

Description of the educational program.

General characteristics of the educational program of higher education (EP HE).

1.1. The purpose (mission) of EP HE

The mission of the EP HE is to provide high quality training of scientific and scientific-pedagogical personnel of the highest qualification in the direction 01.06.01 "Mathematics and mechanics", profile "Real, complex and functional analysis", which has social mobility, competitiveness and stability in the modern labor market.

The purpose of the EP HE is to prepare scientific and scientific-pedagogical personnel of the highest qualification capable of innovative activity in the field of science, education, culture and management.

The objectives of the EP HE are:

- formation of skills of independent research and pedagogical activity;
- in-depth study of theoretical and methodological foundations of physical and mathematical Sciences;
- improvement of the philosophical training focused on professional activity;
- improvement of knowledge of a foreign language for use in scientific and professional activities;
- formation of competences necessary for successful scientific and pedagogical work in this field of science.

1.2. Basic information.

Basic educational program of higher education in the direction 01.06.01 "Mathematics and mechanics", profile "Real, complex and functional analysis".

Basic educational program of higher education in the direction 01.06.01 "Mathematics and mechanics", profile "Real, complex and functional analysis" is carried out in Peoples' Friendship University of Russia in full-time training with the qualification " Researcher. Teacher-researcher".

The volume of the postgraduate program is 240 credits (credits), regardless of the form of training, educational technologies used, the implementation of the program by several organizations engaged in educational activities, using a network form, the implementation of training on an individual curriculum, including accelerated education.

The normative term of mastering the basic educational training of scientific and pedagogical personnel in basic educational program of higher education in the direction 01.06.01 "Mathematics and mechanics", profile "Real, complex and functional analysis" in full-time education is 4 years. For persons with disabilities and persons with disabilities, the period of education on individual curricula may be increased by no more than a year.

1.3. Features of the implementation of the EP HE

In the implementation of basic educational program of higher education in the direction 01.06.01 "Mathematics and mechanics", profile "Real, complex and functional analysis" are used e-learning and distance education technologies. When teaching disabled people and persons with disabilities, e-learning and distance education technologies provide for the possibility of receiving and transmitting information in accessible forms.

1.4. The need of the labor market for graduates of this EP HE

The objects of professional activity of the basic educational program of higher education in the direction 01.06.01 "Mathematics and mechanics", profile "Real, complex and functional analysis" are research and production organizations of physical and mathematical and related profile, higher educational institutions, services, economic and other institutions that require specialists of higher physical and mathematical qualifications.

Researcher, teacher-researcher of mathematics can work in positions provided by the legislation of the Russian Federation and departmental documents for highly qualified specialists, taking into account the profile of training and work experience.

1.5. Requirements to the entrant.

The entrant must have a state-issued document on higher professional education (master's degree or specialist diploma) in one of the natural science areas or in one of the natural science specialties.

1.6. Characteristics of professional activity

Basic educational program of higher education in the direction 01.06.01 "Mathematics and mechanics", profile "Real, complex and functional analysis" is developed in accordance with the educational standard of higher education of PFUR, by level of education – training of highly qualified personnel (graduate course).

1.6.1. The field of professional activity of graduates – in the scientific and industrial sphere, in the socio-economic sphere.

Area of professional activity of graduates who have mastered the postgraduate program:

- solving complex problems in research, organizational, managerial and pedagogical spheres of activity related to the use of mathematics, mechanics and their applications
- participation in scientific mathematical research
- theoretical and experimental research, mathematical and computer modeling, covering a set of problems of theoretical and applied mathematics and mechanics (in accordance with the direction of training), as well as related natural science disciplines.

1.6.2 The objects of professional activity of graduates who have mastered the postgraduate program are concepts, hypotheses, theorems, physical and mathematical models, numerical algorithms and programs, methods of experimental study of the properties of materials and natural phenomena that make up the content of fundamental and applied mathematics, mechanics and other natural Sciences.

1.6.3 Types of professional activity.

- training of highly qualified scientific and scientific-pedagogical personnel, formation and development of their competencies in accordance with the professional standard;
- the final original scientific research, contributing to the creation, expansion and development of scientific knowledge.

1.6.4 Tasks of professional activity.

A graduate who has mastered the basic educational program of higher education in the direction 01.06.01 "Mathematics and mechanics", profile "Real, complex and functional analysis" can solve the following professional problems:

research activities:

- development of programs for research in mathematics, preparation of tasks for research and scientific works;
- collection, processing, analysis and systematization of scientific and technical information on the topic of research, selection and justification of methods and tools for solving problems;
- preparation of scientific and technical reports, reviews, publications on the results of research;
- participation in conferences, symposiums, schools, seminars, etc.;
- protection of intellectual property, management of research results;

scientific and pedagogical activity:

- preparation of educational materials and conducting theoretical and practical classes at the University;
- application and development of new educational technologies, including computer and distance learning systems.

1.7 Requirements for the results of postgraduate programs

1.7.1. The program is aimed at training highly qualified scientific and scientific-pedagogical personnel, formation and development of their competencies in accordance with the professional standard; the final original scientific research that contributes to the creation, expansion and development of scientific knowledge. As a result of the development of postgraduate programs, students should be formed universal, General professional and professional competence.

1.7.2. The graduate of the postgraduate program must possess the following universal competencies (UC):

ability to critical analysis and evaluation of modern scientific achievements, generating new ideas in solving research and practical problems, including inter-disciplinary fields (UC-1);

the ability to design and carry out complex research, including interdisciplinary, on the basis of a holistic system of scientific worldview using knowledge in the field of history and philosophy of science (UC-2);

willingness to participate in the work of Russian and international research teams to solve scientific and educational problems (UC-3);

readiness to use modern methods and technologies of scientific communication in the state and foreign languages, including readiness to communicate orally and in writing in Russian and foreign languages to solve the problems of professional activity, possession of foreign language communicative competence in the official business, educational and professional, scientific, socio-cultural, everyday spheres of foreign language communication (UC-4);

ability to plan and solve problems of own professional and personal development (UC-5).

1.7.3. A graduate of the postgraduate program must possess the following general professional competencies (GPC):

ability to independently carry out research activities in the relevant professional field using modern research methods and information and communication technologies (GPC-1);

readiness for teaching in the main educational programs of higher education (GPC-2).

1.7.4. A graduate who has mastered the postgraduate program must have the following professional competencies (PC):

knowledge in the main sections of real, complex and functional analysis, including measure theory, Lebesgue integral theory, Fourier series, Fourier transform, theory of analytic functions, theory of metric, Banach and Hilbert spaces, theory of bounded and completely continuous operators in Banach spaces, theory of self-adjoint operators, spectral theory of operators (PC-1);

knowledge of the theory of functional spaces (Lebesgue space, Sobolev space, Nikolsky-Besov space, etc.) and its applications to the theory of partial differential equations, including the solvability and smoothness of solutions of boundary value problems for elliptic equations, in the field of nonlinear analysis, the theory of extreme problems and optimal control (PC-2);

the ability to formulate the task of the study and the ways of its implementation, to summarize the results and draw appropriate conclusions, must understand the practical aspects of the theoretical results (PC-3).

1.8. Requirements to the results of the development of the educational program

Basic educational program of higher education in the direction 01.06.01 "Mathematics and mechanics", profile "Real, complex and functional analysis"

	Name disciplines (modules) in accordance with the curriculum	Universal competences				
		UC-1, ability to critical analysis and evaluation of modern scientific achievements, generating new ideas in solving research and practical problems, including inter-disciplinary fields	UC-2, the ability to design and carry out complex research, including interdisciplinary, on the basis of a holistic system of scientific worldview using knowledge in the field of history and philosophy of science	UC-3, willingness to participate in the work of Russian and international research teams to solve scientific and educational problems	UC-4, readiness to use modern methods and technologies of scientific communication in the state and foreign languages, including readiness to communicate orally and in writing in Russian and foreign languages to solve the problems of professional activity, possession of foreign language communicative competence in the official business, educational and professional, scientific, socio-cultural, everyday spheres of foreign language communication	UC-5, ability to plan and solve problems of own professional and personal development
Unit 1	Basic part					
	Foreign Language			+	+	
	History and Philosophy of Science		+			
	The variable part					
	Methodology of Scientific Research			+		
	Additional chapters of functional analysis	+	+	+		+
	Variational problems	+	+	+		

						+
	Pedagogy of Higher Education					
	Elective disciplines					
	General theory of functional differential equations	+	+	+		+
	Nonlinear partial differential equations	+	+	+		+
	Mathematical methods in Economics	+	+	+		+
	Variational analysis of differential equations	+	+	+		+
	Academic English			+	+	
	Academic Russian			+	+	
Unit 2	The variable part					
	Scientific training	+	+	+		+
	Pedagogical training					
Unit 3	The variable part					
	Scientific Research	+	+	+		+

	Name	General professional competencies
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	disciplines (modules) in accordance with the curriculum	GPC-1, ability to independently carry out research activities in the relevant professional field using modern research methods and information and communication technologies	GPC-2, readiness for teaching in the main educational programs of higher education
Unit 1	Basic part		
	Foreign Language		
	History and Philosophy of Science		+
	The variable part		
			+
	Methodology of Scientific Research		
	Additional chapters of functional analysis		
	Variational problems		+
	Pedagogy of Higher Education		
	Elective disciplines		
	General theory of functional differential equations		
	Nonlinear partial differential equations		

	Mathematical methods in Economics		
	Variational analysis of differential equations		
	Academic English		
Unit 2	Academic Russian		
	The variable part	+	
	Scientific training		+
Unit 3	Pedagogical training	+	
	The variable part	+	

	Name disciplines (modules) in accordance with the curriculum	Professional competencies	
	PC-1, knowledge in the main sections of real, complex and functional analysis, including measure theory, Lebesgue integral theory, Fourier series, Fourier transform, theory of analytic functions, theory of metric, Banach and Hilbert spaces, theory of bounded and completely continuous operators in Banach spaces, theory of self-adjoint operators, spectral theory of operators	PC-2, knowledge of the theory of functional spaces (Lebesgue space, Sobolev space, Nikolsky-Besov space, etc.) and its applications to the theory of partial differential equations, including the solvability and smoothness of solutions of boundary value problems for elliptic equations, in the field of nonlinear analysis, the theory of extreme problems and optimal control	PC-3, the ability to formulate the task of the study and the ways of its implementation, to summarize the results and draw appropriate conclusions, must understand the practical aspects of the theoretical results

Unit 1	Basic part			
	Foreign Language			
	History and Philosophy of Science			
	The variable part			
	Methodology of Scientific Research	+		+
	Additional chapters of functional analysis		+	+
	Variational problems			
	Pedagogy of Higher Education			
	Elective disciplines	+		+
	General theory of functional differential equations		+	+
	Nonlinear partial differential equations			+
	Mathematical methods in Economics			+
Variational analysis of differential equations				

	Academic English			
Unit 2	Academic Russian			
	The variable part			
Unit 3	Scientific training			
	Pedagogical training			
	The variable part			
