

Mathematics*

Master of Mathematics is able to creatively apply modern knowledge of analytical number theory, functional theory, differential equations and mathematical statistics, making innovative decisions, able to integrate the knowledge of mathematics and the knowledge of related areas and solve complex problems while possessing limited information. He/she prepares determined, stochastic mathematic models of real process, mathematical models of physical processes using differential equations, defines the proceeding of these processes as well as their characteristics. Master is able to assess the need of scientific researches, plan them in a qualified way, choose appropriate methodology of scientific researches, organize and conduct these scientific researches, reveal quantitative and qualitative characteristics of the object under research; using the software of applied programming, mathematical packages able to systematize, analyze, assess and forecast the data of scientific researches. He/she can to present the material – in writing and orally – in native and foreign languages in a lucid and reasoned way, present ideas and suggested solutions. Moreover, Master of Mathematics is able to plan and organize independently his/her activity, work individually and manage the team, that may consist of people of various scientific areas and education, and perceive the interests of society where he/she lives and works, the consequences of decisions as well as able to take responsibility. He/she gains generic competences which allow adjust to the situations of professional activities and to activity content. Mathematics Master's qualification gives an opportunity to work as teachers at institutions of higher education, researchers, as analysts of data in laboratories, centres of investigations, banks and companies, where it is necessary to have deep logical and mathematical thinking and preparation together with knowledge on information technologies. Also they can continue the doctoral studies.

Code: 621G10006

Degree awarded: Master of Mathematics

Study duration: 2 years full-time

Study Language: English and Russian

Knowledge and competences provided:

SUBJECT KNOWLEDGE:

- deep and extended knowledge in analytical number theory, functional theory, differential equations and mathematical statistics and skills to use it in new non-standard environment.
- suitably choose the methodology of scientific researches, organize and conduct these scientific researches;
- reveal quantitative and qualitative characteristics of the object under research;
- will apply the applied software, mathematical packages,
- will assess the need of scientific researches, plan them in a qualified way,

COGNITIVE COMPETENCES:

- to prepare the determined, stochastic mathematical models of real process;
- to prepare mathematical models of physical processes, which are described by differential equations;
- to define the proceeding of these processes and their characteristics;

- to choose and assess the alternative variants of solution;
- to solve the problems of adequacy and optimality;
- to solve complex problems while possessing the limited information.

PRACTICAL COMPETENCES:

- to systematize, analyze, assess and forecast the data of scientific researches;
- to apply creatively the theoretical knowledge and research results while making innovative decisions;
- to integrate the knowledge of mathematics and the knowledge of the areas related to mathematics in research and professional activities;
- to present scientific material in a clear, understandable and argumentative way.

TRANSFERABLE COMPETENCES:

- to plan independently and organize his/her activity;
- to present the ideas and suggested solutions in native and foreign languages;
- to perceive the interests of society in which he/she lives and works, the consequences of taken decisions and will be able to take up responsibility;
- to work individually and manage the team, which may be composed of the people of various scientific areas and education;
- to understand the need to learn and to develop his/her professional competences all life;
- to acquire generic competences that allow to adapt to constantly changing situations of professional activity and activity content.

Semester	Code	Course Title	Credits	No. of Academic Hours
M 1	P120M085	Analytic Number Theory	6	72
	P140M001	Additional Chapters of Functional Analysis	6	72
	P130M010	Special Sections of Complex Variable Functions Theory	6	72
	P001M546	Research Work in Science		3
		<i>Alternatives 1</i>		
	<i>P160M136</i>	<i>Gaussian Processes</i>	6	76
	<i>P160M135</i>	<i>Reliability Analysis</i>	6	76
M 2	P160M134	Multidimensional Statistical Analysis	6	72
	P140M129	Weak Convergence of Measures	6	72
	P160M001	Laplace Transformation in Stochastic Analysis	6	74
	P001M547	Research Work in Science	6	3
		<i>Alternatives 2</i>		
	<i>P190M365</i>	<i>Theory of Quantum Systems</i>	6	76
	<i>P130M100</i>	<i>Analytical Theory Degenerate System of Partial Differential Equations</i>	6	76
M 3	P130M130	Theory of Dirichlet L-Functions	6	72

	P130M001	Differential Mathematical Models	6	72
	P170M138	Statistical Modeling and Analysis	6	74
	P001M548	Research Work in Science	6	3
		<i>Alternatives 3</i>		
	P120M010	<i>Introduction to Modular Forms</i>	6	76
	<i>P130M101</i>	<i>The Basics of Probabilistic Number Theory</i>	6	76
M 4	P190M233	Final Master's Degree Work (Master's Thesis)	30	12

* The content of the study programme may change.