakhstani society and solve conflict situations in society and professional environment based on them. To study the methods of analysis and interpretation of political institutions and processes, ideas about politics, power, state and civil society, to understand and use the methods and methods of sociological, comparative analysis, to understand the meaning and content of the political situation in the modern world. Analysis and classification of the main political institutions	4	✓								
		GED	RC	Cultural studies and psychology	Purpose: the formation of scientific knowledge of history, modern trends, current problems and methods for the development of culture and psychology, the skills of a systematic analysis of psychological phenomena. Contents: Morphology, language, semiotics, anatomy of culture. Culture of nomads, proto-Turks, Turks. Medieval culture of Central Asia. Kazakh culture at the turn of the XVIII - XIX centuries, XX century. Cultural policy of Kazakhstan. State Program "Cultural Heritage". National consciousness, motivation. Emotions, intellect. The will of man, the psychology of	4	✓								

					self-regulation. Individual typological features. Values, interests, norms are the spiritual basis. The meaning of life, professional self-determination, health. Communication of the individual and groups. Socio-psychological conflict. Models of behavior in conflict.											
3	Socio-ethnic development	GED	UC	Ecosystem and law	The purpose: Formation of integrated knowledge in the field of economics, law, anti-corruption culture, ecology and life safety, entrepreneurship, scientific research methods. Content: Fundamentals of safe human-nature interaction, ecosystem and biosphere productivity. The entrepreneurial activity of society in conditions of limited resources, increasing the competitiveness of business and the national economy. Regulation of relations in the field of ecology and human life safety. Knowledge and compliance of Kazakhstan's law, obligations and guarantees of subjects, state regulation of public relations to ensure social progress. Application of scientific research methods.	5	✓						✓		
		BD	EC	Abai study	Purpose: based on the creativity of A.Kunanbayev, the preservation of the «national code» and in the project «Kazakhtanu» Contents: historical overview of the history of Kazakhstan and Kazakh literature of the XIX-XX centuries. Studies of Abai's legacy of the XX-XXI century. Chronology of Abai's creativity. Abai is a great poet, ethnographer, founder of Kazakh written literature. Abai is the compiler of the code of laws «The Position of Karamola», social significance. Abai is a thinker, religious scholar, philosopher. The role of Abai in education and science, the concept of a «Holistic person». «Words of Edification»by Abai, an epic novel by M.Auyezova «The Way of Abai» . K. Tokayev «Abai and Kazakhstan in the XXI century», role, significance.	3	✓								✓
				Mukhtar study	Purpose: Formation of a historical, literary idea of M. Auezov's work in the context of literary history, patriotism and cultural and spiritual position.		✓								✓

					Development of artistic thinking, skills of independent research activity. The content of the discipline The life and creative path of M. Auezov Semipalatinsk, Tashkent, St. Petersburg periods. M. Auezov's activity in the magazines «Sholpan», «Abai». M. Auezov's journalism. An artistic review of the short stories "Korgansyzdyn kuni", "Kyr suretteri", "Okagan azamat", "Kokserek", the play Enlik-Kebek and the stories "Kili Zaman", "Karash-Karash" okigasy", the monograph "Abai Kunanbayev", the epic novel "Abai Zholy"										
				Basics of financial literacy	The purpose of the discipline is to study personal and family financial resources, which are critical to achieving financial well-being. Contents of the discipline. Financial planning and consumer safety. Basic methods and techniques for effective spending and saving money. Protecting and investing your own financial resources. The role and significance of personal finance, its capabilities for achieving financial stability. Filtering out a lot of dubious financial information. Incentives for independent management of responsibilities and optimal financial capabilities of the consumer. Making smart financial decisions when building a professional career		✓								✓
				Service to Society	The aim is the formation of socially significant skills and competencies in students based on the assimilation of academic programs, carrying out socially useful activities related to the disciplines studied at the university. Content. The concept and meaning of Service learning, the history of the formation and development of the concept of Service Learning. Key components of Service Learning, socially useful activities in the children's and youth environment, organization of volunteer movement in the world and Kazakhstan practice, profile orientation of Service Learning. International practice of learning through socially useful activities. General principles and methodology		✓								✓

					for the development of social projects. Methods of analysis of implemented social projects.										
				Foundations of Anticorruption Culture	Purpose: formation of an anti-corruption worldview, strong moral foundations of a personality, civic position, stable skills of anti-corruption behavior. Content: Overcoming legal nihilism, formation of the basics of students' legal culture in the field of anti-corruption legislation. Formation of a conscious perception/attitude towards corruption.Moral rejection of corrupt behaviour, corrupt morality and ethics.Development of skills necessary to fight corruption.Development of anti-corruption standards of conduct.Anticorruption propaganda, dissemination of lawfulness and respect for the law. Activities aimed at understanding the nature of corruption, awareness of social damage caused by its manifestation, ability to defend one's position with arguments, seeking ways to overcome manifestation of corruption.		✓								✓
4	Communication and Physical Training	GED	RC	Kazakh (Russian) language	Purpose: formation of communicative competence using the Kazakh (Russian) language in the socio-cultural, professional and public life, improvement of the ability to write academic texts. The contents. Levels A1, A2, B1, B2-1, B2-2 (B2, C1 Russian language) are presented in the form of cognitive-linguocultural complexes, consisting of spheres, themes, sub-themes and typical situations of communication of the international standard: social, social - cultural, educational and professional, modeled by forms: oral and written communication, written speech works, listening. Demonstration of understanding of the language material in the texts on the educational program, knowledge of terminology and development of critical thinking.	10		✓							
		GED	RC	Foreign language	The aimis a formation of students' intercultural and communicative competence in the process of foreign language education at a sufficient level A2 and a level of basic sufficiency B1. Student reaches B2level of common European competence if the language level at	10		✓							

					the start is higher than B1level of common European competence The contents. Levels A1, A2, B1, B2 are presented in the form of cognitive-linguocultural complexes, consisting of spheres, themes, sub-themes and typical situations of international standard'scommunication: social, social - cultural, educational and professional, modeled by forms: oral and written communication, written speech works, listening.Demonstration of language material'sunderstanding in texts on educational program, knowledge of terminology and critical thinking development										
		GED	RC	Information and communication technologies	Purpose: formation of the ability to critically evaluate and analyze processes, methods of searching, storing and processing information, methods of collecting and transmitting information through digital technologies. Development of new "digital" thinking, acquisition of knowledge and skills in the use of modern information and communication technologies in various activities Contents: Introduction and architecture of computer systems. Software. Operating systems. Human-computer interaction. Database systems. Data analysis. Data management. Networks and Telecommunications. Cybersecurity. Internet technologies. Cloud and Mobile technologies. Multimedia technologies. Smart technology. E-technologies. Electronic business. Electronic government.	5						✓			
		GED	RC	Physical Training	Objective: the formation of social and personal competencies and the ability to purposefully use the means and methods of physical culture that ensure the preservation and strengthening of health in preparation for professional activity; to the persistent transfer of physical exertion, neuropsychic stresses and adverse factors in future work. Implementation of physical culture and health and training programs. A complex of general development and special exercises. Sports (gymnastics, sports and outdoor games, athletics, etc.). Control and self-control	8	✓								

					during classes, insurance and self-insurance. Refereeing competitions, Means of professionally applied physical training. Modern health-improving systems: the breathing system according to A. Strelnikova, K. Buteyko, K. Dinaiki, joint gymnastics according to Bubnovsky										
		BD	UC	Professional Kazakh (Russian) language	Purpose: mastering communication skills in the professional sphere in the Kazakh (Russian) language. The terms and concepts from the field of mathematics are presented; the features of the translation of professionally oriented texts are considered; the use of digital technologies in professional activity; examples of the definition of the topic, the idea of a scientific text are given; examples of the definition of linguistic means of composing a scientific text and the use of highly specialized vocabulary and subject terminology.	3		✓							
		BD	UC	Professionally-oriented foreign language	The purpose of the discipline: the formation and development of communication skills in a foreign language, as well as language training necessary in professional activities and building business communication. The study of mathematical terms and definitions, the compilation of mathematical texts and problems in English.			✓							
5	Fundamentals of mathematical disciplines-1	BD	EC	Linear algebra	The purpose of the discipline: to explain the basic constructions that make up linear algebra (matrices and determinants, tensors and linear maps, systems of linear equations). Application of linear algebra elements in solving SLOWS. The study of the role of linear algebra methods in applications and other mathematical sciences, their practical use and possibilities.	4				✓					
				Matrix theory	The purpose of the discipline: to study the types and elements of the matrix; various methods of calculating matrices and matrix equations. Calculation of the minor and algebraic complement, finding the inverse matrix, the rank of the matrix, the basic minor. The use of matrices in finding SLAE solutions by Kramer and					✓					

					Gauss methods.										
		BD	EC	Analytical geometry	Purpose: to introduce the basic concepts and methods of modern analytical geometry. Vector algebra is studied; the transformation of Cartesian rectangular coordinates, the main ways of describing geometric objects by algebraic methods are considered; linear images are described, as well as the theory of second-order images. Examples of the use of the studied concepts in physics and engineering are given.	5				✓					
				Determinant theory	The purpose of the discipline: to study the basic definitions and properties of determinants, methods of calculating determinants, axiomatic construction, alternative methods of calculation. Solving SLAE using determinants, analysis of some special properties and types of determinants. The application of determinants in other natural sciences is considered.					✓					
		BD	UC	*Educational practice*	The educational practice is aimed at consolidating the theoretical knowledge obtained with the use of IT technologies and acquiring in-depth practical skills, educational experience in practice bases: at the department, in research institutes, in computing centers and associations, as well as in organizational and managerial structures. The practice is aimed at adapting to the conditions of future professional activity. The training practice is organized in isolation from the training sessions.	1						✓			
		BD	EC	Discrete mathematics and mathematical logic	The purpose of the discipline: teaching methods for solving problems of discrete mathematics, the study of discrete structures – finite graphs, set theory, relations, functions and statements in logic. Familiarity with the basic provisions and sections of mathematical logic. The study of statements, logical operations, the concepts of implication, logical consequence and equivalence.	5				✓					
				Boolean Function	The purpose of the discipline is to teach students the basics of Boolean algebra and its application in computer science and technology. a discipline that					✓					

					defines the basics of Boolean algebra and its application in computer science and technology. Students study practical applications of Boolean algebra, such as creating digital circuits, designing algorithms, and programming										
		BD	EC	Number theory	The purpose of the discipline: to study the properties of integers, algebraic and transcendental numbers, their generalizations, functions of various kinds related to the arithmetic of integers. The study of methods of number theory (analytical, algebraic, geometric and elementary). Ability to solve problems in number theory	5				✓					
				Graph theory	The purpose of the discipline: to teach the basic methods of mathematical description of the structure of various objects. The study of the basic terms of graph theory. The application of graph theory in relation to mathematics is considered. The current state of graph theory, some of their problems and open problems are presented. Analysis of the structural properties of the specified objects.					✓					
6	Fundamentals of mathematical disciplines-2	BD	EC	Differential equations	Purpose: to study methods for solving differential equations. The methods of solving the simplest differential equations of the first and second order, and the interpretation of solutions are presented; questions of the existence, uniqueness of solutions of differential equations, continuous dependence of solutions on initial values and parameters, differentiability of solutions by these quantities. Examples of the application of differential equations in the theory of oscillations, in the theory of automatic control are given.	5					✓				
				Bessel function	The purpose of the discipline: to study the complex of functions acting as canonical solutions of the Bessel differential equation and their properties; the ability to apply the Bessel function in solving problems of wave propagation, problems of statistical potentials, signal processing, problems of thermal conductivity in						✓				

					cylindrical objects, etc.										
		PD	EC	Theory of Probability and mathematical statistics	The purpose of the discipline: to study the patterns of random events and random variables, properties and basic operations on them; elements of statistics. The study of combinatorics, probability, random variables and their characteristics, conditional probability, the law of large numbers, elements of mathematical statistics. Analysis of methods for solving problems on finding probability, methods of collecting, processing and analyzing statistical data.	6						✓		✓	
				Stochastic process	The terminology, basic information and methods of the probabilistic process are studied. A classification of random processes is provided, examples are considered (Random variable, Markov chain, Markov and Non-Markov processes) Applied methods of the theory of random functions are covered. Knowledge of mathematical approaches to the construction and analysis of probabilistic and statistical models; ability to apply basic methods to solving data analysis problems.							✓		✓	
		PD	EC	Differential geometry	The purpose of the discipline: the study of smooth manifolds having additional structures. Geometric images such as curves and surfaces are studied by mathematical analysis methods. Such subsections as differential geometry of curves and surfaces, Riemannian geometry are discussed. The discipline serves as a support for the subsequent study of various mathematical disciplines	5				✓					
				Topology	The purpose of the discipline: familiarity with the basic terms, sections, tasks and methods of topology, its applications. The phenomenon of continuity, the properties of spaces that remain unchanged under continuous deformations are studied. The basics of topology are applicable to the study of other mathematical disciplines. Solid practical skills of solving topology problems are formed.					✓					
7	Classical mathematical	BD	EC	Mathematical Analysis I	The purpose of the discipline: the formation of concepts of the principles of analysis. The study of the limit of a	6					✓				

	analysis				sequence and a function, the geometric and physical meaning of a derivative function, differentiation of a function of one variable. Mastering the methods of differentiation of various functions necessary for further study of mathematical analysis and other mathematical disciplines. Formation of ideas about the numerous applications of differential calculus, widely used in mathematics and natural sciences.										
				Differential calculus of a function of one variable	The purpose of the discipline: to study the basic methods of studying variables, the theory of series, finding the derivative of a function. The ability to find the derivative of a function of one variable, from a complex function, from the product of two functions, from the ratio of two functions.						✓				
		BD	EC	Mathematical Analysis II	Purpose: to consider issues related to the basic concepts and terminology of mathematical analysis. Methods of integration are considered (direct, variable substitution, method of indefinite coefficients, etc.; methods of proving theorems of mathematical analysis theory of differential forms in n-dimensional vector spaces and manifolds. Examples of the application of mathematical knowledge in natural sciences are given.	5					✓				
				Integral calculus of a function of one variable	Purpose: to present the concept of calculus with one variable and its application in solving applied problems. The theory of function, rules of differentiation, definite and indefinite integrals are presented. Integration methods are considered. Examples of differentiation for solving applied problems are given, examples of calculating the integral for calculating the arc length, the volume of rotation and the surface area of rotation.						✓				
		BD	EC	Mathematical analysis III	The purpose of the discipline: to teach to find partial derivatives of a function of many variables, as well as from complex and implicitly given ones. Differentiability of a function of several variables, partial derivatives of various orders and their differential are studied. Finding the derivative of an implicit function.	5					✓				

					The study of the Taylor formula for a function of several variables, their extremes, etc.										
				Differential calculus of functions of many variables	The purpose of the discipline: to present the concept of multidimensional calculus and its application in solving applied problems. The concept of a function of many variables is considered, the basic theorems of calculus, finding the differential of functions, methods of calculus of functions of several variables are presented. Examples of solving problems of a combined and complicated nature (functions given implicitly) are given; the application of calculus in natural sciences and engineering is studied.						✓				
		BD	EC	Mathematical analysis IV	The purpose of the discipline: to study the rules of integral calculus of a function of several variables. The double integral and its calculation, the study of its applications. The triple integral and its calculation in various coordinate systems. Development of critical thinking; mastering the methods of problem research; - instilling the skills of using mathematical knowledge to solve problems of an applied nature.	5					✓				
				Integral calculus of functions of many variables	The purpose of the discipline: to study the methods of integral calculus of functions of many variables; the rules for calculating multiple integrals, curved integrals, improper integrals. The study of double and triple integrals, finding the volume of bodies (bodies of rotation) using multiple integrals. The ability to calculate the volume of a body in different coordinates (polar, cylindrical, spherical). Formation of skills to solve combined and complicated tasks.						✓				
		PD	EC	Fourier Series	The purpose of the discipline: to teach the operations of matching two real functions to each other. The properties of the Fourier transform (uncertainty principle), its application and varieties are studied. Interpretation is given in terms of time and frequency, and important formulas are provided. The transformation represents a continuous function as	5							✓		

					the sum of an infinite number of trigonometric functions with certain amplitudes and phases. The issues of Fourier analysis are considered.										
				Fourier Transform	The purpose of the discipline: to provide the necessary knowledge for the practical use of integral transformations in mathematical modeling of applied problems. Study of terms, definitions of Laplace transformation rules. The integral transformation connecting the function of a complex variable with the function of a real variable is described. Investigation of properties of dynamical systems and solution of differential and integral equations.							✓		
8	Fundamentals of Mathematics Teaching Methods	BD	EC	Introduction to specialty	Purpose: to give an idea of the chosen specialty The article describes the subject and tasks of mathematics, the relationship of the development of mathematics with the development of other sciences, the connection of mathematics with production, provides an analysis and assessment of modern problems and prospects for the development of mathematics, discusses promising areas of research that contribute to the choice of the field of professional activity	6				✓					✓
				Fundamentals of Academic Writing	The purpose of the discipline: mastering these rules for the design and creation of academic content and documents used in professional activities. The ability to compile scientific reports, articles and abstracts, correspondence and contracts, as well as research papers and essays. The features and examples from practice are studied. They gain experience in reviewing printed publications and electronic resources, as well as protecting their own manuscript.					✓					
		BD	EC	Additional chapters of algebra	Purpose: to study individual chapters of algebra, to master the theory of linear systems of arbitrary form. Symmetry groups, bilinear forms and linear groups, representations of groups, rings of polynomials, fundamentals of the theory of polynomials are described. The classification of finite-dimensional	5					✓				

					operators over fields, the application of matrix theory for the classification of second-order curves and surfaces is considered.										
				Additional chapters of mathematical analysis	Purpose: to study methods of mathematical analysis for solving specific problems. The theory of functional sequences and series, methods of studying their convergence are presented. The theory of multiples, curvilinear and surface integrals, as well as proper integrals depending on the parameter, is considered. Examples of their use in solving various practical problems in mathematics and physics are given.						✓				
		PD	EC	Information technology in mathematics	The purpose of the discipline: The concept and types of information technologies are studied. The possibilities of using modern digital technologies applicable in teaching mathematics and geometry (MathCAD, Geogebra, etc.) are revealed, the process of teaching the subject of mathematics using ICT is studied, the necessary skills and abilities are formed	5			✓						
				Mathematics and information technology	The purpose of the discipline: the formation of a system of knowledge, skills of possession of innovative IT technologies in the field of teaching mathematics. Analysis of methodological aspects and principles of application of digital innovations in teaching students mathematical disciplines. The features and directions of the introduction of information technologies in the learning process are studied				✓						
9	Workshop on solving tasks of mathematics and geometry	BD	EC	Workshop on solving mathematical tasks	The purpose of the discipline: in-depth study of elementary mathematics sections. Problems are solved in the following sections: simplification of expressions, various types of equations and inequalities, function research, trigonometry, Newton's binomial, text problems. Analysis of current trends in the development of current elementary mathematics; applications of elementary mathematics.	5			✓						
				Workshop on	The purpose of the discipline: to study the basic				✓						

				solving Olympiad tasks in mathematics	methods and techniques for solving problems in mathematics of the Olympiad level of various types. Solving and researching Olympiad problems in elementary mathematics, algebra and geometry, number theory, graph theory. Tasks for proof, logical and criterion thinking, Dirichlet principle, complete and incomplete mathematical induction. Problems in combinatorics and probability theory; solving difficult equations and inequalities.											
		PD	UC	*Industrial practice I*	The purpose of industrial practice I is to create conditions that allow students to acquire practical skills of independent activity and master the basics of mathematical mastery. The internship takes place in accordance with the academic calendar. The practice takes place in scientific research institutes of the natural-mathematical direction, in computing centers and associations, as well as in organizational and managerial structures. As a result of the internship, students are issued documents on the practice.	4						✓			
		PD	EC	Selected Chapters of Geometry	Purpose: to give an idea of geometric conclusions and rules for the construction of geometric shapes. The axioms of constructive geometry, the basic and theorems of geometry are presented. The analysis of the algorithm for solving reference problems is carried out. logical constructions. the construction of geometric shapes using compasses and rulers is considered; various methods are given for solving construction problems.	5			✓						
				Selected Chapters of Algebra	A discipline that measures advanced topics in algebra, including Galois algebra, chain of Abelian groups, microchips, categories, and other topics. As part of the course, students deepen their knowledge of algebra by studying advanced concepts such as finite fields, domain extensions, Lie groups, Abelian groups, and others. They also study algorithms and methods for solving problems.				✓						
		PD	EC	Workshop on	The purpose of the discipline: to teach how to use the	6			✓						

				solving geometric tasks on a plane	basic conclusions, theorems, properties of geometric shapes on the plane when solving planimetry problems of different levels of complexity. The axioms of planimetry, basic figures such as a triangle, rhombus, parallelogram, circle are studied. The development of geometric culture, the construction of the problem and the ability to prove and justify the solution.										
				Scientific work of Student	The purpose of the discipline is to teach students the methods of scientific research and the development of skills designed to conduct research in the chosen field. The course also helps to improve their skills of analysis, critical thinking, communication and organization, which is useful for their study in scientific and research studies.						✓				
		PD	EC	Workshop on solving geometric tasks in space	The purpose of the discipline: to study some special methods of solving geometric problems in space. The development of the skills of constructing figures in space, such as straight lines and planes in space, the construction of three perpendiculars. Rules for drawing polyhedron models. Solving various problems on the properties of stereometry figures using coordinate and vector methods. The ability to apply non-standard ways of solving problems of increased complexity.	6			✓						
				Linear transformations	Purpose: formation of the ability to engage in geometric transformations and apply them in solving geometry problems. The discipline outlines the elements of the theory of geometric transformations. Plane movements, similarity transformations, affine, circular and projective transformations are considered. The construction of models of Lobachevsky geometry using projective and circular transformations is described				✓						
10	Complex and functional analysis	BD	EC	Additional chapters of differential equations	Objective: to study numerical methods for solving ordinary differential equations (ODES) and systems. The most well-known Euler and Runge-Kutta methods (of different orders) are analyzed in the content. As a result of mastering the discipline, the student	5					✓				

					should be able to formulate and prove theorems; solve differential equations by Euler, Runge-Kutta methods, find a solution to a boundary value problem by the finite difference method											
				Variational analysis	The purpose of the discipline: the study of terms and definitions of variational analysis, studying variations of functionals (calculus of variations, derivative in direction, variational derivative, conditional extremes). The Euler-Lagrange equation is studied. The necessary conditions of the extremum of the Euler-Lagrange differential equation, the brachystochron problem, Legendre conditions, Jacobi conditions, Weierstrass conditions, Hamilton's principle are explained.						✓					
		PD	UC	*Industrial practice II*	The industrial practice is aimed at expanding and consolidating the theoretical and practical knowledge acquired by students in the learning process, acquiring and improving practical skills according to the chosen educational program, preparing for future professional activity. This is an active individual form of training, during which students develop the ability to work independently, based on individual plans and tasks. The practice is organized in isolation from the training sessions for several weeks.	6						✓			
		PD	EC	Theory of functions of a complex variable	The purpose of the discipline: to study the set of complex numbers, their properties and rules of action on them. The ability to represent complex numbers in trigonometric and exponential forms. Carrying out differentiation and integration of functions of a complex variable; possession of Cauchy's theorem; Cauchy integral and Cauchy integral formula	6					✓					
				Tensor calculus	The purpose of the discipline: to study the concept and properties of tensors and tensor fields, the rules of action on them. Generalization of the concept of tensor by the concepts of vector and matrix. The ability to prove formulas defining the scalar product, to deduce the Cauchy-Bunyakovsky inequality. Acquisition of practical skills of rigorous proof of the statement, formulation of the							✓			

					result.										
		PD	EC	Functional analysis	The purpose of the discipline: to give an idea of the sections of functional analysis, such as the theory of measure and integral, the theory of operators and the theory of functions, the application of differential calculus on infinite-dimensional spaces. The basic concepts, theorems and conclusions of this discipline are studied, the key results and important research directions of functional analysis are analyzed	5					✓				
				Valid analysis	The purpose of the discipline: to study infinite-dimensional topological vector spaces of a function and their mappings. The study of the basic methods and principles of analysis, and the ability to solve problems on the course. Understanding the relationship between mathematical analysis and functional analysis. The development of critical thinking, the ability to perform operations on sets, draw parallels between sets and determine the power of the set.						✓				
11	Computational mathematics and mathematical physics	BD	UC	Physics	The purpose of the discipline is to study the fundamental laws and principles of nature, as well as their mathematical description. Students study physical phenomena and processes using mathematical apparatus to formulate laws and equations. They also study applications of physics in the real world and in other fields of science and technology. As part of the course, students get acquainted with the theoretical foundations of mechanics, electromagnetism, optics, thermodynamics and quantum physics. Ultimately, the purpose of the discipline is to form students' foundations of physical thinking and the ability to use physical concepts to solve problems in various fields.	4							✓		
		BD	EC	Equations of mathematical physics	The purpose of the discipline: to teach how to find a solution to a partial differential equation. The present classification is considered (dimension, linearity, uniformity, order); existence and uniqueness of the solution. Examples of UMF problems (heat conduction equation, string vibrations, two-dimensional Laplace	5							✓		

					equation) are analyzed. Analytical and numerical solutions, weak solutions are studied										
				Methods of mathematical physics	The purpose of the discipline: to study the basic equations of mathematical physics (equations of hyperbolic, parabolic and elliptic types). The ability to apply mathematical tools to physical problems and processes; knowledge of mathematical methods applicable to such applications and to the description of physical theories. The qualitative properties of the solutions of the ODE, the first-order PDE and their classical and generalized solutions are analyzed								✓		
		PD	EC	Theoretical foundations of computational mathematics	The purpose of the discipline: the formation of knowledge about the methods of approximate calculation. Various numerical methods for solving nonlinear equations and systems of algebraic equations, types of interpolation and approximation, numerical integration and differentiation, solving optimization problems, solving differential equations and equations of mathematical physics by the approximate method are studied	5						✓		✓	
				Numerical methods for solving differential equations	The purpose of the discipline: to teach how to find an approximate numerical value of a given task. The ability to numerically solve the Cauchy problem (ODE) of different order by the Euler method, modified Euler method, Runge-Kutta, etc. Building a solution table. Distinguishes the difference between analytical and numerical solution							✓			
		PD	EC	Vector analysis	The purpose of the discipline: to be able to apply methods of mathematical analysis on vectors in two-dimensional and three-dimensional Euclidean space. Knowledge of vector analysis application objects (vector and scalar fields), ability to find vector operators (rotor, divergence, gradient, Laplacian). Applies the basic theorems of multidimensional analysis in vector notation (gradient theorem, Stokes, Green, Ostrogadsky-Gauss).	5						✓			

				Field theory	The purpose of the discipline: to study the properties of fields that generalize basic mathematical operations (addition, subtraction, multiplication, division) and their applications. Introduction to the primitive element theorems, Galois and Wedderburn. Ability to solve problems in field theory (vector, scalar). Analysis of the necessary concepts, such as simple and perfect field, the degree of transcendence of field expansion.							✓			
12	Module acquisition of new professional competencies	BD	EC	Subjects in the Additional Educational Program	The purpose of the Minor program is to provide students with additional in-depth education in the field of fundamental mathematics. The objectives of the program are to prepare bachelors of natural sciences who are able to solve incorrect and inverse problems of mathematical physics and problems of calculus of variations.	12							✓		
13	Final certification	PD	UC	Pre-degree or Industrial Practice	The purpose of the practice: to gain experience in independent research work; to collect materials for the performance of qualification work; to consolidate theoretical knowledge, acquired practical experience, as well as individual work skills. During the practice, the topic of the thesis is clarified, an individual work plan is drawn up, theoretical and practical material is collected	10								✓	
				Writing and defending a thesis, a graduate work, or preparing and passing a comprehensive exam	To achieve the goal of completing the thesis, the graduate solves the following tasks: studies normative legal acts, scientific and methodological literature of domestic and foreign authors for the theoretical substantiation of the essence of the problem under study; collects, summarizes and analyzes factual data on the topic of the work in accordance with the subject of the work. In conclusion, the design and defense of the thesis.	8								✓	

5. SUMMARY TABLE REFLECTING THE VOLUME OF DISBURSED LOANS BY EDUCATIONAL PROGRAM MODULES

Course of training	Semester	Amount of the mastered modules	Amount of the studied disciplines			Amount of KZ credits					Total in hours	Total loans KZ	Amount	
			Compulsory component	University component	Optional component	Theoretical training	Physical education	Training practice	Production practice	Pre-diploma practice			Exam	Diff. credit
1	1	4	5		2	28	2				900	30	6	1
	2	4	4	1	2	27	2	1			900	30	5	2
2	3	6	2	2	4	28	2				900	30	5	3
	4	7	1	3	3	24	2		4		900	30	5	2
3	5	5	1		5	30					900	30	6	0
	6	4		1	3	24			6		900	30	2	1
4	7	3			4	21					630	21	4	0
	8	3			4	21					630	21	4	0
	9	1		1					10	8	540	18		
Total		13	13	8	27	203	8	1	20	8	7200	240	37	9

6. STRATEGIES, TEACHING METHODS AND ARTIFICIAL INTELLIGENCE, MONITORING AND ASSESSMENT

Learning strategies	Student–centered learning: The student is the center of teaching/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 with: • the use of innovative technologies: • problem-based learning; • case study; • work in a group and creative groups; • discussions and dialogues, intellectual games, olympiads, quizzes; • reflection methods, projects, benchmarking; • Bloom's taxonomies; • presentations; • * rational and creative use of information sources: • * multimedia training programs; • * electronic textbooks; • * digital resources. • * machine learning methods Organization of independent work of students, individual consultations. Provision of inclusive education to persons with special needs corresponding to the Roadmap for the development of inclusive Education in Higher and (or) postgraduate education organizations for 2023-2025 (Approved by the Minister of the Ministry of Education and Science of the Republic of Kazakhstan on 03/27/2023)
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 academic discipline; • control works; • protection of independent work; • term papers; • colloquiums; • essays, 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 holding: • 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 EDUCATIONAL PROGRAM

Information Resource Center	The structure of the EIC has 6 subscriptions, 16 reading rooms, 2 electronic resource centers (ERC). The basis of the network infrastructure of the EIC is 180 computers with Internet access, 110 automated workstations, 6 interactive whiteboards, 2 video dvoik, 1 video conferencing system, 3 scanners of A-4 format, 3. The software of the EIC – АИБС «ИРБИС-64» for MSWindows (a basic set of 6 modules), an autonomous server for uninterrupted operation in the ИРБИС system. The library fund is reflected in the electronic catalog available to users on the website http://lib.ukgu.kz is on-line 24 hours 7 days a week. Thematic databases of their own generation have been created: "Almamater", "Труды ученых ЮКГУ", "Электронный архив". Online access from any device 24/7 via an external link http://articles.ukgu.kz/ru/pps. Working with catalogs in electronic form. The EC consists of 9 databases: "Books", "Articles", "Periodicals", "Труды ППС ЮКГУ", "Rare books", "Electronic Fund", "ЮКГУ в печати", "Readers" of "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 divisions of the EIC; through the university's information network for faculties and departments; remotely on the library's website http://lib.ukgu.kz/ Access to international and republican resources is open: "SpringerLink", "Полпред", "Web of Science", "EBSCO", "Эпиграф", to electronic versions of scientific journals in open access, "Зан", "РМЭБ", "Әдебиет", Digital library "Aknurpress", "Smart-kitap", "Kitap.kz", etc. For people with *special needs and disabilities*, the library's website has been adapted to the work of visually impaired users in the ERC.
Material and technical base	Audiences 320, 321, 325, 302, 309, 310., printer, scanner. There are 33 computers in two computer classes (Core 2 Quad, Intel Core 2 Duo), 3-in-1 Multifunctional Device (copier, printer, scanner). In the computer room (302, 309) computers have access to the Internet.

APPROVAL SHEET

according to the Educational Program 6B05410-Mathematics

Director of the DAA	A. Naukenova
Director of the DASc	U. Nazarbek
Director of the DE&C	T. Bazhirov

Рецензия

на образовательную программу 6В05410-Математика разработанной в НАО Южно-Казахстанский Университет имени М. Ауэзова, город Шымкент

1.Краткая характеристика предприятия и профиль ее деятельности.

Университет дружбы народов имени академика А.Куатбекова – готовит высококвалифицированных и конкурентоспособных профессионалов, знающих и любящих свое дело, умеющих в любых условиях принимать компетентные решения. Стратегии развития университета года сформулированы на основе анализа имеющихся в университете ресурсов и возможностей, включающих 3 факультета, отдел послевузовского образования, базу для подготовки по направлениям подготовки бакалавриата, магистратуры и докторантуры PhD, инновационный научно-исследовательский институт «Болашак» и 3 научных центра («Теоретическая и прикладная математика», «Социальные исследования», научный центр «Абайтану» и учебный центр «Лингвоцентр»).

2.Актуальность и востребованность образовательной программы.

Обоснованность подготовки бакалавров естествознания по образовательной программе (ОП) 6В05410-Математика связана с потребностями региона и Республики в высококвалифицированных научных сотрудников в научно-исследовательских институтах и лабораториях; в вычислительных центрах; в центрах использующих современные компьютерные технологии; специалиста, в управленческих организациях.

Согласно образовательной программе бакалавры могут занимать должности научного сотрудника в научно исследовательских институтах, научных центрах; разрабатывать математические модели процессов и явлений в области естественных наук, техники; создавать программные комплексы.

3.Результаты обучения и компетенции, их связь с запросами рынка труда.

В рецензируемой ОП приведен полный перечень необходимых компетенций, которыми должен обладать бакалавр естественных наук в результате освоения образовательной программы 6В05410-Математика, а также перечень профессиональных задач, которых должен быть готов решать выпускник в соответствии с видами профессиональной деятельности.

После успешного завершения настоящей образовательной программы выпускнику присваивается степень: Бакалавр естественных наук по образовательной программе 6В05410-Математика.

Перечень квалификаций и должностей:

-специалист, ведущий специалист, ведущий математик;

-научный сотрудник, математик-исследователь в научно-исследовательских организациях и вычислительных центрах;

-математик-программист, математик-экономист, математик-актуарий в организационно-управленческих структурах;

-математик-аналитик

-статистика

Объекты профессиональной деятельности:
-математика;
-актуарная математика;
-математика и прикладная математика;
-математика и системное программирование;
-математические и компьютерное моделирование;
-финансовая, хозяйственная, управленческая

4.Содержание образовательной программы.

Структура образовательной программы отражена в учебном плане и включает 13 учебных модулей. Цели ОП соответствуют 6 уровню Национальной рамки квалификаций Республики Казахстан.

5.Заключение по образовательной программе.

В заключении, в качестве сильных сторон образовательной программы следует отметить:

1) к реализации данной программы привлекли достаточно опытный профессорско-преподавательский состав, а также ведущих практических деятелей;

2) приемуществом программы является учет требований работодателей при формировании элективных дисциплин;

3) насыщенный учебный план, сочетание естественно-математических дисциплин и контроль ряда математических дисциплин на иностранных языках – являются отличительными чертами рецензируемой образовательной программы.

В целом, рецензируемая образовательная программа, разработанная и реализуемая ЮКУ им. М.Ауезова, отвечает основным требованиям и способствует формированию ключевых компетенций по направлению подготовки 6В05410-Математика.

к.ф-м.н., доцент
кафедры «Математика»
ЮКПУ им. О.Жанибекова

Абдрахманов К.

19.02.24

Экспертное заключение

на образовательную программу 6B05410-Математика

1.Актуальность образовательной программы (ОП).

Образовательная программа для бакалавров 6B05410-Математика остается актуальной и востребованной в силу своей ключевой роли в различных областях, включая науку, технологии, экономику и многие другие, где требуются специалисты с глубокими математическими знаниями и навыками.

Практикоориентированность и акцент на развитие критического мышления и предприимчивости, формирование навыков широкого спектра, которые позволят быть функционально грамотными и конкурентоспособными в любой жизненной ситуации и быть востребованными на рынке труда.

2.Соответствие ОП сформулированным целям, согласующимся с миссией вуза, запросами работодателей и обучающихся.

В данной образовательной программе ясно определены и измеримы цели, которые тесно связаны с миссией университета. Подготовка бакалавров-математиков, способных работать в научных и образовательных учреждениях согласуется с миссией подготовки лидера, транслирующего исследовательское мышление и культуру.

3.Соответствие Национальной рамке квалификации Республики Казахстан.

Цель образовательной программы 6B05410-Математика соответствует 6 уровню Национальной рамки квалификаций Республики Казахстан.

4.Отражение в ОП результатов обучения и компетенций, основанных на Дублинских дескрипторах, заложенных в профессиональных стандартах/ отраслевых рамках.

Образовательная программа направлена на формирование ключевых компетенций бакалавра, которые определяются Дублинскими дескрипторами, согласованными с Европейской рамкой квалификаций.

В ОП 6B05410-Математика определены все соответствующие результаты обучения и компетенции.

Цели программы гармонизированы с Дублинскими дескрипторами, 1 циклом Квалификационной Рамки Европейского Пространства Высшего Образования (A Frameworkfor Qualifications of the European Higher Edication Area), а также 6 уровнем Европейской квалификационной рамки для образования в течение всей жизни (The European Qualifications Framework for Lifelong Learning).

5. Соответствие нормативно-правовой базе документов.

Образовательная программа 6B05410-Математика, разработанная и реализуемая НАО Южно-Казахстанский университет им. М.Ауезова, отвечает основным требованиям и способствует формированию необходимых компетенций по направлению подготовки 6B05410-Математика:

1. Закон Республики Казахстан «Об образовании» № 319-III от 27 июля 2007 года;
2. Типовые правила деятельности организаций высшего и (или) послевузовского образования, утвержденные приказом МОН РК от 30 октября 2018 г. №595.
3. Государственные общеобязательные стандарты высшего и послевузовского образования, утвержденные приказом МНиВО РК от 20 июля 2022 г. № 2;
4. Правила организации учебного процесса по кредитной технологии обучения, утвержденные приказом МОН РК от 20 апреля 2011 г. № 152;
5. Квалификационный справочник должностей руководителей, специалистов и других служащих, утвержденный приказом Министра труда и социальной защиты населения Республики Казахстан от 30 декабря 2020 года № 553.
6. Руководство по использованию ECTS.
7. Руководство по разработке образовательных программ высшего и послевузовского образования, приложение 1 к приказу директора ЦБПиАМ № 45 о/д от 30 июня 2021 г.

6.Структура и содержание ОП, применение модульного принципа их построения.

Структура образовательной программы отражена в учебном плане и включает 13 учебных модулей.

Профессиональные дисциплины, междисциплинарные модули, 3 вида практики и научно-исследовательская работа обеспечивают широту и глубину подготовки к профессиональной деятельности в соответствии с целями образовательной программы.

Обучение по образовательной программе завершается выполнением дипломной работы, содержащей элементы научно-исследовательской деятельности, или сдачей итогового государственного экзамена. Теоретическое обучение, практики и научные исследования в целом учитывают принципы академической честности.

Поддерживается академическая мобильность, предусматривающая изучение обучающимися ряда дисциплин (модулей) учебного плана, выполнение научных исследований, прохождение практик в других образовательных и научных организациях.

7.Наличие в ОП компонентов для подготовки к профессиональной деятельности, развивающих ключевые компетенции, интеллектуальные и академические навыки, отражающих изменяющиеся требования общества, в том числе по реализации президентской программы по овладению тремя языками: казахским, русским и английским.

Подготовка к профессиональной деятельности осуществляется в течение всего периода обучения. Образовательная программа обеспечивает достижение всеми выпускниками результатов обучения, согласованных с профессиональными стандартами и необходимых для профессиональной деятельности.

Согласно образовательной программе, в результате обучения выпускники демонстрируют базовые и углубленные математические, естественнонаучные, гуманитарные, социально-экономические знания и умение применять их в междисциплинарном контексте для решения проблем, соответствующих направлению подготовки 6B05410-Математика; демонстрируют навыки эффективной коммуникации, в том числе на иностранном языке, в профессиональной среде и в обществе; осознают необходимость и способность к самостоятельному обучению и непрерывному профессиональному совершенствованию.

8.Логическая последовательность дисциплин и отражение основных требований в учебных планах и программ обучения.

Учебный план включает гуманитарные и социально-экономические дисциплины, дающих основу для формирования необходимых компетенций.

Учебный план включает базовые естественнонаучные и математические дисциплины, обеспечивающие фундаментальную подготовку и дающие основу для приобретения необходимых профессиональных компетенций выпускников бакалавриата.

При обновлении образовательной программы 6B05410-Математика были определены новые наименования и содержание модулей. Ожидается, что предложенное сочетание модулей обеспечит логическую последовательность дисциплин, достаточную гибкость при выборе конкретного дидактического контента предметных областей образовательных дисциплин для обучения определенного контингента обучаемых и самостоятельного усвоения ими новых объемов знаний путем достижения дидактических, специальных и профессиональных целей в ходе образовательного процесса.

9.Отражение в ОП системы учета учебной нагрузки обучающихся и преподавателей в кредитах, ее соответствие параметрам кредитной системы обучения.

Направленность образовательной программы 6B05410-Математика на развитие у обучающихся навыков самостоятельной работы, позволяет повысить уровень творческой активности и самостимуляции в освоении знаний, что подтверждает соответствие данной ОП принципам и параметрам кредитной системы обучения.

10.Наличие в ОП производственной практики для закрепления теоретического материала, выраженного в учебной нагрузке в кредитах.

Обязательными компонентами программы являются практики, в результате происходит закрепление и углубление теоретических знаний, полученных в процессе обучения в университете, приобретаются практические навыки.

В образовательной программе 6B05410-Математика предусмотрены следующие виды практик: учебная практика, производственная практика I, производственная практика II, НИРС.

11.Сведения о ППС, участвующих в реализации ОП.

Подбор преподавателей-практиков осуществляется на основании квалификационных требований, должностных инструкций и утвержденного штатного расписания, с учетом большого опыта работы в соответствующей области деятельности.

ОП 6B05410-Математика реализуют профессорско-преподавательский состав, владеющие фундаментальными знаниями и умениями специфики преподаваемых предметов; обеспечена высококвалифицированными специалистами-учеными: Сарсенби А.М. - д.ф.-м.н., профессор; Аширбаев Н.К. - д.ф.-м.н., профессор; Калимбетов Б.Т. - д.ф.-м.н., профессор, Сапахов Д. – PhD, Мусирепова Э. – PhD, семи обладателями звания «Лучший преподаватель вуза РК».

12.Квалификация, получаемая в результате освоения ОП.

После успешного завершения настоящего ОП выпускнику присваивается степень: Бакалавр естественных наук по образовательной программе 6B05410-Математика.

13.Рекомендация.

Заключение экспертной комиссии: характер, структура и содержание образовательной программы 6B05410-Математика, соответствует требованиям и позволяет, при его реализации, успешно обеспечить формирование заявленных компетенций.

Председатель экспертной комиссии
Заведующий кафедрой «Физика»,
Южно-Казахстанского университета
им. М. Ауэзова, к.п.н. — Турсынбаев А.З.
19.02.24 ж

Члены экспертной комиссии:
Декан Высшей школы
«Естественных наук и педагогики», Южно-Казахстанского университета им. М. Ауэзова, к.п.н., доцент — Мадияров Н.К.

Заведующий кафедрой «Информатика»,
Южно-Казахстанского университета
им. М. Ауэзова, к.п.н. — Жайдакбаева Л.К.

Ф. 8.18-01

Утверждаю
Председатель УМС
_____ Сарыкулов К.Р.
от « 28 » 02. 2024 г. (протокол № 4)

ПРОТОКОЛ ОБНОВЛЕНИЯ ОП на 2024 / 2025 учебный год

По направлению 6В054-Математика и статистика
6В05410-Математика

№ п/п	Вид обновлений	Содержание изменений, вносимых в ОП	Причины (аргументы внесения указанных изменений)
1	2	3	4
1.	Изменение состава дисциплин	**Исключение из ОП дисциплины** «Актуальные проблемы и модернизация общественного сознания»	Решение УМС № 4 от 28.02.2024г.
		Включение в ОП новой дисциплины «Основы финансовой грамотности», БД, КВ, 3 кредита	Протокол Совместной коллегии МП и МНВО от 14.02.2024г.
2.	Иные виды обновления	1. Включение задачи «Создание условий для формирования востребованных знаний и навыков, осознанного отношения к улучшению благосостояния населения и защите планеты в контексте ЦУР»	Интеграция концепции и индикаторов целей устойчивого развития (ЦУР) Казахстана

Рассмотрен на заседании комитета по академическому качеству факультета/ВШ
«ЕНП».
Протокол № 4, от 23.02 2024 г.

Председатель АК _____ Турсынбаев А.З.
Разработчик ОП _____ Байдибекова А.О.
Секретарь АК _____ Нышанбаева Ж.У.

Согласовано:
Начальник ЦМОП _____ Адырбекова Г.М.