Ф.7.02-10

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

«APPROVED»
Acting Chairman of the Board-Rector
K. Zhumanbetov
« __ » ________ 2024 y.

EDUCATIONAL PROGRAM

8D05410-Mathematics

Registration Number	8D05400001
Code and Classification of Education	8D05 Natural sciences, mathematics and statistics
Code and Classification of Areas of Training	8D054 Mathematics and Statistics
Group of educational programs (EP)	D092 Mathematics and Statistics
Type of EP	Acting EP
ISCE level	8
NQF level	8
IQF level	8
Language learning	Kazakh, Russian
The complexity of EP	180 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	
A. Beisebaeva	Doctor's student of DEP-22-11nk 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 EP	The competition is aimed at promoting scientific and pedagogical specialists with the professional and scientific competence, providing the opportunity to integrate research into the field of mathematics, science and education.
Tasks of the EP	-providing conditions for the acquisition of high-quality fundamental, professional education, deep specialized knowledge in the chosen field of mathematics, which successfully develop science, mastering logical and critical thinking, systematic theoretical knowledge and practical skills in fundamental and relevant areas of mathematics; -instilling the skills of independent scientific research, expertise and analysis of scientific problems and continuous professional development throughout their professional activities, which will allow PhD doctors to successfully adapt to changing conditions; -development of skills in organizing, planning and conducting research, the ability to apply them in research, pedagogical, organizational activities; -involvement in research and innovative activities of scientific and pedagogical direction involving fundamental, educational, methodological and research training; -formation of graduates' competitiveness in the relevant areas of mathematics, pedagogy and psychology for the system of higher and postgraduate education and the scientific sphere -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	• 8 th level of the National Qualifications Framework of the Republic of Kazakhstan; • Dublin descriptors of the 8 th level of qualification; • 3 cycle of a Framework for Qualification of the European Higher Education Area); • 8 th Level of European Qualification Framework for Life long Learning).
Connection of EP with the professional sphere	Professional standard: Teacher (faculty) of higher and (or) postgraduate education organizations. Order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated November 20, 2023 No. 591.
Name of the degree awarded	Persons, who have mastered the EP of doctoral studies and defended a doctoral dissertation, with a positive decision of the dissertation councils of the OHPE with a special status or the Committee for Quality Assurance in Education and Science of the Ministry of Science and Higher Education of the Republic of Kazakhstan, are awarded the PhD degree on the EP 8D05410-Mathematics
List of qualifications and positions	Doctor of PhD on EP 8D05410-Mathematics can hold positions: -senior researcher, manager in research institutions, design and design organizations; -a teacher of mathematics in higher educational institutions, a methodologist in education departments, a researcher; -head of the scientific group in research institutes and laboratories and computer centers, in centers using modern computer technologies; -a leading specialist in management organizations, a specialist in state institutions conducting statistical activities
Field of professional activity	-science and education, -actuarial mathematics; -mathematics and applied mathematics; -mathematics and system programming;

	-mathematical and computer modeling; -financial, economic, managerial, educational activities
Objects of professional activity	-research institutes and laboratories; -higher educational institutions of state and non-state profile; -public administration bodies in the field of education and natural sciences; -banking and financial structures; -organizations of the control and analytical service, standardization and certification centers; organizations engaged in statistical activities
Subjects of professional activity	-theoretical development of mathematical models in mathematics, natural sciences, engineering, economics; -scientific experiments of the computational process; -computer, network and computing technology; -modern methods of analysis, algebra, differential equations, control, numerical and approximate solutions of mathematical problems; -mathematical economics; -development of effective methods for solving problems of natural science
Types of professional activity	Doctor of PhD in EP 8D05410-Mathematics can perform the following types of professional activities: -research, as researchers in research institutes, laboratories and computing centers and in centers using modern computer technologies; -design, experimental; -organizational, technological, production and management, as heads of departments and laboratories of the above profiles; -educational (pedagogical) as teachers of mathematics in higher educational institutions of state and non-state profile; -prognostic, mathematical-economic, organization and conduct of statistical observations
Learning outcomes	LO1-Develop a problem research apparatus and apply the obtained skills in professional activities in the field of science and mathematics methodology, use the results obtained for self-improvement of knowledge, in education management, successfully carry out research and teaching and management activities. LO2-To improve and develop the philosophical and methodological foundations of scientific and pedagogical research. LO3-Summarize the results of experimental research and analytical work in the form of a thesis, article, report, analytical note, etc. LO4-Examine problems in various areas of mathematics, determine the opposite of the situation, formulate a hypothesis, develop, verify the truth of the proposed hypothesis, prove scientific conclusions and summarize. LO5-Systematize research results in the field of scientific mathematics LO6-Plan the use of basic methods and technologies for the modernization of modern university mathematical education. LO7-To systematize the work of the election instrumentalization of the management of the educational process, providing designed educational activities. LO8-To develop skills of conceptual, analytical and logical thinking, a creative approach in professional activities, capable of working in a national and international team that learns a strategy for learning 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. GC6.2.To be aware and take social responsibility for the quality of management of the pedagogical process, to take responsibility for the effective solution of

	non-standard problem situations; to manage scientific projects to achieve professional goals, manage staff, demonstrate entrepreneurial skills; the ability to find compromises, correlate their opinion with the opinion of the team; to possess business ethics standards; strive for professional and personal growth; work in a team, correctly defend your point of view, offer new solutions; demonstrate tolerance towards other individuals.
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. To make mathematical models of economic, physical, chemical and other processes, to develop methods for their solution, to solve the problem, to conduct a patent search and to file an application for an invention
	PC2. The ability to use basic knowledge from mathematics, physics and other natural sciences in cognitive and professional activities.
	PC3. To develop a methodology for choosing the necessary method of analysis and methods of its implementation; to present a point of view on the results of the study when discussing with specialists and a wider audience on research topics and on the topic of the dissertation.
	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, to show professionalism, innovation, meritocracy, integrity

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
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
1	Actual problems of mathematics	BD	HsC	Academic writing	Purpose: to review the rules of scientific citation; requirements for bibliographic description; features of genres of academic writing (AW): essay, abstract, abstract, review; stages of AW: planning, writing, editing, reviewing; structure of a scientific manuscript: title, abstract, keywords, introduction, results and discussion, conclusion, references. Forms the skills of bibliographic description; creation of summaries, annotations and abstracts of scientific articles, etc.; public discussion of scientific papers	3		✓			✓		✓	
		BD	HsC	Scientific-Research methods	The purpose is to reveal the basics of the methodology of scientific research; the logic of the process and methods of scientific research; the empirical, theoretical level of scientific research. Content: methodology of work on the research manuscript; composition and content of the dissertation work, requirements for their design. Information about the organization of research work, the stages of its implementation and the presentation of results, recommendations for scientific work.	4	✓	✓				✓	✓	
				Pedagogical practice	The purpose of the discipline: consideration of the methodological foundations of modern education,	10		✓				✓	✓	✓

					the dialectical relationship of pedagogical theory and school practice. Content: the ability to be able to present their own new scientific results in the form of strictly substantiated statements, to formalize the results of work in the form of a report, research results in the form of articles, reports, to analyze the essence of the main modern methods and technologies of teaching at school.									
2	Actual problems of theory of integral equations	PD	HsC	Theory Asymptotical Integration	The purpose of the discipline: to study obtaining asymptotic estimates for complex functions and integrals, which is important for solving many applied problems. The main topics considered in the theory of asymptotic unification include: asymptotic integrals of properties - the property of integrals using parameters, asymptotic estimates, methods of integrals using asymptotic expansions	6	✓					✓		✓
		PD	HsC	Mathematical Foundations of Boundary Layer	The purpose of the discipline: to study the behavior of the flow of a liquid or gas near the wall at small distances from it. The mathematical methods studied are the theory of asymptotic expansions, functional analysis, the theory of differential equations and numerical methods. The main mathematical concepts used in boundary layer theory include the Navier-Stokes equations, dimension, and the theory of asymptotic expansions		✓					✓		✓
		BD	EC	Integral Transforms and Their Applications	The purpose of the discipline is to study the theoretical foundations and practical aspects of integral transformations, as well as their wide range of applications in science, technology and other fields. Considers the relationship between linear differential and integral Volterra equations.	6			✓	✓	✓			✓

					Compilation of integral equations according to given differential equations. Solving integral equations by reducing them to ordinary differential equations. Application of the Laplace transform to the solution of linear differential equations and systems of equations with constant coefficients, linear integral equations and systems of Volterra equations of the 1st, 2nd convolution type.									
		BD	EC	Theory and Applications of Operator Transformations	The purpose of the discipline is to study the theoretical foundations and practical aspects of operator transformations, as well as their applications in various fields of science, technology and other disciplines. The content of the discipline includes the study of the basic concepts and properties of operator transformations, such as the Laplace operator, Fourier operator, Haar operator, their relationship with other mathematical objects and methods of analysis. Methods for solving operator equations, spectral properties of operators, as well as applications of operator transformations in various fields such as signal and image theory, control, optimization, quantum mechanics, and other scientific and engineering applications are also studied.		✓			✓				✓
		PD	EC	Difference Methods for Solving Grid Equation	The purpose of the discipline is to familiarize with the basic principles and techniques of numerical solution of grid equations, which are one of the important tools in numerical analysis and mathematical modeling. The content of the discipline includes the study of various difference methods, such as explicit, implicit and Crank-Nicholson methods, finite difference methods, finite volume methods and finite element methods. The difference methods of	6			✓	✓			✓	

					solving grid equations, methods of numerical solution of grid equations, theoretical foundations of the method of solving systems of linear and nonlinear equations, construction of interpolation algorithms are considered. Ability to analyze the task and choose ways to solve it; optimize the computational algorithms used. Possession of practical computational skills for solving applied problems using the means of a mathematical package.									
		PD	EC	Difference Methods for Solving Integral Equation	The purpose of the discipline is to familiarize with the basics of numerical solution of integral equations and acquire practical skills in applying various difference methods to solve such equations. The content of the discipline includes the study of basic concepts and definitions, the classification of integral equations, the analysis of various methods, such as methods of direct and inverse transformations, grid methods, Monte Carlo methods and others, as well as the study of their accuracy, stability and convergence. Doctoral students will also gain practical experience in numerical solution of integral equations using software packages and conduct a comparative analysis of the results.		✓		✓	✓				
				Research practice	The goal is to conduct original scientific research, create new knowledge and expand scientific understanding in the field of mathematical knowledge. Development of goals and objectives of research practice, conducting bibliographic work on the topic of the dissertation work, processing and analyzing the data obtained. The ability to compile the results of their own research with existing data in science, providing a critical approach to the	10			✓	✓	✓			

					results of their own research, readiness for professional self-improvement and the development of creative potential and professional skills.									
3	Module of research work and Final Certification			Research work of a doctoral student, including passing an internship and completing a doctoral dissertation	The goal is to gain new scientific knowledge, develop scientific thinking, skills of scientific research, analysis, evaluation and interpretation of scientific data. In the process of research work, a doctoral student can also undergo internships, practical classes and other activities aimed at expanding his professional experience and competencies. The ultimate goal of a doctoral student's research work is the successful completion of a doctoral dissertation, its presentation and defense before the scientific community, as well as the possible introduction of scientific results into practice and the field of professional activity.	123		✓	✓	✓	✓			
				Writing and defending a doctoral thesis	The goal is to prepare doctoral students for independent research, writing and defending a doctoral dissertation. The content of the discipline includes familiarization with the scientific method, conducting a literary review, formulation of scientific tasks and hypotheses, development and implementation of a research plan, analysis of results, writing a scientific dissertation in compliance with the requirements of scientific style and design. In the course of training, attention is also paid to the skills of presenting scientific results and preparing for the defense of a dissertation before the scientific council. Doctoral students also study the ethical aspects of scientific research and scientific publication. Special attention is paid to the development of scientific	12			✓	✓	✓			

					thinking, critical analysis and independence in conducting research, writing and defending a doctoral dissertation.									

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	
			BD	EC	Theoretical training	Pedagogical practice	Research practice	RWD	Writing and defending a doctoral dissertation			Exam	Diff. credit
1	1	3	3	2	25			5		900	30	5	1
	2	2				10		20		900	30		2
2	3	2					10	20		900	30		2
	4	1						30		900	30		1
3	5	1						30		900	30		1
	6	1						18	12	900	30		1
Total			3	2	25	10	10	123	12	5400	180	5	8

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

Learning strategies	**Student–centered learning:** The doctoral 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, practical and laboratory work, various types of practices, using: • 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 doctoral 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 8D05410-Mathematics

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

Рецензия

на образовательную программу 8D05410-Математика
(Южно-Казахстанский университет имени М.Ауезова)

1.Краткая характеристика предприятия и профиль ее деятельности.

Главная цель Университета дружбы народов имени академика А.Куатбекова – подготовка 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 «Болашақ» 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 докторов PhD по образовательной программе (ОП) 8D05410-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 выпускники могут занимать должности руководителя научной группы в научно-исследовательских институтах и лабораториях и вычислительных центрах; в центрах использующих современные компьютерные технологии; а также вести педагогическую деятельность в университете.

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

В рецензируемой ОП приведен полный перечень необходимых компетенций, которыми должен обладать доктор PhD в результате освоения образовательной программы 8D05410-Математика, а также перечень профессиональных задач, которых должен быть готов решать выпускник в соответствии с видами профессиональной деятельности:

-Обобщать результаты экспериментально-исследовательской и аналитической работы в виде диссертации, статьи, отчета, аналитической записки и др.

-Исследовать проблемы в различных сферах математики, определить противоположности, формулировать гипотезу, разрабатывать, проверить истинность предполагаемой гипотезы, доказывать научные выводы и резюмировать.

-Систематизировать исследовательские результаты в области научной математики.

-Планировать применения основных методов и технологий модернизации современного вузовского математического образования.

-Систематизировать работу выборов инструментария управления учебным процессом, обеспечивающим спроектированную учебную деятельность.

Разработчики данной образовательной программы учитывают современные тенденции на рынке труда, определяющие требования работодателей к потенциальным соискателям, и качественно сформировали результаты обучения и приобретаемые профессиональные компетенции выпускников, а именно, ОП согласуется с Профстандартом Педагог (профессорско-преподавательский состав) организаций высшего и (или) послевузовского образования. Приказ Министра науки и высшего образования Республики Казахстан от 20 ноября 2023 года № 591.

4.Содержание образовательной программы.

Образовательная программа 8D05410-Математика представляет собой систему документов, разработанную в соответствии нормативными документами.

Качество содержательной составляющей образовательной программы не вызывает сомнений. Структура программы в целом логична и последовательна. Оценка образовательной программы позволяет сделать вывод, что содержание программы соответствует компонентностной модели выпускника докторантуры.

Структура образовательной программы отражена в учебном плане и включает 3 учебных модулей. Цели ОП соответствуют 8 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;

В целом, рецензируемая образовательная программа, разработанная и реализуемая ЮКУ им. М.Ауезова, отвечает основным требованиям и способствует формированию ключевых компетенций по направлению подготовки 8D05410-Математика.

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

19.02.24

Экспертное заключение
на образовательную программу 8D05410-Математика

1.Актуальность образовательной программы (ОП).

Образовательная программа, представленная для рецензирования, разработана кафедрой «Математика» в соответствии с Положением о магистратуре и докторантуре Южно-Казахстанского университета имени М.Ауэзова, базирующимся на основополагающих документах: Закон Республики Казахстан «Об Образовании», Закон Республики Казахстан «О науке», а также «Об утверждении государственных общеобязательных стандартов высшего и послевузовского образования», утвержденном приказом Министра науки и высшего образования Республики Казахстан от 20 июля 2022 года №2 и регламентирует цели, ожидаемые результаты, содержание, условия и технологии реализации образовательного процесса, оценку качества подготовки выпускников и включает в себя необходимый набор нормативно-методических документов.

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

В представленной образовательной программе четко определены и измеримы цели программы; четко увязываются с миссией университета; легко адаптируются к удовлетворению требований потребителей.

3.Соответствие Национальной рамке квалификации Республики Казахстан.

Цель образовательной программы 8D05410-Математика соответствует 8 уровню Национальной рамки квалификаций Республики Казахстан, а также по МСКО-8 и ОРК-8.

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 доктора Phd, которые определяются Дублинскими дескрипторами, согласованными с Европейской рамкой квалификаций.

Согласуется с Приказом Министра науки и высшего образования Республики Казахстан от 20 ноября 2023 года № 591. «Профессиональный стандарт: для педагогов (профессорско-преподавательского состава) организаций высшего и (или) послевузовского образования».

5.Соответствие нормативно-правовой базе документов.

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.

Требования к поступающим устанавливаются согласно Типовым правилам приема на обучение в организации образования, реализующие образовательные программы высшего и послевузовского образования приказ МОН РК №600 от 31.10.2018г.

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

Структура образовательной программы отражена в учебном плане и включает 3 учебных модулей.

Профессиональные дисциплины, междисциплинарные модули, практики и научно-исследовательская работа обеспечивают широту и глубину подготовки к профессиональной деятельности в соответствии с целями образовательной программы. 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 научной и 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 углубленные математические, естественнонаучные, гуманитарные, социально-экономические знания и умение применять их в междисциплинарном контексте для решения проблем, соответствующих направлению подготовки 8D05410-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 базовые естественнонаучные и математические дисциплины, обеспечивающие обширную подготовку и дающие основу для приобретения необходимых профессиональных компетенций выпускников докторантуры.

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

Направленность образовательной программы 8D05410-Математика на развитие у докторантов навыков самостоятельной исследовательской 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 8D05410-Математика предусмотрены следующие виды практик: исследовательская практика, НИРД, научная зарубежная стажировка.

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 8D05410-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.

Лицам освоившим ОП докторантуры и защитившим докторскую диссертацию, при положительном решении диссертационных советов ОВПО с особым статусом или Комитета по обеспечению качества в сфере образования и науки Министерства науки и высшего образования Республики Казахстан присуждается степень доктора PhD по ОП 8D05410-Математика

13.Рекомендация.

Заключение экспертной комиссии: характер, структура и содержание образовательной программы 8D05410-Математика, соответствует всем 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

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 8D054-Математика и статистика
8D05410-Математика

№ п/п	Вид обновлений	Содержание изменений, вносимых в ОП	Причины (аргументы внесения указанных изменений)
1	2	3	4
1.	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
		2. Корректировка дисциплины «Разностные методы решения интегральных уравнений» 3. Включение в профессиональные компетенции: Способность проявлять профессиональные ценности: профессионализм, инновационность, меритократия, добропорядочность.	Профстандарт «Педагог (ППС ОВПО)» Приказ МНВО № 591 от 20.11.2023

Рассмотрен на заседании комитета по академическому качеству факультета/ВШ «ЕНГ».
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.