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**Federal State Autonomous Educational Institution of Higher Education  
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA NAMED AFTER PATRICE  
LUMUMBA  
RUDN University**

**Faculty of Science**

(educational division (faculty/institute/academy) as higher education programme developer)

Approved at the meeting of the Academic  
Council of RUDN University  
Protocol No. 1  
January 24, 2011

(date, month, year)

Opened by order of the Rector of  
RUDN University  
No. 44-1  
January 31, 2011

(date, month, year)

**PROFESSIONAL EDUCATION PROGRAMME OF HIGHER EDUCATION**

Field of Studies/Speciality:

**01.04.01 Mathematics**

(field of studies/speciality code and title)

Profile/Specialisation:

**Functional Methods in Differential Equations and Interdisciplinary Research**

(higher education programme title)

The Educational Programme is developed in compliance with:

**Educational Standard of RUDN University**, approved by Order of the Rector No. 371 dated  
May 21, 2021

Level of education:

**master's**

(bachelor's/specialist's/master's – to fill in the required)

Graduate's Qualification:

**Master**

(graduate's qualification in compliance with the order of the Ministry of Education and Science of Russian Federation  
dated September 12, 2013, No. 1061)

Length of Educational Programme:

**2 years**

(full-time education)

-

(part-time education)

-

(correspondence education)

AGREED by:

Head  
of Educational Programme  
**V.I. Burenkov**

(signature)

(day, month, year)

Chairperson  
of Didactic Council  
**A.L. Skubachevskiy**

(signature)

(day, month, year)

Head  
of Educational Department  
**L.G. Voskressensky**

(signature)

(day, month, year)

2024

## **1. EDUCATIONAL PROGRAMME GOAL (MISSION)**

The social mission of the EP of HE is to prepare professional mathematicians who can, among other things, competently teach mathematics.

## **2. RELEVANCE, SPECIFICITY, UNIQUENESS OF THE EDUCATIONAL PROGRAM**

During their master's studies (and subsequently in postgraduate and doctoral studies), students conduct scientific research. To involve students in research work, the departments actively cooperate with research institutes of the Russian Academy of Sciences (RAS), conduct joint seminars and international conferences.

Students have the opportunity to study, practice and write theses with the best specialists in the field of functional analysis, theory of functional spaces, ordinary differential equations, partial differential equations, nonlinear analysis, spectral theory of differential operators. The graduation papers of many master mathematicians are devoted to mathematical modeling in economics, forecasting climate change, optimal calculations of the movement of flying objects, control theory, optimization problems in general, numerical modeling of physical processes. Along with studying in an international environment, there is a wide cooperation with leading specialized research organizations with the possibility of preparing graduation papers and subsequent employment or cooperation. Students have the opportunity to perform graduate qualification work in partner organizations, such as:

- V.A. Steklov Mathematical Institute of the Russian Academy of Sciences,
- A.A. Dorodnitsyn Computing Center of the Russian Academy of Sciences,
- Scientific Center for Nonlinear Problems of Mathematical Physics,
- Interdisciplinary Research Center Mathematical Modeling in Biomedicine.

## **3. LABOUR MARKET NEEDS FOR PERSONNEL TRAINING IN EDUCATIONAL PROGRAMME PROFILE**

Mathematics graduates are widely in demand in many regions of Russia, as well as in foreign countries, including developing countries in Asia, Africa and Latin America. The steady popularity of this direction is connected both with the traditionally high level of training of mathematicians in Russia and with the extensive experience of training mathematics students at the RUDN. One of the important reasons for the demand for graduates in this specialty in the labor market is the significant experience of pedagogical work of mathematical departments and their extensive international relations.

Many graduates of mathematics are actively working in the banking system (Alfa-Bank, Sberbank, Prombusinessbank); participate in the development of mathematical models of economic behavior of the Russian economy in industry and

academic institutions; are engaged in applied problems arising in physics, technology, defense industry, economics and ecology, in modeling natural science problems; occupy leading positions in scientific institutions and enterprises in Russia (LUKOIL, TANECO), as well as countries of the near and far abroad (for example, in the National Academy of Sciences of Kazakhstan).

A number of graduates work in prestigious Russian (Lomonosov Moscow State University, RUDN, Moscow Aviation Institute, St. Petersburg Institute of Precision Mechanics and Optics (Technical University), etc.) and foreign universities (P. and M. Curie University, Paris, France; Berlin Free University, Germany), where they teach disciplines related to mathematical modeling, forecasting in economics, differential equations.

## 5. SPECIAL REQUIREMENTS FOR POTENTIAL APPLICANTS

Requirements for the applicant: The presence of higher education of the 1st level (bachelor's degree or specialty) in the direction of "Mathematics" or in related areas, no less than satisfactory passing of entrance tests.

## 6. FEATURES OF EDUCATIONAL PROGRAMME IMPLEMENTATION

6.1. The Educational Programme is implemented with elements of e-learning / distance learning technologies / (Teams platform).

6.2. The language of the Educational Programme implementation is English.

6.3. The Educational Programme does not provide for education of people with disabilities.

6.4. The Educational Programme is implemented by the Federal State Autonomous Educational Institution of Higher Education "Peoples' Friendship University of Russia.

The information about partner organisations involved in the implementation of the Educational Programme

<b>Name of partner organisation</b>	<b>Interaction functionality</b>
V.A. Steklov Mathematical Institute of the Russian Academy of Sciences, Moscow	Scientific work of students on the basis of a partner organization

6.5. The information on the planned introductory/advanced field internships and (or) research & development internships

<b>Internship*</b>	<b>Internship location</b> ( <i>organisation name and location</i> )
Pedagogical training	Interdisciplinary Research Center Mathematical Modeling in Biomedicine, Moscow
Research work	Interdisciplinary Research Center Mathematical Modeling in Biomedicine, Moscow

<b>Internship*</b>	<b>Internship location</b> ( <i>organisation name and location</i> )
Pre-graduation practical training	Interdisciplinary Research Center Mathematical Modeling in Biomedicine, Moscow

\* The section should indicate the type (introductory/advanced field internship), the kind (orientation, technological, research, pre-graduate, etc.), and the mode (intramural/ extramural) of internship.

## 7. CHARACTERISTICS OF EDUCATIONAL PROGRAMME GRADUATE'S PROFESSIONAL ACTIVITIES

7.1. The field(s) of professional activities of the Educational Programme graduate,—where he/she can carry out his/her professional activities: Research activities in areas using mathematical methods and computer technologies; solving various problems using mathematical modeling of processes and objects and software; development of effective methods for solving problems of natural science, technology, economics and management; software and information support for scientific, research, design and operational management activities; teaching cycle mathematical disciplines (including computer science).

7.2. The type(s) of professional activities tasks, which the graduate is trained to solve when mastering the Educational Programme:

- research and scientific;
- production and technology;
- organizational and managerial;
- pedagogical.

Research activities in areas using mathematical methods and computer technologies; solving various problems using mathematical modeling of processes and objects and software; development of effective methods for solving problems of natural science, technology, economics and management; software and information support for scientific, research, design and operational management activities; teaching cycle mathematical disciplines (including computer science).

7.3. The list of generalised labour functions and labour functions which are related to the professional activities of the Educational Programme graduate and are taken into account in the course of its development\*

Code and title of occupational standard	Generalised labour functions			Labour functions		
	Code	Title	Qualification level	Title	Code	Qualification level (sublevel)
40.011 Specialist in research and development	A	Conducting research and development work on separate	5	Implementation of work on processing and analysis of scientific and technical	A/01.5	5

Code and title of occupational standard	Generalised labour functions			Labour functions		
	Code	Title	Qualification level	Title	Code	Qualification level (sublevel)
		sections of the topic		information and research results		
				Implementation of experiments and registration of research and development results	A/02.5	5
				Preparation of documentation elements, draft plans and programs for individual stages of work	A/03.5	5

\* - The wording of labour functions is taken from the relevant Occupational Standards.

## 8. REQUIREMENTS FOR EDUCATIONAL PROGRAMME OUTCOMES

8.1. Upon completion of the Educational Programme, the graduate is expected to acquire the following Generic Competences (GCs):

Code and descriptor of generic competence	Code and competence level indicator
<b>GC-1.</b> Is able to search, critically analyze and synthesize information, apply a systematic approach to solving tasks	<b>GC-1.1.</b> Analyzes the problem situation as a mathematical system, identifying its components and the connections between them <b>GC-1.2.</b> Identifies gaps in the information needed to solve a problem situation and designs processes to eliminate them; <b>GC-1.3.</b> Critically assesses the reliability of information sources, works with contradictory information from different sources. <b>GC-1.4.</b> Develops and substantiates a strategy for solving a problem situation on the basis of systemic and interdisciplinary approaches. <b>GC-1.5.</b> Uses logical and methodological tools for a critical assessment of modern concepts of a philosophical and social nature in its subject area
<b>GC-2.</b> He is able to manage the project at all stages of its life cycle	<b>GC-2.1.</b> Formulates a project task based on the problem posed and a way to solve it through the implementation of project management, <b>GC-2.2.</b> Develops the concept of the project within the framework of the designated problem: formulates the goal, objectives, justifies the relevance, significance, expected results and possible areas of their application; <b>GC-2.3.</b> Plans the necessary resources, including taking into account their interchangeability;

Code and descriptor of generic competence	Code and competence level indicator
	<p><b>GC-2.4.</b> Develops a project implementation plan using planning tools;</p> <p><b>GC-2.5.</b> Monitors the progress of the project, corrects deviations, makes additional changes to the project implementation plan, clarifies the areas of responsibility of project participants</p>
<p><b>GC-3.</b> He is able to organize and manage the work of the team, developing a team strategy to achieve the goal</p>	<p><b>GC-3.1.</b> Develops a strategy of cooperation and on its basis organizes the selection of team members to achieve the goal;</p> <p><b>GC-3.2.</b> Plans and corrects the work of the team taking into account the interests, behavioral characteristics and opinions of its members;</p> <p><b>GC-3.3.</b> Resolves conflicts and contradictions in business communication on the basis of taking into account the interests of all parties</p> <p><b>GC-3.4.</b> Organizes discussions on a given topic and discussion of the results of the team's work with the involvement of opponents to the developed ideas;</p> <p><b>GC-3.5.</b> Organizes discussions on a given topic and discussion of the results of the team's work with the involvement of opponents to the developed ideas;</p>
<p><b>GC-4.</b> Able to apply modern communication technologies in the state language of the Russian Federation and foreign language(s) for academic and professional interaction</p>	<p><b>GC-4.1.</b> Establishes and develops professional contacts in accordance with the needs of joint activities, including the exchange of information and the development of a unified strategy of interaction</p> <p><b>GC-4.2.</b> Compiles, translates and edits various academic texts (abstracts, essays, reviews, articles, etc.)</p> <p><b>GC-4.3.</b> Presents the results of academic and professional activities at various public events, including international ones, choosing the most appropriate format</p> <p><b>GC-4.4.</b> Defends its positions and ideas in academic and professional discussions in the state language of the Russian Federation and a foreign language in a reasoned and constructive manner</p>
<p><b>GC-5.</b> Able to analyze and take into account the diversity of cultures in the process of intercultural interaction</p>	<p><b>GC-5.1.</b> Analyzes the most important ideological and value systems formed in the course of historical development; substantiates the relevance of their use in social and professional interaction;</p> <p><b>GC-5.2.</b> Builds social and professional interaction taking into account the peculiarities of the main forms of scientific and religious consciousness, business and general culture of representatives of other ethnic groups and confessions, various social groups;</p> <p><b>GC-5.3.</b> Ensures the creation of a non-discriminatory interaction environment when performing professional tasks</p>
<p><b>GC-6.</b> He is able to determine and implement the priorities of his own activities and ways to improve it on the basis of self-assessment</p>	<p><b>GC-6.1.</b> Evaluates his resources and their limits (personal, situational, temporary), optimally uses them for the successful completion of the assigned task</p> <p><b>GC-6.2.</b> Determines the priorities of professional growth and ways to improve their own activities based on self-assessment according to the selected standards</p>

<b>Code and descriptor of generic competence</b>	<b>Code and competence level indicator</b>
	<b>GC-6.3.</b> Builds a flexible professional trajectory using the tools of continuing education, taking into account the accumulated experience of professional activity and dynamically changing requirements of the labor market
<b>GC-7</b> Is able to: search for the necessary sources of information and data, perceive, analyze, memorize and transmit information using digital means, as well as using algorithms when working with data obtained from various sources in order to effectively use the information received to solve problems; evaluate information, its reliability, build logical conclusions based on incoming information and data	<b>GC-7.1</b> Formation of the ability to effectively use the information obtained by various modern methods to solve fundamental scientific problems and tasks

8.2. Upon completion of the Educational Programme, the graduate is expected to acquire the following general professional competences (GPCs):

<b>Code and descriptor of general professional competence</b>	<b>Code and competence level indicator</b>
<b>GPC-1.</b> Able to formulate and solve actual and significant problems of mathematics	<b>GPC-1.1.</b> Uses existing and develops new methods of solving problems in mathematics <b>GPC-1.2.</b> Uses modern equipment, software and professional databases to solve mathematical problems <b>GPC-1.3.</b> Uses modern computational and theoretical mathematical methods to solve professional problems
<b>GPC-2.</b> He is able to build and analyze mathematical models in modern natural science, technology, economics and management	<b>GPC-2.1.</b> Conducts a critical analysis of the results obtained <b>GPC-2.2.</b> Formulates conclusions and conclusions based on the results of the analysis of historical data, his own results in mathematics
<b>GPC-3.</b> Is able to use knowledge in the field of mathematics in the implementation of pedagogical activities	<b>GPC-3.1.</b> Presents the results of the work in the form of a scientific publication (abstracts, article, review) in Russian and English <b>GPC-3.2.</b> Determines possible directions of development of the work and prospects for practical application of the results obtained

8.3. Upon completion of the Educational Programme, the graduate is expected to acquire the following professional competences (PCs)\*:

Code and descriptor of professional competence	Code and competence level indicator	Code and title of occupational standard for relevant PC
<b>PC-1</b> Able to conduct scientific research and obtain new scientific and applied results independently and as part of a research team	<b>PC-1.1.</b> Draws up a general research plan and detailed plans for individual stages <b>PC-1.2.</b> Selects experimental and computational theoretical methods for solving the problem based on the available material and time resources	40.011 Specialist in research and development
<b>PC-2</b> Able to develop and analyze conceptual and theoretical models of solved scientific problems and tasks	<b>PC-2.1.</b> Searches for specialized information in the patent information databases of the <b>PC- 2.2.</b> Analyzes and summarizes the results of the patent search on the subject of the project in the chosen field of mathematics	40.011 Specialist in research and development
<b>PC-3</b> Is able to develop and apply mathematical methods, system and application software to solve problems of scientific and design-technological activities	<b>PC-3.1.</b> Systematizes the information obtained in the course of research, analyzes it and compares it with the literature data <b>PC-3.2.</b> Determines possible directions for the development of work and prospects for the practical application of the results obtained	40.011 Specialist in research and development
<b>PC-4</b> Is able to develop and analyze conceptual and theoretical models of solved tasks of design and production and technological activities	<b>PC-4.1.</b> Capable of composing mathematical models for solving practical problems	40.011 Specialist in research and development
<b>PC-5</b> Able to manage projects, plan research activities, analyze risks, manage the project team	<b>PC-5.1.</b> Capable of planning when organizing research activities	40.011 Specialist in research and development
<b>PC-6</b> Able to organize corporate learning processes based on information technology and the development of corporate knowledge bases	<b>PC-6.1.</b> Ability to use modern information and communication technologies in the process of learning and teaching	40.011 Specialist in research and development
<b>PC-7</b> Able to develop and optimize business plans for scientific and applied projects	<b>PC-7.1.</b> Capable of drawing up business models in research activities; <b>PC-7.2.</b> Ability to solve modern problems of business informatics and mathematical economics	40.011 Specialist in research and development
<b>PC-8</b> Able to develop corporate standards and	<b>PC-8.1.</b> Development and use of corporate standards	40.011 Specialist in research and



Code and descriptor of professional competence	Code and competence level indicator	Code and title of occupational standard for relevant PC
profiles of functional standardization of applications, systems, information infrastructure		development
<b>PC-9</b> Capable of teaching mathematical disciplines and computer science in general education organizations, professional educational organizations and educational institutions of higher education	<b>PC-9.1.</b> Формирование педагогических умений и навыков; <b>PC-9.2.</b> Ability to work and interact with the team	40.011 Specialist in research and development
<b>PC-10</b> Able to develop educational and methodological complexes for e-learning	<b>PC-10.1.</b> Ability to develop educational and methodological complexes for e-learning	40.011 Specialist in research and development
<b>PC-11</b> Carrying out work on the processing and analysis of scientific and technical information and research results	<b>PC-11.1</b> Ability to process scientific and technical information; <b>PC-11.2</b> Ability to analyze the results of scientific research	40.011 Specialist in research and development

\*The Educational Programme's developer formulates the PC, taking into account the requirements of occupational standards and the Educational Programme field of study.

**9. MATRIX of COMPETENCIES** formed by students during the development of the Educational Program "**Mathematics**", in the field of studies /specialty **01.04.01 Mathematics**

	<b>Courses/modules that form students' competences</b>	GC-1: He is able to carry out a critical analysis of problem situations based on a systematic approach, to develop a strategy of actions	GC-2: Able to manage the project at all stages of its life cycle	GC-3: Able to organize and manage the work of the team, developing a team strategy to achieve the goal	GC-4: Able to carry out business communication in oral and written forms in the state language of the Russian Federation and foreign language(s) языке(ах)	GC-5: Able to analyze and take into account the diversity of cultures in the process of intercultural interaction	GC-6: He is able to determine and implement the priorities of his own activities and ways to improve it on the basis of self-assessment	GC-7: Is able to: search for the necessary sources of information and data, perceive, analyze, memorize and transmit information using digital means, as well as using algorithms when working with data obtained from various sources in order to effectively use the information received to solve problems; evaluate information, its reliability умозаключения на основании поступающих информации и данных
<b>Block 1.</b>	<b>Disciplines (modules)</b>							
B1.O.01	<b>Core component</b>							
B1.O.01.01	<i>The Foreign (Russian) language in professional activities</i>				GC-4.1, GC-4.2, GC-4.3, GC-4.4			
B1.O.01.02	<i>History and methodology of mathematics</i>						GC-6.1, GC-6.2, GC-6.3	

B1.0.01.03	<i>Computer technologies in science and education</i>							
B1.0.01.04	<i>Introduction to Neural Networks, Big Data Analysis and Machine Learning</i>							
B1.0.01.05	<i>Applied problems of mathematical modeling</i>							
B1.0.02	<b>Variable component</b>	GC-1.1; GC-1.2; GC-1.3; GC-1.4; GC-1.5	GC-2.1; GC-2.2; GC-2.3; GC-2.4; GC-2.5	GC-3.1; GC-3.2; GC-3.3; GC-3.4; GC-3.5				
B1.0.02.01	<i>Modern problems of mathematics</i>	GC-1.1; GC-1.2; GC-1.3; GC-1.4; GC-1.5						
B1.0.02.02	<i>Functional-differential equations and nonlocal boundary value problems</i>		GC-2.1; GC-2.2; GC-2.3; GC-2.4; GC-2.5	GC-3.1; GC-3.2; GC-3.3; GC-3.4; GC-3.5				
B1.0.02.03	<i>Function spaces</i>							
B1.0.02.04	<i>Additional chapters of mathematical modeling</i>							
B1.0.02.05	<i>Nonlinear analysis and optimization</i>							
B1.0.02.06	<i>Interdisciplinary term paper</i>							

	<b>The part formed by the participants of educational</b>							
B1.V.DV.01.0 1	Topological methods in elliptic theory					GC-5.1; GC-5.2; GC-5.3		
B1.V.DV.01.0 2	Mathematical models in biology and medicine					GC-5.1; GC-5.2; GC-5.3		
B1.V.DV.02.0 1	Introduction to low-dimensional topology							
B1.V.DV.02.0 2	Mathematical models in economics							
B1.V.DV.03.0 1	Computational methods of continuum mechanics							
B1.V.DV.03.0 2	Nonlinear evolution equations	GC-1.1; GC-1.2; GC-1.3; GC-1.4; GC-1.5						
B1.V.DV.04.0 1	Numerical analysis							
B1.V.DV.04.0 2	Non-Euclidean geometries and their applications							
B1.V.DV.05.0 1	Mathematical models and databases							
B1.V.DV.05.0 2	Elements of perturbation theory	GC-1.1; GC-1.2; GC-1.3; GC-1.4; GC-1.5						
<b>Block 2.</b>	<b>Mandatory part</b>							

B2.O.01	<b>Variable component</b>						GC-6.1; GC-6.2; GC-6.3	
B2.O.01.01(P)	<i>Pedagogical training</i>							
B2.O.01.02(R)	<i>Research work</i>						GC-6.1; GC-6.2; GC-6.3	
	The part formed by the participants of educational							
B2.B.01	Pre-graduation practical training							
Block 3	<b>Final State Examination</b>	GC-1.1; GC-1.2; GC-1.3; GC-1.4; GC-1.5	GC-2.1; GC-2.2; GC-2.3; GC-2.4; GC-2.5	GC-3.1; GC-3.2; GC-3.3; GC-3.4; GC-3.5	GC-4.1, GC-4.2, GC-4.3, GC-4.4	GC-5.1; GC-5.2; GC-5.3	GC-6.1; GC-6.2; GC-6.3	GC-7.1

	<b>Courses/modules that form students' competences</b>	GPC-1: Able to formulate and solve actual and significant problems of mathematics	GPC-2: He is able to build and analyze mathematical models in modern natural science, technology, economics and management	GPC-3: Is able to use knowledge in the field of mathematics in the implementation of pedagogical activities
Block 1	<b>Mandatory part</b>			
B1.O.01	<b>Core component</b>	GPC-1.1; GPC-1.2; GPC-1.3	GPC-2.1; GPC-2.2	GPC-3.1; GPC-3.2
B1.O.01.01	<i>The Foreign (Russian) language in professional activities</i>			
B1.O.01.02	<i>History and methodology of mathematics</i>	GPC-1.1; GPC-1.2; GPC-1.3		

B1.O.01.03	<i>Computer technologies in science and education</i>	GPC-1.1; GPC-1.2; GPC-1.3;		
B1.O.01.04	<i>Introduction to Neural Networks, Big Data Analysis and Machine Learning</i>	GPC-1.1; GPC-1.2; GPC-1.3;		
B1.O.01.05	<i>Applied problems of mathematical modeling</i>		GPC-2.1; GPC-2.2	GPC-3.1; GPC-3.2
B1.O.02	<b>Variable component</b>			GPC-3.1; GPC-3.2
B1.O.02.01	<i>Modern problems of mathematics</i>			
B1.O.02.02	<i>Functional-differential equations and nonlocal boundary value problems</i>			
B1.O.02.03	<i>Function spaces</i>			

B1.O.02.04	<i>Additional chapters of mathematical modeling</i>			GPC-3.1; GPC-3.2
B1.O.02.05	<i>Nonlinear analysis and optimization</i>			
B1.O.02.06	<i>Interdisciplinary term paper</i>			
	<b>The part formed by the participants of educational</b>			
B1.V.DV.01.0 1	Topological methods in elliptic theory			
B1.V.DV.01.0 2	Mathematical models in biology and medicine			
B1.V.DV.02.0 1	Introduction to low-dimensional topology			
B1.V.DV.02.0 2	Mathematical models in economics			



B1.V.DV.03.0 1	Computational methods of continuum mechanics			
B1.V.DV.03.0 2	Nonlinear evolution equations			
B1.V.DV.04.0 1	Numerical analysis			
B1.V.DV.04.0 2	Non-Euclidean geometries and their applications			
B1.V.DV.05.0 1	Mathematical models and databases			
B1.V.DV.05.0 2	Elements of perturbation theory			
<b>Block 2</b>	<b>Mandatory part</b>			
B2.O.01	<b>Variable component</b>			
B2.O.01.01(P )	<i>Pedagogical training</i>			
B2.O.01.02(R )	<i>Research</i>			
	The part formed by the participants of educational relations			

B2.B.01(Pg )	Pre-graduation practical training			
Block 3	<b>Final State Examination</b>	GPC-1.1; GPC-1.2; GPC-1.3	GPC-2.1; GPC-2.2	GPC-3.1; GPC-3.2

Code	Courses/modules that form students' competences	PC-1: Capable of conducting scientific research and obtaining new scientific and applied results independently and as part of a research team	PC-2: Capable of developing and analyzing conceptual and theoretical models of solved scientific problems and tasks	PC-3: Capable of developing and applying mathematical methods, system and application software to solve problems of scientific and design-technological activities	PC-4 is able to develop and analyze conceptual and theoretical models of solved tasks of design and production and technological activities	PC-5: Able to manage projects, plan research activities, analyze risks, manage the project team	PC-6: Able to organize corporate learning processes based on information technology and the development of corporate knowledge bases	PC-7: Able to develop and optimize business plans for scientific and applied projects	PC-8: Capable of developing corporate standards and profiles of functional standardization of applications, systems, information infrastructure
Block 1	<b>Mandatory part</b>								
B1.O.01	<b>Core component</b>		PC-2.1; PC-2.2	PC-3.1; PC-3.2					
B1.O.01.01	<i>The Foreign (Russian) language in professional activities</i>								
B1.O.01.02	<i>History and methodology of mathematics</i>								
B1.O.01.03	<i>Computer technologies in science and education</i>		PC-2.1; PC-2.2	PC-3.1; PC-3.2					

B1.O.01.04	<i>Introduction to Neural Networks, Big Data Analysis and</i>								
B1.O.01.05	<i>Applied problems of mathematical modeling</i>		PC-2.1; PC-2.2	PC-3.1; PC-3.2					
B1.O.02	<b>Variable component</b>	PC-1.1; PC-1.2	PC-2.1; PC-2.2	PC-3.1; PC-3.2		PC-5.1	PC-6.1		
B1.O.02.01	<i>Modern problems of mathematics</i>	PC-1.1; PC-1.2							
B1.O.02.02	<i>Functional-differential equations and nonlocal boundary value problems</i>		PC-2.1; PC-2.2	PC-3.1; PC-3.2					
B1.O.02.03	<i>Function spaces</i>					PC-5.1			
B1.O.02.04	<i>Additional chapters of mathematical modeling</i>								
B1.O.02.05	<i>Nonlinear analysis and optimization</i>					PC-5.1	PC-6.1		
B1.O.02.06	<i>Interdisciplinary term paper</i>	PC-1.1; PC-1.2	PC-2.1; PC-2.2	PC-3.1; PC-3.2	PC-4.1	PC-5.1			
	<b>The part formed by the participants of educational relations</b>								
B1.V.DV.01.01	Topological methods in elliptic theory								

B1.V.DV.01.0 2	Mathematical models in biology and medicine								
B1.V.DV.02.0 1	Introduction to low-dimensional topology	PC-1.1; PC-1.2							
B1.V.DV.02.0 2	Mathematical models in economics	PC-1.1; PC-1.2							
B1.V.DV.03.0 1	Computational methods of continuum mechanics				PC-4.1				
B1.V.DV.03.0 2	Nonlinear evolution equations								
B1.V.DV.04.0 1	Numerical analysis				PC-4.1	PC-5.1			
B1.V.DV.04.0 2	Non-Euclidean geometries and their applications	PC-1.1; PC-1.2							
B1.V.DV.05.0 1	Mathematical models and databases							PC-7.1; PC-7.2	PC-8.1
B1.V.DV.05.0 2	Elements of perturbation theory								
<b>Block 2</b>	<b>Mandatory part</b>								
B2.O.01	<b>Variable component</b>	PC-1.1; PC-1.2	PC-2.1; PC-2.2	PC-3.1; PC-3.2					
B2.O.01.01(P)	<i>Pedagogical training</i>								
B2.O.01.02(R)	<i>Research work</i>	PC-1.1; PC-1.2	PC-2.1; PC-2.2	PC-3.1; PC-3.2					
	The part formed by the participants of educational relations								

B2.B.01(Pg )	Pre-graduation practical training	PC-1.1; PC-1.2	PC-2.1; PC-2.2	PC-3.1; PC-3.2					
Block 3	<b>Final State Examination</b>	PC-1.1; PC-1.2	PC-2.1; PC-2.2	PC-3.1; PC-3.2	PC-4.1	PC-5.1	PC-6.1	PC-7.1; PC-7.2	PC-8.1