CONTENT OF THE EDUCATIONAL PROGRAM

№	Code and name of modules	Total credits by module	№	Name of subject and code	Credits by subjects	Cycle/component
1	**ORW – 1** Research methods of mathematics	**14**	1	**ORW 701** Academic writing	4	UC
			2	**ORW 702 Methods of scientific research**	5	UC
			3	**ORW 703/1 Commercialization of research and development**	5	OC
			4	**ORW703/2 Actual problems of modern mathematics and mathematical education**		OC
2	Fundamental problems of modern mathematics	11	5	Modern methods of mathematical and graphical information processing	5	
			6	Assessment of mathematical education	6	
			7	Actual problems of the methodology of teaching differential equations		
5	**PT – 2** Research work	**143**	8	**PT 801** Research work of a doctoral student, including an internship and the completion of a doctoral dissertation	123	UC
			9	**PT7(8)02** Research practice	10	UC
			10	**PT7(8,9) 031** Pedagogical practice	10	DSRW
6	**FC** Final certification	**12**	11	**FE 901** Writing and defending a doctoral dissertation	12	FC
TOTAL:		**180**			**180**	

2.1. DESCRIPTION MODULES AND DISCIPLINES

ORW – 1 Research methods of mathematics

Description of the module: The module is aimed at identifying the principles and main categories of the construction of science as a sphere of human activity, the patterns of its development and the study of the basics of the methodology of research in science; concepts of a systematic approach in scientific creativity; models of a systematic approach in conducting scientific research; models and methods of activating the creative potential of the researcher; the basic principles and characteristics of the system of certification of scientific personnel.

№	Name of subject and code	Cycle/component	Credits	Subject discruption	Teaching methods	LO by EP	Assessment methods
1	**ORW 701** Academic writing	UC	5	The purpose of the discipline is to familiarize doctoral students with the general methodology of scientific creativity, the basic concepts of the organization, planning of scientific research and the general laws of the development of science. Results - knows theoretical research methods; - can choose the right direction of scientific research; - is able to search, collect and process scientific information; - is able to conduct, process and formalize the results of experimental studies; - the skills of applying methods of mathematical analysis and modeling are being formed.	-role-playing games -educational discussions -case study method of projects		
2	**ORW 702** Methods of scientific research	UC	5	The purpose of the discipline is to form deep ideas among doctoral students about the content of scientific activity of theoretical and applied areas on methods of scientific research of mathematical problems and methods of teaching mathematics, its methods and forms of knowledge. Results -knows the conceptual and terminological apparatus, theoretical and empirical foundations of science, theoretical foundations of methodology, the main	-role-playing games -educational discussions -case study method of projects		

				functions of modern science, structural elements of theory, stages of scientific research; - - can determine the purpose, objectives, object and subject of research, formulate a hypothesis; - demonstrates the ability and willingness to apply the acquired skills and abilities in professional activities.			
3	**ORW 703/1** Commercialization of research and development	OC	8	The purpose of the discipline is the commercialization of the results of scientific and practical activities of doctoral students, the formation of a competent representation of their developments and developments of colleagues and professional competencies on the market. Results - knows how to analyze the problem, search, makes the optimal sequence of actions to achieve the goal; - knows the methods of planning, evaluation and control of scientific activities; - knows the principles of independent decision-making in the field of management of the organization of scientific research.			
Basic principles and methods of teaching mathematics Module description: in the process of mastering the module, doctoral students develop skills in the effective use of innovative pedagogical technologies, assessment tools in the study of special disciplines. Skills are formed to solve practical problems based on the results of research and analytical work carried out in the relevant fields of science.							
4	**ORW703/2 Actual problems of modern mathematics and mathematical education**			The objectives of mastering the discipline is the formation of a modern qualified competitive-capable specialist in the field of mathematical education, capable of active professional and creative activity with the use of acquired competencies, as well as knowledge, skills, skills to independently navigate in the field of professional activity, possess information and analytical tools. Graduates will be able to: - analyze and evaluate information related to the problems of science and education, plan and carry out their professional activities taking into account this analysis; -to design and organize the process of teaching mathematics using modern developing technologies, corresponding to the age and psychophysical characteristics of students, including their special educational needs;			

				- analyze the results of scientific research in the field of mathematical education using modern scientific methods and technologies; - to organize and conduct scientifically organized research.			
	ORW 704 Modern methods of mathematical and graphical information processing	UC	5	The purpose of the discipline is the formation of skills for choosing effective modern mathematical and graphical methods of information processing using computer technologies that help evaluate the results of the experiment. Results: - knows modern mathematical and graphical methods of information processing; - is able to mathematically evaluate the results of the experiment and draw theoretical conclusions; - is able to work in a team in the implementation of professional activities using modern methods of mathematical modeling.			

PT – 2 Fundamental problems of modern mathematics

Module description: the disciplines of the module are an introduction to the assessment of the quality of mathematical knowledge of students in the context of international comparative studies and the practical application of knowledge aimed at the formation of global competencies used in professional activities.

№	Name of subject and code	Cycle/component	Credits	Subject discruption	Teaching methods	LO by EP	Assessment methods
6	**PT 801** Assessment of mathematical education	UC	10	The purpose of the discipline is the formation of skills to improve the effectiveness of education through pedagogical monitoring. Results: - knows and can implement many scales of knowledge assessment used in the world; - knows the system of assessment of knowledge, skills and abilities of students and can receive them with dignity; - to improve and develop the system of conducting and evaluating control activities in mathematics.			
7	**PT7(8)02** Actual problems of the	UC	10	The purpose of the discipline is to familiarize doctoral students with modern methods of teaching the solution of			

	methodology of teaching differential equations			differential equations, the formation of skills of independent study of literature on methods of solving differential equations and their application, the development of skills in choosing effective numerical methods for solving differential equations. Results - knows analytical methods for solving differential equations; - owns the method of choosing numerical methods and algorithms for solving differential equations using basic concepts and methods of calculus; - can analyze solutions of differential equations based on the results obtained during the study.			

GER – 4 Research work

Description of the module: The module is mandatory for pedagogical specialties and is based on modern technological methods and techniques for organizing the structure of mathematical content as a competent specialist for solving various problems in international research.

№	Name of subject and code	Cycle/component	Credits	Subject discruption	Teaching methods	LO by EP	Assessment methods
1	Research work of a doctoral student, including an internship and the completion of a doctoral dissertation	UC	6	The purpose of the internship is the formation of skills to reflect the acquired knowledge in the field of mathematics, knowledge of current and promising problems of science, their systematic understanding, as well as the formation of the ability to use modern mathematical apparatus for the systematic solution of professional problems. Result - knows the basics of organizing scientific research in the field of mathematics; - is able to plan, develop, implement the process of scientific research; - skills of constant updating of professional knowledge, independent study of new knowledge are formed; - has the skills to conduct theoretical and applied scientific research in the field of mathematics.			**Video clip or social project protection**
2	**Research practice**	UC	10	The goal is to complete a doctoral dissertation, conduct research, defend one's point of view in a scientific			

				discussion, make independent judgments and independent decisions. Result - knows and understands modern scientific methodology; - is able to apply modern mathematical methods in professional activity; - able to critically analyze, evaluate and compare new ideas; - makes reasoned conclusions, can express his opinions; - can set new scientific tasks in the professional field.			
3	**Pedagogical practice**		6	The goal is to develop theoretical knowledge, skills and abilities of doctoral students in general professional and special disciplines, skills and abilities to implement professional educational programs and curricula in accordance with educational standards. Results - knows modern mathematical methods in the educational process; - is able to apply the acquired knowledge and skills in practice; - is able to use pedagogical technologies as a means of the educational process, to develop creative thinking.			
4	**Writing and defending a doctoral dissertation**			The purpose is to prepare a scientific qualification work for obtaining and defending an academic degree, including solving a problem of significant importance for the relevant field of knowledge. Results - the job must meet a number of qualification requirements; - take a test (at seminars, methodological meetings of the department, conferences, symposiums) to understand what questions or objections the defense may have and how they can be answered; - design of the text in accordance with the requirements.			