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. Nurmaganbetov
«27» 05 2024 y.

EDUCATIONAL PROGRAM

6B01510-Mathematics

Registration Number	6B01500027
Code and Classification of Education	6B01 Pedagogical science
Code and Classification of Areas of Training	6B015 Teacher training in natural science subjects
Group of educational programs (EP)	B009 Mathematics teachers training
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	
L. Iskakova	Director of the Branch Orleu for Turkistan region and Shymkent city, Doctor of Pedagogical Sciences, professor 07.02.24	
A. Amankulova	Director of the school-gymnasium No.1 named after A.S.Pushkin 06.02.24	
A. Sakhova	Director of the specialized gymnasium No.5 with instruction in three languages named after M.Auezov	06.02.24
Zh. Sarsenbayeva	Director of gymnasium No.50 named after A.Baitursynov 05.02	
A. Kayypov	Director of secondary school No.65 05.02.24	
P. Duisebaeva	Senior Lecturer of the Department of Mathematics	
D. Sansyzbay	Student of the EP-20-1k 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

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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	Preparation of bachelors-teachers of mathematics of the General education system, possessing theoretical and practical knowledge in the field of pedagogy, methods of teaching mathematics
Tasks of the EP	-formation of socially responsible behavior in society, understanding the importance of professional ethics and adherence to these standards; -providing basic undergraduate training to enable lifelong learning to successfully adapt to changing conditions throughout their professional careers; -providing conditions for the acquisition of a high General intellectual level of development, mastering competent and developed speech, culture of thinking and skills of scientific organization of labor in the educational sphere; -creation of conditions for intellectual, physical, spiritual, aesthetic development to ensure the possibility of their employment in the specialty or continuing their master's degree -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	• 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	Professional standard «Teacher» (Order of the Acting Minister of Education of the Republic of Kazakhstan dated December 15, 2022 No. 500)
Name of the degree awarded	After successful completion of this Educational Program, the graduate is awarded the degree: A Bachelor of Education in the Educational Program 6B01510-Mathematics
List of qualifications and positions	-school teacher -teacher in the field of education, college -math teacher
Field of professional activity	-conducting the learning process at school -educational impact on students -sphere for the development of children and young students in general education organizations, educational institutions and centers
Objects of professional activity	-students of educational organizations of all forms of ownership -college students -pupils in child and youth development centers
Subjects of professional activity	-the educational process in the unity of its value-target orientations, content, methods, forms and results; -research, innovation, information and analytical activities in the field of mathematics, pedagogy, psychology and methods of teaching mathematics -work with educational and methodological literature, professional development and professional development
Types of professional activity	-educational: training and development of students, organization of the learning and upbringing process, design and management of the pedagogical process, diagnostics, correction, forecasting of the results of pedagogical activity; -research: conducting scientific research in the field of mathematics,

	pedagogy, psychology and methods of teaching mathematics; -organizational and methodological: study, generalization and dissemination of innovative learning experience; -public organization of cultural and leisure work with students and parents in the field of education, development of programs, methods and technologies of educational work in the field of mathematical culture
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-To master the techniques and techniques of psychological and pedagogical design of the pedagogical process, using them in their professional activities LO5-The use of advanced teaching methods, studying the results of current research on improving the educational process LO6-To solve pedagogical, educational and scientific-methodical tasks, to compose and conduct lessons taking into account the characteristics and needs of students LO7-Apply innovative technologies of teaching mathematics, methods of forming subject skills, methods of forming interest in mathematics of schoolchildren LO8-Use physical and mathematical apparatus and modern computer technologies to solve practical problems of theoretical, fundamental and applied mathematics LO9-Manage the behavior of students, motivating their educational and cognitive activities using the methodology of educational work, modern concepts of education and tools for evaluating educational achievements of learning LO10-To use research, entrepreneurial skills and skills of working in conditions of uncertainty. LO11-To work effectively individually and as a team member, planning professional continuing education in formal, informal, informational forms LO12- Demonstrates the skills of mathematical reasoning, functional literacy, research activities in the organization of educational and extracurricular activities of students

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 make lesson plans taking into account the characteristics and needs of students, defining appropriate teaching methods and assessment tools GC1.2. To design an individual trajectory of students' development taking into account their individual abilities and needs. Design, develop programs and methods of education and upbringing, taking into account their individual abilities and needs GC1.3. Knowledge of the basics of labor legislation, safety and labor protection rules. Fundamentals of teaching methods, modern teaching technologies, including information. Patterns of age and individual development
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.Knowledge of the Rules of pedagogical ethics approved by the Order of the Minister of Education and Science of the Republic of Kazakhstan dated May 11, 2020 No. 190 "On some issues of pedagogical ethics" (registered in the Register of State Registration of Normative Legal Acts under No. 20619) 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 normative legal acts in the field of education, the basics of labor legislation, safety and labor protection rules, the content of the educational subject, modern teaching and evaluation methods
	PC2. The ability and skills to make lesson plans taking into account the characteristics and needs of students, defining appropriate teaching methods and assessment tools, to design an individual trajectory of students' development taking into account their individual abilities and needs, to design, develop programs and methods of teaching and upbringing taking into account their individual abilities and needs
	PC3. Skills and abilities to develop and present the results of professional activity, programs, methods of teaching and development of students, taking into account the peculiarities and needs, methods of teaching the subject
	PC4. Study independently and in a team the results of current research on improving the educational process
	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	LO10	LO11	LO12
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	LO10	LO11	LO12
1	Fundamentals of the Public Sciences	GED	OC	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	OC	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 consciousness, spirit and language. Being. Ontology and metaphysics. Cognition and creativity. Education,	5	✓	✓										

					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	OC	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	OC	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 self-regulation. Individual typological features. Values, interests, norms are the spiritual basis. The meaning of life, professional self-	4		✓									✓	

					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	OC	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	OC	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 the start is higher than B1level of common European competence The contents. Levels A1, A2, B1, B2 are presented in	10	✓											

					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	OC	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	OC	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 during classes, insurance and self-insurance. Refereeing competitions, Means of professionally	8											✓		

					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	Goal: to provide professionally oriented language training of a specialist who is able to competently construct communication in professionally significant situations and speak the language norms for special purposes. Content: Professional language and its components. Professional terminology as the main feature of scientific style. Scientific vocabulary and scientific constructions in educational-professional and scientific-professional spheres. Algorithm of work on the analysis and production of scientific texts on specialty. Producing scientific and professional texts. Basics of business communication and documentation within the framework of future professional activity	3	✓												
		BD	UC	Professionally-oriented foreign language	The goal is to develop the skills of using a foreign language in specific mathematical contexts, such as scientific articles, presentations, technical reports, as well as interaction with foreign colleagues and clients. Contents: Mathematical terminology: the study of specialized vocabulary and grammatical structures used in mathematical texts. Reading and analysis of scientific articles, Written communication: development of skills for writing scientific texts in a foreign language, Oral communication, Culture and professional norms	3	✓												
5	Fundamentals of Pedagogical Skills	BD	UC	Pedagogy and Cyber pedagogy	The aim is to equip future teachers with professional competencies on the theoretical and methodological foundations of modern pedagogical science, the technology of organizing the pedagogical process, the formation of students' readiness to design and construct the educational process based on information and communication technologies based on the laws and scientific principles of cyberpedagogy. Content. The genesis of pedagogical science,	5				✓	✓						✓	

					regularities and principles of a holistic pedagogical process. Fundamentals of the theory of education and didactics. Problems of modern school management. Scientific principles and regularities of cyberpedagogy, methodology and technology for managing the educational process based on information and communication technologies, methods of distance learning and blended lear.													
		BD	UC	Inclusive education	The aim is familiarization with modern world and domestic theories of inclusive education, the formation of future teachers' professional competencies in the design and organization of inclusive education. Content. Social significance and features of inclusive education. Patterns, principles and models of inclusive education, legal documents regulating the activities of inclusive education in a mass school. Approaches and technologies for organizing inclusive education in educational institutions. Methods of psychological and pedagogical support and creating a comfortable environment for inclusive education of children with special educational needs. Problems of creating an inclusive educational environment	4				✓	✓	✓						
		PD	UC	Workshop of Special Disciplines	The purpose of the discipline, preparation for the national qualification testing. It is aimed at developing organizational, analytical skills, stress management. The study of various types and formats of certification, types of tasks, computer, to prepare for various types of certification of teachers, testing. Practice in solving test tasks developing mathematical and functional literacy and conducting self-assessment of their level of preparation for the test, as well as professional activities	4			✓	✓	✓	✓						
		BD	UC	Pedagogical practice	The purpose of pedagogical practice is to master students' practical experience in the field of teaching, the development of professional skills and competencies, as well as the formation of the professional identity of the future teacher. It is aimed	1				✓		✓			✓	✓		

					at familiarizing students with the organization and conduct of training sessions, interaction with students and colleagues, the use of modern pedagogical technologies, analysis and evaluation of the results of the educational process, the development and implementation of their curricula and programs, adaptation to pedagogical activities and the development of reflexive competence.													
6	Fundamentals of Psycho-pedagogical Sciences	BD	UC	Physiology Development of Schoolchildren	The purpose of the discipline is to give the future teacher up-to-date information about the anatomical and physiological features of the body of children and adolescents, its relationship with the environment, to equip with knowledge about the laws underlying the preservation and strengthening of the health of schoolchildren, maintaining their high efficiency in various types of educational activities. The growth and development of the body. The development of the nervous system, the formation of higher nervous activity and its formation in the process of child development; features of the development of sensory; endocrine; musculoskeletal system; respiratory system; digestive; blood and cardiovascular system. The basics of protecting the health of schoolchildren, familiarization with the rules of a healthy lifestyle	4						✓			✓			
		BD	UC	Fundamentals of General and age psychology	Purpose: development of psychological thinking of students on the basis of studying and mastering knowledge of various mental phenomena, taking into account the age-related characteristics of the development of the human psyche. Contents: introduction to psychology. Consciousness. Personality. Activity. cognitive processes. Psychology of will, emotions, feelings. Temperament. Character. Capabilities. Structure, functions, laws of the psyche, cognitive processes, conditions, factors, mechanisms of development of the psyche in ontogenesis. Methodological foundations of developmental psychology, concepts, categories, mechanisms, nature of age-related transformations. Features, causes and	4				✓		✓			✓			

					factors, conditions and prospects for the positive development of the personality at different age stages of the development of the human psyche.													
		BD	UC	Theory and methods of educational work	The aim: the formation of professional competencies of future teachers in the design, construction and organization of upbringing work at school. Content. The essence and features of the upbringing process, upbringing work, systems of upbringing of the school and class. Functions and content of the class teacher. Skills in planning upbringing work at school and in the classroom, organizing a class team and individual upbringing work with students. Skills of pedagogical support, work with difficult and gifted children, methods of cooperation with parents of students. career guidance work with students. Methods for diagnosing the effectiveness of upbringing work.	4				✓		✓			✓			
		BD	UC	Psycho-pedagogical practice	The purpose of psychological and pedagogical practice is to master students' skills and knowledge in the field of psychology and pedagogy, as well as the development of professional competencies necessary for work in the field of education and psychological support. It is aimed at practical application of psychological and pedagogical knowledge in real conditions of work with students, analysis and assessment of psychological and pedagogical situations, development and implementation of pedagogical measures, adaptation to pedagogical activity and formation of professional identity of the future psychologist or teacher.	2				✓		✓			✓	✓		
7	Methodological fundamentals of Teaching Mathematics	PD	UC	Methods of teaching mathematics and assessment	The purpose of the discipline is to prepare students for competent teaching of mathematics in various educational institutions. The content of the discipline includes the study of the basics of mathematics teaching methods, the organization of the educational process, the principles of lesson construction, methods and techniques for assessing student performance, working with different categories of students. Special attention is paid to the	6				✓	✓	✓			✓			

					development of pedagogical strategies and techniques, the activation of cognitive activity of students, the formation of mathematical problem solving skills and the analysis of evaluation results. The course also includes aspects of working with gifted students, students with special needs, foreign students, and the development of inclusive pedagogy.													
		PD	EC	Introduction to specialty	The purpose of the discipline is to familiarize with the basics of the professional activity of a mathematics teacher, the formation of professional competence and awareness of the teacher's role in the educational process. The content of the discipline includes the study of the history of the development of mathematical education, the role of mathematics in modern society, the main approaches and methods of teaching mathematics, the structure and content of mathematical education in Kazakhstan, familiarization with teaching materials, principles of the organization of the educational process, issues of evaluation and control, professional ethics and didactics of teaching mathematics. The course also includes an introduction to the specifics of the work of a mathematics teacher in various educational institutions and with different categories of students.	4					✓			✓	✓			✓
				Fundamentals of Academic Writing	The purpose of the discipline is to master the principles of creating written texts of an academic nature (essay, abstract, abstract, article, theses, etc.) and acquire the skills of writing them. The experience of bibliographic description of printed publications and electronic resources, skills of self-independent search, design of their own written works, public presentation and discussion of scientific papers, conducting discussions and defending their own position are acquired		✓	✓										
		PD	EC	Information Technologies in teaching mathematics	The purpose of the discipline is familiarization with modern information technologies and their application in teaching and teaching mathematics, the formation of skills for the effective use of information	5			✓		✓			✓				

					technologies in the educational process. The content of the discipline includes the study of the basics of computer technology, software and applications that can be used in teaching mathematics, familiarization with electronic educational resources, the development and adaptation of mathematical materials using information technology, the development of methods for creating interactive tasks, tests and teaching materials, as well as the analysis of the effectiveness of the use of information technology in teaching mathematics and interaction with students													
				Transcedent Functions	The purpose of the discipline is to study the main theoretical and practical aspects of transcendental functions, their properties, graphs and applications in various fields of mathematics and natural sciences. The content of the discipline includes the study of definitions, properties and graphs of elementary transcendental functions, such as exponential, logarithmic, trigonometric, hyperbolic functions, their derivatives and integrals, the solution of equations and inequalities using transcendental functions, the study of applications of transcendental functions in physics, economics, biology and other scientific and practical fields. Various methods of approximation and numerical analysis of transcendental functions are also considered.									✓				
		PD	UC	Educational and Methodical (pedagogical) practice	Purpose: mastering teaching methods and technologies, developing pedagogical competencies, experience in organizing and conducting training sessions, as well as evaluating the effectiveness of the educational process in accordance with the requirements of modern education. The student attends, analyzes the lessons of teachers, subject teachers, other interns; studies textbooks, teaching aids, visual aids used by the subject teacher; make short-term, long-term plans, sociograms under the guidance of a methodologist, acquiring skills to work with students, including teachers, conduct class hours and extracurricular activities. Make a report on	2				✓	✓					✓		

					the practice													
8	Algebra and Geometry	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. The elements of vector algebra, analytical geometry on the plane and in space, lines and surfaces of the second order are considered.	5								✓				
				Theory of determinants	The purpose of the discipline: to study the basic definitions and properties of determinants, methods of calculating determinants, axiomatic construction, alternative methods of calculation The fundamentals of the theory of determinants and their basic properties are considered. The ability to apply Kramer's formulas to solve a system of linear algebraic equations. Fluency in special types of determinants: the determinant of Vronsky, Vandermond, Gram, Jacobi. The ability to choose the best method for calculating determinants.									✓				
		BD	EC	Algebra and numbers theory	The purpose of the discipline: to study the types and elements of the matrix; various methods of calculating matrices and matrix equations. The basic concepts of algebra and number theory are considered; theoretical knowledge of the Jordan normal form. Knowledge of group theory, practical skills with actions on the group. The ability to prove statements specific to algebra; apply the methods of algebra and number theory to solve mathematical problems; mastering the methods of algebra for the study of various applied problems.	6							✓	✓				
				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). The basic concepts and theorems of linear algebra are considered. The ability to find minors and algebraic									✓				

					complements; calculate systems of linear equations by the Kramer and Gauss method, using the Grebner basis to find the inverse matrix and the rank of the matrix, the ability to divide a polynomial with a remainder; apply the Euclid algorithm, the Gorner scheme, the Sturm method when solving linear algebra problems.													
		BD	UC	Educational practice	The purpose of the practice is to get acquainted with practical experience in teaching, the development of professional competencies and the acquisition of pedagogical skills in the real conditions of the educational process. During the internship, they get acquainted with the organization of work, analyze the teaching and methodological activities of the teacher; with the tasks, content, organization of pedagogical work at school; visit classrooms, get acquainted with their equipment, design, apply the knowledge gained in the process of theoretical training, performing individual work, acquire computer skills; a report on practice is compiled.	1			✓		✓						✓	
9	Basic of School Mathematics	BD	EC	Workshop on solving mathematical tasks	The purpose of the discipline: in-depth study of elementary mathematics sections. Content. 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 The discipline is aimed at developing students' skills in solving mathematical problems of increased complexity. In this process, methods of solving problems are studied, as well as practical classes are held in which students perform their tasks in this area, practice solving problems	5							✓	✓				✓
				Methodical Fundamentals of Solving Tasks	The purpose of the discipline is to develop the skills of analysis, formulation and solution of various types of tasks in various fields of knowledge, the formation								✓	✓				✓

					of the ability to apply effective methods and strategies for solving problems, as well as mastering the skills of developing methodological recommendations for teaching problem solving in the educational process. The content of the discipline includes the study of the theoretical foundations of problem solving, analysis of various types of problems, methods and techniques for solving them, development of methodological materials, organization of work with textbooks, modeling and analysis of the problem solving process, as well as analysis of the effectiveness of problem solving techniques and interaction with students.													
		BD	EC	Workshop on solving planimetric tasks	The purpose of the discipline: to teach how to use the basic conclusions, theorems, properties of geometric shapes on a plane when solving planimetry problems of different levels of complexity. The axioms of planimetry are studied, the basic figures as a triangle, rhombus, parallelogram, circle. The development of geometric culture the construction of the problem and the ability to prove and justify the solution Solve problems for the construction, calculation of areas and perimeters, as well as other problems of planimetry of increased complexity	6							✓	✓				
				Geometric tasks on the Plane	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. During the lessons, students improve their problem solving skills, master new methods and techniques for solving planimetric problems.								✓			✓		
		BD	EC	Workshop on solving stereometric tasks	The purpose of the discipline: to study some special methods of solving geometric problems in space. Various methods and techniques for solving	5							✓	✓				

					stereometric problems are considered. Ability to solve stereometry problems by coordinate and vector methods. Formation of graphic culture in the construction of polyhedron models. Development of spatial representation and imagination. The ability to apply various methods in solving a problem of increased complexity													
				Geometric tasks on the space	The purpose of the discipline: to study methods for solving stereometric problems. The basic properties and formulas of stereometric figures are considered. The ability to solve stereometric problems based on the properties of stereometric figures. Fluency and application of the following concepts: vectors and coordinates, equation of the plane, angle between planes, axioms of stereometry, Parallelepiped, pyramid, cone and cylinder, etc. The ability to find the distance between planes in space									✓				
		BD	EC	Methods of Mathematical Modelling	The principles, methods and main stages of mathematical modeling used in solving applied problems of natural science, economics, etc. are considered. Classification and analysis of mathematical models is carried out in order to select a suitable algorithm for finding a solution. Methods of solving linear, fractional-linear, integer programming problems, transportation problems, etc. are studied.	4							✓					
				Optimization Methods	The purpose of the discipline: to teach how to find solutions to optimization problems, that is, to find the extremum of an objective function that has a set of constraints. Classification of optimization methods (local and global), study of methods for solving optimization problems (analytical, graphical and numerical); basic problems (discrete, integer and nonlinear programming). The ability to build a mathematical model of a problem in stages								✓					
		PD	EC	Geometric construction problems	Various construction problems and methods and techniques for solving are considered. The ability to depict geometric figures in drawings and defined by conditions of tasks, to give complete justification for	4							✓	✓				

					solving problems, to apply properties of geometric transformations. The formation of graphic culture in construction of models of geometric shapes.													
				Geometric proof problems	The basic formulas and formulations theorems and applying ability in solving problems of proof are considered. Mastery of basic evidence methods used in geometry. Possession of heuristic activity basics, creating evidence plan; The knowledge and understanding that geometric methods have always been used to solve practical and applied problems.							✓	✓				
		PD	UC	Teaching and Educational Pedagogical Practice	Purpose: students gain experience of pedagogical activity in practice by developing the educational competence of a teacher. Students work with students, conduct classes, analyze their experience and receive feedback from teachers and mentors. The practice is aimed at the formation of educational pedagogical skills and preparation for future professional activity	4				✓	✓							
10	Introduction to Mathematical Analysis and Integral Calculus	BD	EC	Mathematical Analysis 1	The purpose of the discipline: the formation of concepts of the principles of mathematical analysis. The first and second remarkable limits are considered. Be able to compare infinitesimal functions, use equivalent infinitesimal functions. Fundamental methods of studying variables, infinitesimal analysis. Higher-order derivatives, the ability to find derivatives of indefinite and parametric given functions, logarithmic differentiation, knowledge of the concept of the differential of a function	6								✓				
				Differential calculus of one variable function	The purpose of the discipline: to study the basic methods of studying variables, the theory of series, finding the derivative of a function. The theory of limits of functions, differential calculus of functions of one variable, the derivative of basic elementary functions are considered. Application of differentiation rules and differentiation formulas when finding the derivative of functions. The ability to solve problems for finding the limits of functions, the derivative of complex functions (given implicitly, parametrically), to investigate a function using a derivative.									✓		✓		

		BD	EC	Mathematical Analysis 2	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 science disciplines are given	4								✓				
				Integral calculus of one variable function	Purpose: to present the concept of integral calculus with one variable and its application in solving applied problems. Integration operations, concepts of a primitive function, an indefinite integral, and its properties are considered. Ability to choose the appropriate integration method (integration by parts, variable replacement, integration of rational functions, irrationalities, differential binomials, trigonometric and transcendental functions) when solving problems; use the table of basic indefinite integrals									✓		✓		
		BD	EC	Mathematical Analysis 3	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. The study of the Taylor formula for a function of several variables, their extremes, etc.In the course of the discipline, the concept of derivative, differentiation methods, curvature analysis and many other issues are considered.	6								✓				
				Differential calculus of several variables function	The purpose of the discipline: to present the concept of multidimensional calculus and its application in solving applied problems. The basic concepts and methods of differential calculus of functions of many variables, the theory of numerical and functional Fourier series are considered. The ability to differentiate, to investigate									✓		✓		

					the functions of several variables at an extreme, to calculate the limit values of functions, to calculate approximate values of functions, to be able to investigate numerical and functional series.														
		BD	EC	Mathematical Analysis 4	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. A discipline in mathematics that studies the properties and behavior of functions of several variables, as well as methods for integrating functions from several variables. The course covers multiple integrals, the concept of surfaces and volumes, as well as other issues related to integral calculus.	5								✓				
				Integral calculus of several variables function	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 physical and geometric meaning of the double and triple integrals, their properties, and the application of the integral of the function of many variables are considered. Ability to calculate double and triple integrals. Knowledge of the skills of replacing a variable in a double and triple integral. The ability to apply multiple integrals in mechanics.									✓		✓		
		PD	EC	Theoretical fundamentals of calculating mathematics	The purpose of the discipline: the formation of knowledge about the methods of approximate calculation. Methods of numerical solution of algebraic and transcendental 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 tools of the Mathematica package	5								✓		✓		
				Numerical methods for solving the	The purpose of the discipline: to teach to find the approximate numerical value of a given problem, a								✓					

				differential equations	differential equation. The mathematical formulation of the problem is considered; the principles of the formation of numerical methods. The ability to use explicit and implicit Euler methods for the numerical solution of the Cauchy problem for an ordinary differential equation. The ability to explain and apply a modification of the Euler method, the Runge-Kutta method. The ability to programmatically implement and correctly apply numerical methods. Has the skills of constructing and researching numerical methods.													
		BD	EC	Differential equations	Purpose: to study methods for solving differential equations. The basic concepts and definitions of the theory of ordinary differential equations are considered; methods of integration of certain types of equations of the first and higher orders; theorems of the existence of solutions of differential equations. The ability to integrate linear homogeneous and inhomogeneous differential equations of the second and higher orders with constant coefficients and their systems.	5								✓		✓		
				Theory of operator transformations	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. The ability to calculate transients by the operator method, the ability to apply the knowledge gained in solving problems.									✓				
		PD	UC	Industrial Pedagogical Practice I	The purpose of the practice is to acquire professional experience and develop pedagogical skills in real conditions of pedagogical activity. Students get the opportunity to apply their knowledge and skills in real conditions and get acquainted with the methods and approaches used in professional activities. As part of the practice, students conduct classes, organize extracurricular activities, and take part in the work of the team.	10			✓						✓		✓	

11	Complex and Discrete analysis	PD	EC	Complex analysis	The purpose of the discipline: to study the set of complex numbers, their properties and the rules of action on them. The ability to represent complex numbers in trigonometric and exponential forms. The basic concepts, formulas, theorems and definitions of the theory of functions of a complex variable are considered; various forms of writing a complex number; series in the complex plane; function deduction. Knowledge of differentiation and integration of functions of a complex variable; Cauchy's theorem; Cauchy integral and Cauchy integral formula.	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. The basic concepts of field theory are considered: scalar field, surfaces and level lines, directional derivative, gradient, vector field, flow, divergence, Ostrogradsky-Gauss formula, circulation, rotor, Stokes formula, Hamilton operator, vector differential operations of the first and second orders.									✓				
		BD	EC	Mathematical Logic and Discrete Mathematics	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. The discipline studies mathematical structures and methods of analysis of discrete objects and processes. The study of statements, logical operations, the concepts of implication, logical consequence and equivalence. It includes graph theory, combinatorics, coding theory, automata and information theory. Students develop logical thinking and the ability to apply methods in practical tasks.	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 studies logical operations and algorithms used to process Boolean values. It includes									✓		✓		

					the theory of Boolean functions, logic algebras, Boolean optimization and logic circuit analysis. Students learn to solve problems and develop algorithms for processing Boolean values in various fields such as electronics, cryptography and computer science.													
12	Private technique of Teaching Mathematics	PD	EC	History and methodology of mathematics	The purpose of the discipline is to familiarize with the history of the development of mathematics, its basic concepts, methods and philosophical foundations, as well as the formation of critical thinking and reflection on mathematical knowledge and its applications. The content of the discipline includes the study of the history of mathematics, famous mathematicians and their contribution to the development of mathematical science, basic methods and approaches in mathematics, philosophical and methodological foundations of mathematical knowledge, analysis of various approaches to the organization of mathematical education, consideration of topical issues and challenges of modern mathematics and its methodology.	4						✓						✓
				Private technique of teaching mathematics	The purpose of the discipline is to form students' in-depth knowledge and skills for the development and application of effective methodological approaches and techniques in teaching mathematics, taking into account the specifics of study groups and individual characteristics of students. The content of the discipline includes the study of the main theoretical and practical aspects of private methods of teaching mathematics, the analysis of various teaching materials, the development of author's textbooks and programs, the organization and conduct of lessons and practical classes with students, as well as the analysis of the effectiveness of applied methodological approaches and their adaptation in the conditions of a particular educational institution.								✓	✓				✓
		PD	EC	Preprofile and profile preparing	The purpose of the discipline is to familiarize with the features of pre-profile and profile training in	5					✓	✓						✓

				mathematics in school	mathematics in a modern school, to develop methodological approaches and programs, as well as to develop skills in planning, organizing and conducting pre-profile and profile classes in mathematics. The content of the discipline includes the study of theoretical aspects of pre-profile and profile training, the analysis of modern requirements and standards of education, the development of curricula, methodological materials and resources for pre-profile and profile training, the study of experience with textbooks, textbooks and other materials, as well as the organization and conduct of practical classes and analysis of their effectiveness.												
				Fundamentals of Physics in an Ungraded School	The purpose of the discipline is to form students" in-depth knowledge and skills for the development and application of effective methodological approaches and techniques in teaching mathematics, taking into account the specifics of study groups and individual characteristics of students. The content of the discipline includes the study of the main theoretical and practical aspects of private methods of teaching mathematics, the analysis of various teaching materials, the development of author"s textbooks and programs, the organization and conduct of lessons and practical classes with students, as well as the analysis of the effectiveness of applied methodological approaches and their adaptation in the conditions of a particular educational institution.						✓	✓		✓				✓
		PD	UC	Industrial Pedagogical Practice II	The purpose of the practice is to improve professional competencies in the field of pedagogy by mastering practical work experience in an educational institution or other educational organization. The practice allows students to gain experience as a teacher in the real conditions of the production environment. They get acquainted with the peculiarities of the organization of the educational process in various production environments and acquire the necessary skills to work with students. Practice involves the development of methods and techniques of pedagogical work, as well as the formation of the ability to interact with colleagues, parents and students.	5			✓	✓				✓		✓	

13	Methods for processing experimental data	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 basic concepts of probability theory are considered: axiomatics, random events. The ability to use basic techniques and methods for determining the probabilities of complex events, methods for describing and determining random variables, limit theorems of probability theory. Ability to calculate probabilities of random events, find numerical characteristics of random variables, solve mathematical statistics problems. Knowledge of probabilistic methods in scientific research.	5								✓		✓		
				Theory of graphs	The purpose of the discipline: to teach the basic methods of mathematical description of the structure of various objects. The basic concepts of graph theory are considered.The ability to distinguish between oriented and undirected graphs; to identify graph elements, to understand ways of defining graphs. Freely operates with the concepts: incident matrix, vertex neighborhood matrix, vertex degrees, chain and path, cycle and contour, trees, Eulerian graphs. Ability to apply basic formulas to solve graph theory problems.									✓				
		PD	EC	Applied physics	Purpose, to study the issues and tasks of applied physics. The following sections of applied physics are considered: solid state mechanics, molecular physics in life, electrodynamics, optics and quantum physics; the ability to understand the boundaries of their application; methods of experimental physical research. The ability to use the mathematical apparatus of physical theories to solve applied problems, solve qualitative and computational problems, plan and conduct physical experiments taking into account measurement errors.	4								✓				
				Theoretical physics	The purpose of the discipline: to study the basics of solid state physics, its tasks and methods of its solution, the main processes occurring in crystals.									✓		✓		

					The following topics are considered: mechanics, molecular physics, electrodynamics, optics and quantum physics. The ability to use the main characteristics and parameters of crystalline solids, types of waves propagating in crystals. Ability to analyze data, conduct experiments and draw conclusions. Knowledge of mathematical formulas, units of measurement, various methods of solving problems.													
14	Module of Acquisition of new Professional Competenciess	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. Knowledge of the basics of economic mathematics and basic concepts of partial differential equations. Acquisition of new professional competencies on the basis of an additional educational program (Minor) (Minor). Obtaining practical skills and acquiring competencies for running your own business. Ability to independently develop Minor programs.	12		✓	✓					✓					
15	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 qualifying work; to consolidate theoretical knowledge, acquired practical experience, as well as individual work skills. The teacher conducts pedagogical research by collecting, analyzing and summarizing materials on the subject of the thesis. Conducts classes according to his developed methodology, draws conclusions and conclusions; draws up a thesis for preliminary defense, coordinates it with his supervisor; writes a report of pre-graduate practice.	4										✓	✓	
				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 Culture	Educational practice	Industrial practice	Pedagogical practice	Pre-degree or Industrial practice	Final certification			Exam	Diff. credit
1	1	5	5		2	28	2						900	30	6	1
	2	3	4	1	2	27	2	1					900	30	5	1
2	3	6	2	5	2	27	2			1			900	30	6	2
	4	5	1	3	3	22	2		4	2			900	30	5	1
3	5	6	1	4	3	28				2			900	30	6	0
	6	4		1	4	20			6	4			900	30	2	1
4	7	6		2	6	33			10				1290	43	6	1
	8	2		1					5		4	8	510	17	0	0
Total		15	13	17	22	185	8	1	25	9	4	8	7200	240	36	7

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 6B01510-Mathematics

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