

L.N. GUMILYOV EURASIAN NATIONAL UNIVERSITY

APPROVED BY

NCJSC «L.N. Gumilyov Eurasian National University»

By the decision of the Board of 2022 y., Record No. 8.



EDUCATION PROGRAM

Program Level: Master degree

Code and name of areas of training:

7M054 – Mathematics and Statistics

7M05401 – Mathematics
(Code and name of education programme)

2022 ADMISSION

Typical period of study: 2 years

Qualification level: 7 NQF, 7 EQF

DESIGNED

Academic Council for the development and evaluation of education programs

<u>Kozybaev D.Kh.</u> (Name)	<u>[Signature]</u> (signature)	<u>15.03.2022</u> (date)	<u>Nauryzbaev R.Zh.</u> (Name)	<u>[Signature]</u> (signature)	<u>15.03.2022</u> (date)
<u>Alday M.</u> (Name)	<u>[Signature]</u> (signature)	<u>15.03.2022</u> (date)	<u>Koshkarova B.S.</u> (Name)	<u>[Signature]</u> (signature)	<u>15.03.2022</u> (date)

Employer:

<u>Bekmaganbetov K.A.</u> (Name)	<u>[Signature]</u> (signature)	<u>16.03.2022</u> (date)
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Head of the Department of
Fundamental and Applied
Mathematics, Kazakhstan
branch of Moscow State
University named after M.V.
Lomonosov
(position)



Student:

<u>Bralina S.</u> (Name)	<u>[Signature]</u> (signature)	<u>15.03.2022</u> (date)
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MM-21
(group)

CONSIDERED

At the meeting of the Academic Council
date 06.04.2022 Record № 5
Chairman of the Expertise Section of Educational Programs

<u>Kashkhyrbay B.B.</u> (Name)	<u>[Signature]</u> (signature)	<u>06.04.2022</u> (date)
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AGREED

Dean of Faculty	<u>Kozybayev D.Kh.</u> (Name)	<u>[Signature]</u> (signature)	<u>16.03.2022</u> (date)
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RECOMMENDED

at the meeting of the Academic Council
date 06.04.2022 Record № 5
Vice Rector for Academic Affairs

<u>Ongarbayev E.A.</u> (Name)	<u>[Signature]</u> (signature)	<u>06.04.2022</u> (date)
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The Passport of Education Program

Application area	The program is designed to prepare undergraduates in the field of mathematics.
The code and name of education program	7M05401 – Mathematics
The regulatory and legal support	Law “On Education” of the Republic of Kazakhstan State General Education Standard on higher education (31.10.2018, № 604) Standard Rules for the Activities of Educational Organizations that Implement Study Programs of Higher and (or) Postgraduate Education (30.10.2018 №595) Rules for the Organization of the Educational Process on the Credit Technology of Education (12.10.2018, №563) Classifier of Areas of Training with Higher and Postgraduate Education (13.10.2018 №569) Professional Standart “Educator”, approved in Appendix № 133 of June 8, 2017 by the Order of the Chairman of the Board of the National Chamber of Entrepreneurs of the RK “Atameken”
Profile map of education program	
Objective of EP	To prepare the Master of Science in Mathematics, who have deeper systematic theoretical knowledge and practical skills on fundamental and actual directions of mathematics for their implementation in their professional activities.
The concept of education program	The educational program regulates the goals, results, content, conditions and technologies for the implementation of the educational process, assessment of the quality of the graduate’s training in this area of training, and includes materials that ensure the quality of student training and implementation of appropriate educational technology
Graduate Qualification Characteristics	
Awarded degree	Master of Sciences on the education program «7M05401 – Mathematics»
List of a specialist’s positions	- researcher, analyst, manager in organizations of education and science; - teacher of mathematical disciplines in universities, research centers.
The area of professional activity	Sphere of education and science, scientific and production, social and economic.
The object of professional activity	The objects of the graduate's professional activity are: research institutes and training centers, departments of management, expertise, assessment, analysis of organizations in the fields of education, science and economics, universities.
Functions of professional activity	Functions of research and analytical activities: – conducting fundamental and applied research using a mathematical apparatus; – participation in conducting scientific

	<p>events;</p> <ul style="list-style-type: none"> – approbation of research results; – implementation of publishing activities; – collection and processing of information; – analysis and recommendations for improving the quality of professional activity. <p>Functions organizational and management activities:</p> <ul style="list-style-type: none"> – participation in the implementation of the goals and objectives of the organization; – participation in the creation of communications networks, the collection, processing and direction of information; – participation in organizing various events to improve the quality of professional activity. <p>Functions of pedagogical activity:</p> <ul style="list-style-type: none"> – study of opportunities, needs, achievements of students in the field of education; – education and training in the field of education in accordance with the requirements of educational standards; – use of technologies appropriate to the age-specific characteristics of students and reflecting the specifics of subject areas; – organization of interaction with public and educational organizations, children's collectives and parents (legal representatives), participation in self-management and management of the school collective for solving the problems of professional activity; – the formation of an educational environment to ensure the quality of education, including the use of information technology; – ensuring the safety of life and health of students during the educational process;
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2 Profile of Competences

General professional competences (GPC)	The result of training(GPC units)	The name of courses that form the results of training (units of competences)
<p>GPC₁ - The ability to put the latest achievements in the field of pedagogical activity into practice, to expand and deepen their knowledge in the field of scientific research</p>	<p>RT₁- Analyzes the main world outlook and methodological problems, including cross-disciplinary ones, arising in science at the present stage of its development as well as uses its results in professional activities.</p>	<p>1. Foreign Language (Professional) 2. History and Philosophy of Science</p>
	<p>RT₂ - knows modern pedagogical technologies and possesses communication skills</p>	<p>1. Foreign Language (Professional) 2. Higher School Pedagogy 3. Management psychology 4. Teachinginternship</p>
Professional Competences (PC)	The result of training (PC units)	The name of courses that form the results of training (units of competences)
<p>PC₂ - The ability to find, formulate and solve actual and significant problems of fundamental and applied mathematics. To own methods of fundamental areas of mathematics and being able to use them in for various application problems also to be capable analytical approach to solving problem and to be capable to present own new scientific results in the form of strictly reasonable statements.</p>	<p>RT₃- To master methods of the theory of the closed linear operators in Hilbert space, to be capable to represent regional tasks with rough data in the form of the operator equation and to investigate them functional methods.</p>	<p>1. Linear analysis in finite-dimensional space/ 2. The linear differential operators/ 3. Maximum Regularity Approach to Equations of Quantum Mechanics 4. The compact operators 5. Metric spaces and theory of operators 6. Nonlinear analysis in finite-dimensional space. 7. Weighted estimates of matrix operators</p>
	<p>RT₄- To master bases of the modern theory of functional spaces, to be aimed at development of functional thinking in a broad sense, to own definitions of spaces of Lebegue, Sobolev, spaces of functions of no integral smoothness - from a position of the harmonious analysis, from a position of the classical analysis, to be capable to prove theorems of an investment, the theorem of animators.</p>	<p>1. Inequalities in functional spaces/ 2. Weighted inequalities of Hardy type/ 3. Boundedness of integral and matrix operators/ 4. Expansion and contraction of linear operators/ 5. Methods of functional analysis 6. Additive and multiplicative weighted inequalities/</p>

	<ul style="list-style-type: none"> 7. Spaces of potentials and their applications. 8. Galois theory 9. Transformations of type Hardy and Bellman
<p>RT₅- To master the theory of orthogonal ranks, multiple trigonometrical series, Fourier's multiple series on trigonometrical system, regular systems. to be capable to apply methods of trigonometrical series of Fourier and of multiple trigonometrical series of Fourier, in the theory of animators, the theory of multipliers, in the theory of functional spaces.</p>	<ul style="list-style-type: none"> 1. Trigonometric Fourier series and Fourier transform 2. Multipliers of trigonometric Fourier series in optimal monitoring problems 3. Classes of multipliers in the trigonometric system 4. Fourier series in the regular system 5. Binary analysis 6. Summability of multiple Fourier series 7. Fourier multipliers in Lorentz spaces 8. Summability of Fourier coefficients functions from weight spaces 9. Wavelet analysis and its applications to signal processing 10. Multipliers on weighted spaces of smooth functions
<p>RT₆- To master methods of topological vector spaces, the theory of the generalized functions and to apply them in research work.</p>	<ul style="list-style-type: none"> 1. Elements of the theory of generalized functions 2. The theory of measure 3. Topological vector spaces 4. Weighted space of functions whose smoothness
<p>RT₇- To understand the goals and objectives of modern harmonic analysis, set forth the main tasks posed by modern science, solve new problems and use new study methods in the theory of functions and functional analysis.</p>	<ul style="list-style-type: none"> 1. Integrability and summability of orthogonal series 2. Singular integrals in function spaces 3. The theory of approximation of a function 4. Discrete space and the basic inequalities in them
<p>RT₈- To own skills of search of actual problems of the theory of algebra and geometry; to formulate a problem and to apply modern methods of algebra to its solution.</p>	<ul style="list-style-type: none"> 1. The theory of groups 2. C*- Algebra 3. Lie algebras and their automorphisms 4. Polynomial automorphisms/ 5. Finite Abelian groups 6. Spaces and rings 7. Group-based cryptography

	<p>RT₉- To master theoretical knowledge of the theory of the numerical integration, the necessary mathematical apparatus, helping to analyze, model and solve applied engineering problems with use of the computer, methods of the scientific analysis and forecasting of various phenomena and processes for their application in professional activity.</p>	<ol style="list-style-type: none"> 1. Computational (numerical) diameter by exact information 2. Limiting errors unexact information for the discretization of PDE solutions 3. Limiting error of unexact information of optimal recovery (case of recovery the functions) 4. The basic computational aggregates of the numerical analysis 5. Algebraic number theory in reconstruction problems 6. Problems of numerical integration in the context of a computer (computing) diameter 7. Optimal approximation of a thermal process with infinitely smooth initial conditions
	<p>RT₁₀- To attain skills of work with various inequalities, methods of interpolation spaces for their application to concrete functional spaces; to master interpolation methods and to apply them at research of specific objectives.</p>	<ol style="list-style-type: none"> 1. Interpolation theory 2. The general theory of interpolation Sobolev spaces 3. Net spaces and their application 4. Multivariable interpolation method and its application 5. Generalized Morrey spaces and their application 6. Interpolation of weighted Sobolev spaces
	<p>RT₁₁- To understand an essence of the generalized derivatives, the generalized solution of the differential equation, to enter the generalized solution of the set regional task in a class of explosive functions, to prove aprioristic estimates of solutions of the elementary differential equations and resolvability of the equations with the operator with the closed area of values, to apply theorems of the functional analysis to search of the generalized decisions.</p>	<ol style="list-style-type: none"> 1. The singular differential equations 2. Boundary value problems for ordinary differential equations 3. The linear equations in the Banach space 4. The generalized solutions of the equations of mathematical physics
<p>PC₃ - To be capable to be correct to formulate the purposes and problems of scientific research, the concept of scientific search; to be capable to make the plan of research work for separate sections of the master thesis, to plan works necessary for performance resources, to estimate results of own work; to be capable to take useful scientific and technical information from electronic libraries, abstract magazines, the Internet; to be capable to present own new scientific results in the form of strictly reasonable statements.</p>	<p>RT₁₂- To work with scientific information, master the skills of academic writing (abstracting, annotation, writing a scientific article, a project) and the presentation of the research topic. to present own new scientific results in the form of strictly reasonable statements and to make out results of researches in the form of articles, reports, etc.</p>	<ol style="list-style-type: none"> 1. Scientific-research work of graduate students 2. Research Intership 3. Accomplishment and defense of Master's degree thesis

3 The content of the education programme

Module name and code	Course code	Coursename	Cycle, component	Language of instruction	Amount of credits	The volume of hours by types of occupations				Type of control	Developed competences	Department in charge
						Lectures	Seminars	aboratory classes	SIW			
semester 1												
EDUC 52003 Higher School Pedagogy	HSP 5201	Higher School Pedagogy	BD UK	Kazakh/Russian	4	15	22		83	Exam	GPC ₁	Social pedagogy and self-cognition
PSYC 52004 Management psychology	MP 5202	Management psychology	BD UK	Kazakh/Russian	4	15	22		83	Exam	GPC ₁	Social pedagogy and self-cognition
Chooseone												
MATH53005 Methods of functional analysis	MFA5201	Methods of functional analysis	BD EC	Kazakh/Russian	8	45	30		165	Exam	PC ₂	Fundamental mathematics
MATH53006 Trigonometric Fourier series and Fourier transform	TFSFT5202	Trigonometric Fourier series and Fourier transform	BD EC	Kazakh/Russian						Exam	PC ₂	Fundamental mathematics
MATH53007 Integrability and summability of orthogonal series	ISOS 5203	Integrability and summability of orthogonal series	BD EC	Kazakh/Russian						Exam	PC ₂	Fundamental mathematics
MATH53008 The theory of groups	ThG 5204	The theory of groups	BD EC	Kazakh/Russian						Exam	PC ₂	Algebra and Geometry
MATH53009 The basic computational aggregates of the numerical analysis	BCANA5205	The basic computational aggregates of the numerical analysis	BD EC	Kazakh/Russian						Exam	PC ₂	Fundamental mathematics
MATH53010 The compactoperators	KO5206	The compactoperators	BD EC	Kazakh/Russian						Exam	PC ₂	Fundamental mathematics
MATH53011 Discrete space and the basic inequalities in them	DSBI5207	Discrete space and the basic inequalities in them	BD EC	Kazakh/Russian						Exam	PC ₂	Fundamental mathematics

MATH53012 Topological vector spaces	TVS5208	Topological vector spaces	BD EC	Kazakh/ Russian						Exam	PC ₂	
Choose one												
MATH53013 Metric spaces and theory of operators	MSTO5209	Metric spaces and theory of operators	BD EC	Kazakh/ Russian	7	45	30		135	Exam	PC ₂	Fundamental mathematics
MATH53014 Classes of multipliers in the trigonometric system	CMTS5210	Classes of multipliers in the trigonometric system	BD EC	Kazakh/ Russian						Exam	PC ₂	Fundamental mathematics
MATH53015 Spaces of potentials and their applications.	SPTA5211	Spaces of potentials and their applications.	BD EC	Kazakh/ Russian						Exam	PC ₂	Fundamental mathematics
MATH53016 Finite Abelian groups	FAG5212	Finite Abelian groups	BD EC	Kazakh/ Russian						Exam	PC ₂	Algebra and Geometry
MATH53017 Computational (numerical) diameter by exact information	C(N)DEI 5213	Computational (numerical) diameter by exact information	BD EC	Kazakh/ Russian						Exam	PC ₂	Fundamental mathematics
MATH53018 The linear differential operators	LDO5214	The linear differential operators	BD EC	Kazakh/ Russian						Exam	PC ₂	Fundamental mathematics
MATH53019 Inequalities in functional spaces	IFS 5215	Inequalities in functional spaces	BD EC	Kazakh/ Russian						Exam	PC ₂	Fundamental mathematics
MATH53020 Elements of the theory of generalized functions	EThGF5216	Elements of the theory of generalized functions	BD EC	Kazakh/ Russian						Exam	PC ₂	Fundamental mathematics
MATH52120 Scientific-research work of graduate students	SRWG5401 (1)	Scientific-research work of graduate students		Kazakh/ Russian	7					Report	PC ₃	Fundamental mathematics Algebra and Geometry
Semester 2												
ENGL 52002 Foreign language (professional)	FL 5203	Foreign language (professional)	BD UK	English	4		37		83	Exam	GPC ₁	Foreign Languages Department
PHIL 52001 History and Philosophy of Science	HPS5204	History and Philosophy of Science	BD UK	Kazakh/ Russian	4	15	22		83	Exam	GPC ₁	Philosophy
MATH 52021 Boundary value problems for ordinary differential equations	BVPODE 5301	Boundary value problems for ordinary differential equations	PD UK	Kazakh/ Russian	5	30	15		105	Exam	PC ₂	Fundamental mathematics
Choose one												
MATH53022 Nonlinear	NAFDS5301	Nonlinear analysis in finite-	PD EC	Kazakh/ Russian	5	30	15		105	Exam	PC ₂	Fundamental mathematics

analysis in finite-dimensional space.		dimensional space.										
MATH53023 Interpolation theory	ITh5302	Interpolation theory	PD EC	Kazakh/Russian						Exam	PC ₂	Fundamental mathematics
MATH53024 Singular integrals in function spaces	SIFS5303	Singular integrals in function spaces	PD EC	Kazakh/Russian						Exam	PC ₂	Fundamental mathematics
MATH53025 Spaces and rings	SR5304	Spaces and rings	PD EC	Kazakh/Russian						Exam	PC ₂	Algebra and Geometry
MATH53026 Algebraic number theory in reconstruction problems	ANTRP5305	Algebraic number theory in reconstruction problems	PD EC	Kazakh/Russian						Exam	PC ₂	Fundamental mathematics
MATH53027 The singular differential equations	SDE5306	The singular differential equations	PD EC	Kazakh/Russian						Exam	PC ₂	Fundamental mathematics
MATH53028 Generalized Morrey spaces and their application	GMSTA5307	Generalized Morrey spaces and their application	PD EC	Kazakh/Russian						Exam	PC ₂	Fundamental mathematics
MATH53029 The theory of measure	ThM5308	The theory of measure	PD EC	Kazakh/Russian						Exam	PC ₂	Fundamental mathematics
Choose one												
MATH53030 Weighted inequalities of Hardy type	WITH5309	Weighted inequalities of Hardy type	PD EC	Kazakh/Russian/English	5	30	15		105	Exam	PC ₂	Fundamental mathematics
MATH53031 Fourier series in the regular system	FSRS5310	Fourier series in the regular system	PD EC	Kazakh/Russian						Exam	PC ₂	Fundamental mathematics
MATH53032 Binary analysis	BA5311	Binary analysis	PD EC	Kazakh/Russian/English						Exam	PC ₂	Fundamental mathematics
MATH53033 Lie algebras and their automorphisms	LATHA5312	Lie algebras and their automorphisms	PD EC	Kazakh/Russian						Exam	PC ₂	Algebra and Geometry
MATH53034 Problems of numerical integration in the context of a computer (computing) diameter	PNICCD5313	Problems of numerical integration in the context of a computer (computing) diameter	PD EC	Kazakh/Russian						Exam	PC ₂	Fundamental mathematics
MATH53035 Expansion and contraction of linear operators	ECLO5314	Expansion and contraction of linear operators	PD EC	Kazakh/Russian						Exam	PC ₂	Fundamental mathematics

MATH53036 Net spaces and their application	NSThA5315	Net spaces and their application	PD EC	Kazakh/Russian						Exam	PC ₂	Fundamental mathematics
MATH53037 Weighted space of functions whole smoothness	WSFWS5316	Weighted space of functions whole smoothness	PD EC	Kazakh/Russian						Exam	PC ₂	Fundamental mathematics
RhIN 52220 Scientific-research work of graduate students	SRWG 5401 (2)	Scientific-research work of graduate students		Kazakh/Russian	7					Report	PC ₃	Fundamental mathematics Algebra and Geometry
Total credits for 1st year					60	225	210		945			
Semester 3												
MATH62038 Linear analysis in finite-dimensional space	LAFDS 5302	Linear analysis in finite-dimensional space	PD UK	Kazakh/Russian	5	30	15		105	Exam	PC ₂	Fundamental mathematics
Choose one												
MATH63039 Boundedness of integral and matrix operators	BIMO6317	Boundedness of integral and matrix operators	PD EC	Kazakh/Russian/English	6	30	30		120	Exam	PC ₂	Fundamental mathematics
MATH63040 Summability of multiple Fourier series	SMFS6318	Summability of multiple Fourier series	PD EC	Kazakh/Russian/English						Exam	PC ₂	Fundamental mathematics
MATH63041 The theory of approximation of functions	ThAF6319	The theory of approximation of functions	PD EC	Kazakh/Russian						Exam	PC ₂	Fundamental mathematics
MATH63042 Galois theory	GT6320	Galois theory	PD EC	Kazakh/Russian/English						Exam	PC ₂	Algebra and Geometry
MATH63043 Limiting error of unexact information of optimal recovery (case of recovery the functions)	LEUIOR (CRF) 6321	Limiting error of unexact information of optimal recovery (case of recovery the functions)	PD EC	Kazakh/Russian/English						Exam	PC ₂	Fundamental mathematics
MATH63044 Maximum Regularity Approach to Equations of Quantum Mechanics	MRAEQM6322	Maximum Regularity Approach to Equations of Quantum Mechanics	PD EC	Kazakh/Russian/							PC ₂	Fundamental mathematics
MATH63045 Fourier multipliers in Lorentz spaces	FMLS6323	Fourier multipliers in Lorentz spaces	PD EC	Kazakh/Russian/English						Exam	PC ₂	Fundamental mathematics
MATH63046 Interpolation of weighted Sobolev spaces	IWSS6324	Interpolation of weighted Sobolev spaces	PD EC	Kazakh/Russian/						Exam	PC ₂	Fundamental mathematics
Choose one												

MATH63047 Additive and multiplicative weighted inequalities	AMWI6325	Additive and multiplicative weighted inequalities	PD EC	Kazakh/ Russian	6	30	30		120	Exam	PC ₂	Fundamental mathematics
MATH63048 Multipliers of trigonometric Fourier series in optimal monitoring problems	MTFSOMP6326	Multipliers of trigonometric Fourier series in optimal monitoring problems	PD EC	Kazakh/ Russian/ English						Exam	PC ₂	Fundamental mathematics
MATH63049 C* - Algebras	CA6327	C* - Algebras	PD EC	Kazakh/ Russian						Exam	PC ₂	Fundamental mathematics
MATH63050 Group-based cryptography	GBC 6328	Group-based cryptography	PD EC	Kazakh/ Russian						Exam	PC ₂	Algebra and Geometry
MATH63051 Optimal approximation of a thermal process with infinitely smooth initial conditions	OATHPISIC6329	Optimal approximation of a thermal process with infinitely smooth initial conditions	PD EC	Kazakh/ Russian						Exam	PC ₂	Fundamental mathematics
MATH63052 The linear equations in the Banach space	LEBS6330	The linear equations in the Banach space	PD EC	Kazakh/ Russian						Exam	PC ₂	Fundamental mathematics
MATH63053 Summability of Fourier coefficients functions from weight spaces	SFCFFWS6331	Summability of Fourier coefficients functions from weight spaces	PD EC	Kazakh/ Russian						Exam	PC ₂	Fundamental mathematics
MATH63054 The general theory of interpolation Sobolev spaces	GThISS 6332	The general theory of interpolation Sobolev spaces	PD EC	Kazakh/ Russian						Exam	PC ₂	Fundamental mathematics
Choose one												
MATH63055 Weighted estimates of matrix operators	WEMO6333	Weighted estimates of matrix operators	PD EC	Kazakh/ Russian	5	30	15		105	Exam	PC ₂	Fundamental mathematics
MATH63056 Transformations of type Hardy and Bellman	THB6334	Transformations of type Hardy and Bellman	PD EC	Kazakh/ Russian						Exam	PC ₂	Fundamental mathematics
MATH63057 Wavelet analysis and its applications to signal processing	WAIASP 6335	Wavelet analysis and its applications to signal processing	PD EC	Kazakh/ Russian						Exam	PC ₂	Algebra and Geometry
MATH63058 Polynomial automorphisms	PA6336	Polynomial automorphisms	PD EC	Kazakh/ Russian/						Exam	PC ₂	Algebra and Geometry

MATH63059 Limiting errors unexact information for the discretization of PDE solutions	LEUIDPDES 6337	Limiting errors unexact information for the discretization of PDE solutions	PD EC	Kazakh/Russian/						Exam	PC ₂	Fundamental mathematics
MATH63060 The generalized solutions of the equations of mathematical physics	GSEMPH 6338	The generalized solutions of the equations of mathematical physics	PD EC	Kazakh/Russian/						Exam	PC ₂	Fundamental mathematics
MATH63061 Multivariable interpolation method and its application	MIMIP66339	Multivariable interpolation method and its application	PD EC	Kazakh/Russian/						Exam	PC ₂	Fundamental mathematics
MATH63062 Multipliers on weighted spaces of smooth functions	MWSSF6340	Multipliers on weighted spaces of smooth functions	PD EC	Kazakh/Russian/						Exam	PC ₂	Fundamental mathematics
TEIN 52063 Teachinginternship	TI 6305	Teachinginternship	BD UK	Kazakh/Russian	4					Report	GPC ₁	Fundamental mathematics Algebra and Geometry
SRWG 62164 Scientific-research work of graduate students	MGZZh SRWG 5401 (3)	Scientific-research work of graduate students		Kazakh/Russian	4					Report	PC ₃	Fundamental mathematics Algebra and Geometry
Semester 4												
SRWG 62065 Research practice	RP 6303	Research practice	PD UK	Kazakh/Russian	12					Report	PC ₃	Fundamental mathematics Algebra and Geometry
SRWG 62264 Scientific-research work of graduate students	SRWG 5401 (4)	Scientific-research work of graduate students		Kazakh/Russian	6					Report	PC ₃	Fundamental mathematics Algebra and Geometry
DMDT62066 Module of final assessment	Accomplishment and defense of Master's degree thesis		FA	Kazakh/Russian/English	12					Defense of degree work	PC ₃	Fundamental mathematics Algebra and Geometry
Total credits for 2nd year					30	120	90	450				
Total for education program					120	345	300	1395				

4 Summary table displaying the amount of obtained credits within the modular education program

Course	Semester	Amount of modules to be studied	Amount of subjects		Total credits						Total amount in hours	Amount		
			UC	EC	Theoretical classes	SRWG	Research practice	Teaching internship	Final assessment	TTotal		Exam	Report	Coursepaper
1	1	2	2	2	23	7				30	900	4	1	
	2	2	3	2	23	7				30	900	5	1	
2	3	2	1	3	22	4		4		30	900	4	2	
	4	2				6	12		12	30	900		2	
Total:			6	7	68	24	12	4	12	120	3600	13	6	

Organization of educational process

1. Specific admission requirements: University graduates enrolled on a master's program take a comprehensive test for groups of education programs, consisting of a test in a foreign language, a test for the major of a group of education programs, a test for determining readiness for learning. Persons entering a master's program with the English language of instruction, shall take a comprehensive test, consisting of a test on the major of a group of education programs in English and a test to determine readiness for learning in Kazakh or Russian (optional). Admission to a master's program is carried out on a competitive basis based on the results of entrance examinations of persons who have a bachelor degree on education programs of higher education. Admission of foreign citizens to a master's program is carried out on a fee basis.

2. Specific arrangements for recognition of prior learning: The condition for the recognition of previous education is carried out in accordance with the current Rules for admission to study at the L.N. Gumilyov Eurasian National University. The document confirming the results of non-formal education is a diploma of completion or a certificate of completion.

3. Qualification requirements and regulations: Persons who have mastered no less than 120 academic credits for the entire period of study, including all types of educational and research activities of the undergraduate, and successfully passed the final certification, awarded the degree of "Master" of natural sciences in the educational program and issued a diploma of postgraduate education with a transcript.

4. Occupational profile/s of graduates: Graduates of the education program "Mathematics" can work junior researcher in mathematical or economic research institutes and centers, mathematicians-analysts, mathematicians-actuaries in organizational and managerial structures, in the banking and financial sectors, teachers of mathematics in secondary vocational schools, secondary schools, lyceums and gymnasiums. In addition, this program will provide students with the necessary basic training to further improve their academic knowledge in fundamental mathematics.

5. Methods and techniques for program delivery: For realization of EP innovation technologies and interactive methods of teaching are widely used in academic classes.

6. Assessment criteria of learning outcomes: Learning achievements (knowledge, skills, abilities and competencies) of students are scored according to a 100-point scale corresponding to the international letter grading system (positive grades, as they decrease, from «A» to «D»), «unsatisfactory» – «FX», «F») with the corresponding digital equivalent on a 4-point scale (see *Table*).

Grade-rating letter system for assessing educational achievements of students with their transfer into the traditional grading scale and ECTS

Evaluation by letter grading system	Equivalent in numbers	Points(in %)	Assessment by traditional system
A	4,0	95-100	Excellent
A-	3,67	90-94	
B+	3,33	85-89	Good
B	3,0	80-84	
B-	2,67	75-79	
C+	2,33	70-74	Satisfactory
C	2,0	65-69	
C-	1,67	60-64	
D+	1,33	55-59	Unsatisfactory
D-	1,0	50-54	
FX	0,5	25-49	
F	0	0-24	