

**Ministry of Science and Higher Education of the Republic of Kazakhstan
K. Zhubanov Aktope Regional University**

APPROVED

By the decision of the Board of
Directors of NJSC «K. Zhubanov
Aktope Regional University»
(Protocol No. __ dated " __ " _____ 202 __)

MODULAR EDUCATIONAL PROGRAM

Code and name of the field of education: 7M01 – Pedagogical Sciences

Code and name of the field of study: 7M015 – Teacher training in science subjects

Code and name of the EP: 7M01501 – Mathematics

Level of education: Master's degree

Awarded degree: Master of Pedagogical Sciences in the educational program "7M01501 – Mathematics"

Total number of credits: 120 academic credits/120 ECTS

Year of admission: 2023

1. Compilers:

Full name	Position	Contact details
Employers:		
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Responsible compilers for the department:		
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Bibigul Zharbolovna Omarova	PhD, Senior Lecturer	
Reviewer:		
Alday Maktagul	PhD., Associate Professor, Eurasian National University named after L.N. Gumilyov	87013332575

2. MISSION: Formation of human capital for innovative transformations of the region and the country

VISION: Leading positions in the national ranking and achieving the status of an anchor university in Kazakhstan

VALUES:

1. Academic excellence
2. Integrity
3. Openness and cooperation
4. Highest quality of education
5. Social activity and civic initiative
6. Leadership and creativity
7. Respect and attention to people
8. Unity of science and innovation

3. Model of a university graduate

- Has in-depth knowledge and understanding of the field of study
- A specialist possessing theoretical knowledge and skills to solve important tasks in everyday life and professional activities.
- Independent, capable of conducting research and experiments in the field of study, analyzing and interpreting results, drawing conclusions and making judgments.
- An organizer skilled in communication technologies and strategies.
- Able to apply innovative experience, self-motivated, striving for self-education and self-realization.
- Competent in the use of information and communication technologies in the field of professional activity.

4. Passport of the educational program

Scope of application	<p>The educational program 7M01501 – Mathematics is a system of documents developed in accordance with the State Educational Standard of the Republic of Kazakhstan, the Professional Standard for teachers, the National Qualifications Framework, and aligned with the Dublin Descriptors and the European Qualifications Framework.</p> <p>The educational program "7M01501 – Mathematics" (hereinafter referred to as the EP) is intended for the training of master's degree students at the K. Zhubanov Aktobe Regional University. The EP represents a system of documents independently developed and approved by K. Zhubanov Aktobe Regional University based on the State Educational Standard for Higher Education in the corresponding field of study, the classifier of training directions for higher and postgraduate education according to the code in the International Standard Classification of Education, and the Professional Standard "Teacher." When developing the EP for higher education, the scientific schools established at K. Zhubanov Aktobe Regional University as well as the needs of the regional and national labor markets were taken into account.</p>
Code and name of the educational program	7M01501 – Mathematics
Regulatory and legal support	<ol style="list-style-type: none"> 1. Law of the Republic of Kazakhstan "On Education" dated July 27, 2007 No319-III (with amendments and additions dated 14.07.2022 No141-VII) 2. Rules for the organization of the educational process on credit technology of education. Order of the Ministry of Education and Science of the Republic of Kazakhstan dated 20.04.2011 No152 (with amendments and additions dated September 23, 2022 No79) 3. Guidelines for the Use of the European Credit Transfer and Accumulation System (ESTS) 2015 4. State compulsory standard of higher and postgraduate education. Order of the Ministry of Science and Higher Education of the Republic of Kazakhstan (hereinafter referred to as the Ministry of Higher Education of the Republic of Kazakhstan) dated 20.07.2022 No2. 5. Classifier of Areas of Training of Personnel with Higher and Postgraduate Education. Order of the Minister of Education and Science of the Republic of Kazakhstan dated October 13, 2018 No 569 (with amendments and additions dated October 13, 2018. No 569) 6. Rules for the organization of dual education. Order of the Ministry of Education and Science of the Republic of Kazakhstan No 50 dated 21.01.2016 (with amendments and additions dated 27.08.2022 No 380) 7. Standard Rules for the Activities of Educational Organizations Implementing Educational Programs of Higher and (or) Postgraduate Education. Order of the Ministry of Education and Science of the Republic of Kazakhstan dated October 30, 2018 No595 (with amendments and additions dated 18.11.2022 No145) 8. Typical Educational Programs of the Cycle of General Educational Disciplines for Organizations of Higher and (or) Postgraduate Education (Order of the Minister of Education and Science of the Republic of Kazakhstan dated October 31, 2018 No 603) 9. System of Coding of Educational Disciplines of Higher and Postgraduate Education. State Educational Standards of the Republic of Kazakhstan 5.05.001-2005 10. Professional Standard "Teacher" (Order of the Acting Minister of Education of the Republic of Kazakhstan dated December 15, 2022 No 500) 11. Sectoral framework of qualifications in the field of "Education" (Approved by the sectoral commission of the Ministry of Education and Science of the Republic of Kazakhstan on social partnership and regulation of social and labor relations in the field of education and science. Protocol No3 dated 27.11.2019) 12. Regulations on the Structure of the Modular Educational Program (Protocol No. 53 dated November 11, 2022)

	13. Regulations on Master's and Doctoral Programs (Protocol No 5 of 30.11.2022) 14. Regulations on the master's thesis (Protocol No 5 of 30.11.2022) 15. Regulation on the organization of professional practice of students (Protocol No 5 of 30.11.2022)
Map of the training profile within the framework of the educational program	
Goal of the educational program	Training highly qualified master's degree specialists in pedagogical sciences in the field of mathematics, who are in demand in the labor market, capable of scientific research and teaching activities in educational organizations, and proficient in modern information technologies.
Qualification characteristics of the graduate	
Awarded degree	Master of Pedagogical Sciences in the educational program "7M01501 - Mathematics" (2 years)
List of specialist positions	<ul style="list-style-type: none"> ● mathematics lecturer at higher education institutions and other educational organizations ● head of an organization, head of a structural division, deputy head of a structural division, lecturer (assistant)
Field of professional activity	<ul style="list-style-type: none"> ● science ● education
Functions and types of educational activities	<u>Types of educational activities</u> <ul style="list-style-type: none"> ● educational (pedagogical) ● teaching and upbringing ● educational and technological ● social and pedagogical ● experimental and research ● organizational and managerial <u>Functions of educational activities</u> <ul style="list-style-type: none"> ● teaching ● upbringing ● career guidance ● scientific research

5. Learning outcomes for the educational program

1. To be fluent in various types of information and communication technologies at a professional level: Internet resources, cloud and mobile search services, storage, processing protection and dissemination of information.
2. Develops conclusions within the framework of the content of the updated education system aimed at successful socialization and integration into modern society.
3. Generates deep knowledge in the field of mathematics, pedagogical and psychological patterns of teaching mathematics in high school, features of the methodological system of teaching in high school.
4. Evaluates situations in various areas of interpersonal, social and professional communication, taking into account basic knowledge of pedagogy, psychology, teaching methods, as well as inclusive and criteria-based learning technologies.
5. Summarizes the results of research and analytical work in the form of a master's thesis, scientific article, report, etc.; he is competent in the implementation of scientific projects and research in the professional field.
6. Evaluates situations in various areas of interpersonal, social and professional communication, taking into account basic knowledge of history, philosophy and within the framework of socio-political disciplines.
7. Demonstrates methods and techniques of various types of oral and written communication within the competence of a specialist in mathematics who speaks state and foreign languages in order to respond adequately in a dynamically developing multilingual and multicultural world.
8. Formulates arguments and solves professional and applied problems in the process of teaching mathematical and methodological disciplines.
9. Substantiates the main provisions of the fundamental directions of mathematics, demonstrates the obtained theoretical knowledge in the design of the process of teaching mathematics.

6. Modular curriculum for 2023–2025

Cycle/ component	Discipline code	Name of the discipline	Term	Academic credits	Credit of ECTS	Form of control	Course work	Budget of working time of master's students, hour					Distribution by courses and terms					
								AL TO GE TH ER	Num ber of class room hours	Classroom classes			Independent work		1st year		2nd year	
										Lectures	laboratory lessons	Practical lessons	I W M S- T	IWM S	1 - t e r m 1 5 w e	2 - t e r m 1 5 w e	3 - t e r m 1 5 w e	4 - t e r m 1 5 w e

															e k s	e k s	e k s	e k s
Module 1 – General Education, 15 Academic Credits																		
BD UC	HPS5201	History and philosophy of science (in Kazakh)	1	3	3	Exam		90	30	15		15	30	30	3			
BD UC	FL(P) 5202	Foreign language (professional) (in English)	1	3	3	Exam		90	30			30	30	30	3			
BD UC	PHE 5203	Pedagogy of higher education (in English)	1	3	3	Exam		90	30	15		15	30	30	3			
BD UC	MP 5204	Management psychology (in Russian)	1	3	3	Exam		90	30	15		15	30	30	3			
BD UC	OPSR 5205	Organization and planning of scientific research (in English)	1	3	3	Exam		90	30	15		15	30	30	3			
Module 2.1 – Methodology of Teaching Mathematics in Higher and Secondary Schools, 20 Academic Credits																		
BD EC	MTSMP 5206	Methods of teaching for solving math problems (in English)	1	5	5	Exa m		150	45	15		30	25	80	5			
BD EC	IMTMH E 5207	Interactive Methods of Teaching Mathematics in Higher Education (in Russian)	2	5	5	Exa m		150	45	15		30	25	80		5		
BD EC	TDLTPT M 5208	The development of logical thinking in the process of teaching mathematics (in Kazakh)	2	5	5	Exa m		150	45	15		30	25	80		5		
BD	TP	Teaching Practice	3	5	5	repor t		150									5	
Module 2.2 – Modern Educational Technologies, 20 Academic Credits																		
BD EC	MTSAM P 5206	Methodology of teaching on solving applied mathematical problems (in English)	1	5	5	Exam		150	45	15		30	25	80	5			
BD EC	MSPPC 5207	Methods for solving problems with practical content (in Russian)	2	5	5	Exam		150	45	15		30	25	80		5		

BD EC	MTMHS 5208	Modular teaching mathematics in high school (in Kazakh)	2	5	5	Exam		150	45	15		30	25	80		5		
BD	TP	Teaching Practice	3	5	5	report		150									5	
Module 3.1 – Research Methodology and Advanced Study of Mathematics, 30 Academic Credits																		
PD UC	FQAGL 5301	Fundamental questions of algebra, geometry and logic (in Kazakh)	1	5	5	Exa m		150	45	15		30	25	80	5			
PD UC	ICSQME 5302	International comparative studies of the quality of mathematical education (in Kazakh)	2	5	5	Exa m		150	45	15		30	25	80		5		
PD EC	FIA 5303	Fundamental Issues of Analysis (in English)	2	4	4	Exa m		120	40	20		20	20	60		4		
	MSRW	Master's Student's Research Work	1, 2	16	16	repor t		480							5	11		
Module 3.2 – Theoretical Foundations of Mathematics Education, 30 Academic Credits																		
PD UC	FQAGL 5301	Fundamental questions of algebra, geometry and logic (in Kazakh)	1	5	5	Exam		150	45	15		30	25	80	5			
PD UC	ICSQME 5302	International comparative studies of the quality of mathematical education (in Kazakh)	2	5	5	Exam		150	45	15		30	25	80		5		
PD EC	CMA 5303	Classical methods of analysis (in English)	2	4	4	Exam		120	40	20		20	20	60		4		
	MRSW	Master's Student's Research Work	1, 2	16	16	report		480							5	11		
Module 4.1 – Development of Mathematical Abilities, 28 Academic Credits																		
PD UC	MPSOM 6304	Methods of preparing schoolchildren for Olympiads in mathematics (in Kazakh)	3	5	5	Exam		150	45	15		30	25	80			5	

PD EC	MSPPT MSUITT 6305	Methods of solving problems of probability theory and mathematical statistics using IT technology (in Russian)	3	5	5	Exam		150	45	15		30	25	80			5	
PD EC	GQTDE 6306	Geometric and qualitative theory of differential equations (in Kazakh)	4	5	5	Exam		150	45	15		30	25	80				5
PD EC	SCPUIT T 6307	Solving construction problems using IT technology (in Kazakh)	4	5	5	Exam		150	45	15		30	25	80				5
	MSRW	Master's student's research work	3, 4	8	8			240									5	3
Module 4.2 – Modern Mathematical Education, 28 academic credits																		
PD UC	MPSOM 6304	Methods of preparing schoolchildren for Olympiads in mathematics (in Kazakh)	3	5	5	Exam		150	45	15		30	25	80			5	
PD EC	MMSPE 6305	Methods of mathematical statistics in a pedagogical experiment (in Russian)	3	5	5	Exam		150	45	15		30	25	80			5	
PD EC	AMSPD E 6306	Approximate methods for solving problems of differential equations (in Kazakh)	4	5	5	Exam		150	45	15		30	25	80				5
PD EC	AAAMM 6307	Applied aspect of the application of mathematical methods (in Kazakh)	4	5	5	Exam		150	45	15		30	25	80				5
	MSRW	Master's student's research work	3, 4	8	8			240									5	3
Module 5 – Practice and Final Certification, 27 academic credits																		
PD	RP	Research Practice	4	19	19	Exam		570									10	9
	FA	Final attestation	4	8	8	SE		240										8
ALTOGETHER																		
	TOTAL	on a cycle BD		35	35			1050	285	105		180	225	390	20	10	5	
		on a cycle BD UK		15	15			450	150	60		90	150	150	15			

BD EC	MTSMP 5206	Methods of teaching for solving math problems (in English)	1	5	5	LO 2, LO 3, LO 4, LO 7, LO 8, LO 9
BD EC	IMTMHE 5207	Interactive Methods of Teaching Mathematics in Higher Education (in Russian)	2	5	5	LO 1, LO 2, LO 3, LO 4, LO 8
BD EC	TDLTPTM 5208	The development of logical thinking in the process of teaching mathematics (in Kazakh)	2	5	5	LO 2, LO 3, LO 4, LO 8
Module 2.2 – Modern Educational Technologies, 20 Academic Credits						
BD EC	MTSAMP 5206	Methodology of teaching on solving applied mathematical problems (in English)	1	5	5	LO 1, LO 2, LO 3, LO 7, LO 8, LO 9
BD EC	MSPPC 5207	Methods for solving problems with practical content (in Russian)	2	5	5	LO 1, LO 3, LO 7, LO 8, LO 9
BD EC	MTMHS 5208	Modular teaching mathematics in high school (in Kazakh)	2	5	5	LO 2, LO 3, LO 4, LO 8
Module 3.1 – Research Methodology and Advanced Study of Mathematics, 30 Academic Credits						
PD UC	FQAGL 5301	Fundamental questions of algebra, geometry and logic (in Kazakh)	1	5	5	LO 3, LO 8, LO 9
PD UC	ICSQME5302	International comparative studies of the quality of mathematical education (in Kazakh)	2	5	5	LO 2, LO 3, LO 5, LO 7, LO 8, LO 9
PD EC	FIA 5303	Fundamental Issues of Analysis (in English)	2	4	4	LO 3, LO 7, LO 8, LO 9
Module 3.2 – Theoretical Foundations of Mathematics Education, 30 Academic Credits						
PD UC	FQAGL 5301	Fundamental questions of algebra, geometry and logic (in Kazakh)		5	5	LO 3, LO 8, LO 9
PD UC	ICSQME5302	International comparative studies of the quality of mathematical education (in Kazakh)	2	5	5	LO 2, LO 3, LO 5, LO 7, LO 8, LO 9
PD EC	CMA 5303	Classical methods of analysis (in English)	2	4	4	LO 7, LO 8, LO 9
Module 4.1 – Development of Mathematical Abilities, 28 Academic Credits						
PD UC	MPSOM 6304	Methods of preparing schoolchildren for Olympiads in mathematics (in Kazakh)	3	5	5	LO 3, LO 8, LO 9
PD EC	MSPPTMSUI TT 6305	Methods of solving problems of probability theory and mathematical statistics using IT technology (in Russian)	3	5	5	LO 1, LO 5, LO 8, LO 9
PD EC	GQTDE 6306	Geometric and qualitative theory of differential equations (in Kazakh)	4	5	5	LO 1, LO 3, LO 5, LO 8, LO 9
PD EC	SCPUITT 6307	Solving construction problems using IT technology (in Kazakh)	4	5	5	LO 1, LO 5, LO 7, LO 8, LO 9

Module 4.2 – Modern Mathematical Education, 28 academic credits						
PD UC	MPSOM 6304	Methods of preparing schoolchildren for Olympiads in mathematics (in Kazakh)	3	5	5	LO 3, LO 8, LO 9
PD EC	MMSPE 6305	Methods of mathematical statistics in a pedagogical experiment (in Russian)	3	5	5	LO 1, LO 5, LO 8, LO 9
PD EC	AMSPDE 6306	Approximate methods for solving problems of differential equations (in Kazakh)	4	5	5	LO 1, LO 5, LO 8, LO 9
PD EC	AAAMM 6307	Applied aspect of the application of mathematical methods (in Kazakh)	4	5	5	LO 1, LO 2, LO 3, LO 8, LO 9

**8. Summary table reflecting the volume of credits disbursed by modules of the educational program
(full-time study, duration of study - 2 years)**

Course	Term	Number of modules to be mastered	Number of disciplines studied		Number of academic credits						Total Hours UK	ECTS EC	Quantity	
			UC	EC	Theoretical training	Pedagogical practice	Research Practice	Scientific research work	Final certification	Total			Theoretical training	Pedagogical practice
1	1	3	6	1	25	0	0	5	0	30	900	30	7	1
	2	2	1	3	19	0	0	11	0	30	900	30	4	1
2	3	3	1	1	10	5	10	5	0	30	900	30	2	3
	4	2	-	2	10	-	9	3	8	30	900	30	2	2
Total:		10	8	7	64	5	19	24	8	120	3600	120	15	7

9. Resource support for master's programs in the field of training

Resource provision is formed based on the requirements for the conditions of implementing master's educational programs in the field of study 7M01501 – Mathematics and includes:

- staffing support
- educational-methodical and informational support
- material and technical support

Staffing

The implementation of the master's degree program should be provided by scientific and pedagogical personnel who, as a rule, have a basic education corresponding to the profile of the discipline taught, and are systematically engaged in scientific and (or) scientific and methodological activities.

The graduating department is the Department of Mathematics. The staff of the department is staffed in accordance with the legislation of the Republic of Kazakhstan and the Rules for competitive filling of positions of scientific and pedagogical staff of higher educational institutions.

The total number of full-time teachers at the Department of Mathematics is 32 teachers, including 2 doctors of science, 13 candidates of science, 5 doctors of PhD and 10 masters. The share of full-time teachers in their total number, including in the cycles of basic and major disciplines of the state compulsory standard of education, is 80%, the share of teachers with academic degrees and titles in the number of full-time teachers is 62.5%.

Educational, methodological and informational support

Educational, methodological and information support of the educational program 7M01501 – Mathematics includes: standard and working curriculum of the discipline, UMKD, syllabus, control and measuring materials, active handouts, didactic materials for all academic disciplines of the curriculum, regulatory documents regulating the types of educational activities.

Each master's student has access to the Internet, including the electronic library of the university, the AF RSTL, KazNEB, Web of Knowledge (Thomson Reuters) and Web of Science, Scopus, Springer and the resources of the scientific library of the university. The library fund is equipped with printed and electronic publications, educational and scientific literature in all disciplines of the specialty. In addition, undergraduates have access to the fund of the RSTL AF under a contract, including access to the dissertation fund of the RSL.

Material and technical support

In the implementation of OP 7M01501 – Mathematics, the material and technical base is used to ensure the conduct of all types of classes provided for by the working curriculum and corresponding to the current sanitary and fire safety rules and standards.

The material and technical base is provided by the presence of an educational building (at 263 Br. Zhubanovkykh Street) with flow classrooms, equipped classrooms and laboratories, computer classes for conducting classes on the EP "7M01501- Mathematics".

For the implementation of EP **7M01501** – Mathematics, the Faculty of Physics and Mathematics has the necessary classroom fund, methodological and specialized classrooms (scientific and innovative classroom named after Daulet Umbetzhanov, multilingual training room, theory and methodology of teaching mathematics room, "Algebra" room, "Geometry" room), computer classes and special laboratories ("Laboratory of Analytics of Streaming Data and Machine Learning", "Computer Modeling and Numerical Methods", "Computer Graphics", etc.). In the specialized classrooms "Geometry", "Algebra" there are interactive panels DIGITOUCH BB-86 - these are interactive devices that combine a touch LCD screen as a multimedia player and a surface for writing with chalk or a marker, which are designed to organize the process of innovative learning, briefings or other tasks that require additional explanations and examples in the course of presenting the material.

10. Environmental characteristics of K. Zhubanov Aktobe Regional University, providing the development of general cultural and socio-personal competences of graduates

The university has all the necessary conditions and opportunities to ensure the formation and development of general cultural and socio-personal competencies of graduates.

An integral part of the educational process is educational work, the purpose of which is the formation of a professional, harmoniously developed and morally stable personality. Particular attention in educational work is focused on the education of patriotism, citizenship, a sense of responsibility, decency, honesty, loyalty to professional duty, law-abiding, respectful attitude to each other and others. Educational work is carried out in the following areas:

1. education of civil and spiritual and moral culture
2. education of aesthetic culture
3. education of physical culture and the formation of a healthy lifestyle
4. education of environmental culture
5. labor education

As the basic regulatory framework for organizing the educational and upbringing process at the university, the "Concept of Educational Work" has been developed, along with a number of internal university regulations, such as the Regulation "On Student Self-Government", the Regulation "On the Organization of Educational Work at K. Zhubanov ARU", the Regulation "On the Council for the Prevention of Offenses", the Regulation "On the School of Legal Knowledge", the Regulation "On the Sports Club", the Regulation "On the Debate Club", and others.

To organize educational work at the university, the department for educational work and youth policy was created, which includes the department for work with students and youth organizations, the department for social and cultural work. In addition, the university has a student parliament, a student dormitory council, a sports club, a Council for the prevention of offenses, etc.

For the organization of cultural work and the formation of a healthy lifestyle, the university has a sufficient material and technical base:

- Palace of Youth
- Palace of Students

- Two sports complexes
- Sports facility
- 3 separate gyms
- Stadium with a running track and a grass football field
- Tennis court
- Shooting range
- Student multidisciplinary clinic
- Modern library

For the harmonious development of the personality, contributing to the strengthening of moral, civic, patriotic and general cultural competencies of undergraduates, the Debate Clubs "Ritor", "Zaman Bizdiki", the school of legal knowledge, the student theater "Zhubanov Zhastary", the Club of Young Poets "Tarazy", "English-club", "Education club", "Universal programmer-club", KVN club, charity club "Umiten uzilmesin", volunteer club "Zhubanov zhyluy", "ARSU STAR" and "Big Fam" dance clubs, "Mansap" School of Public Service, sports sections, etc.

Educational work is carried out in a complex of information and propaganda, individual psychological, legal, socio-economic, moral and ethical, cultural, sports and other events.

AGREED:

Director of the Public School "Secondary School-Gymnasium №21 with three-language instruction," Aktobe

Toishymanova M. K.

Director of the Public School "Aktobe Regional Physics and Mathematics Boarding School," Aktobe

Tleumagambetova K. Y.

Director of the Public School "Aktobe Regional Specialized Boarding Lyceum 'Bilim-Innovation' for Gifted Boys"

Kuralbayev K.N.

Director of School-Gymnasium №35, Aktobe

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Umirzakova Sh.K.

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Kazbayeva S.S.