

Methods of nonlinear dynamics and mathematical modelling

National Research Nuclear University MEPhI (Moscow Engineering Physics Institute)

Degree or qualification is awarded: **Master degree**

Language of study: **Russian**

Mode of study: **full-time**

Duration: **2 years**

Availability of free education: **yes**

Price: **145 600 rubles per semester**

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The program purpose:

Preparation of the highly qualified personnel with deep theoretical and practical knowledge and skills in the field of mathematical physics, mathematical modeling and applied computer science.

The occupational field:

academic and research organizations related to the solution of scientific and technical problems; research and computer centers; scientific-production associations; institutes and educational organizations; government departments; organizations engaged in the development and use of information systems, scientific achievements, products and services in the field of applied mathematics and computer science.

Features of curriculum:

Master of the program gets in-depth mathematical training in the field of methods of computational mathematics, methods of mathematical modeling and nonlinear mathematical physics, techniques of the time-series analysis, mathematical statistics, theory of differential equations, data analysis, symbolic sequences and another branches of math.

A graduate of the program will have a universal and subject-specialized competencies, promote social mobility, stability in the labor market, and opportunities for professional growth. The main competitive advantage of the master's program are:

- The presence of a unique specialized courses;
- A large number of courses on information technology (IT);
- Highly - qualified teachers;
- Training is conducted in small groups.

Part of the curriculum is also implemented in English.

Modules:

The curriculum consists of two modules distributed in four semesters such as: general scientific and professional.

General scientific module consists of general-cultural disciplines and professional disciplines. The main purpose of this module is to extend the masters horizons by exploring the history of science, with contemporary challenges facing scientists, as well as the methods and approaches used in different areas of mathematics.

In turn, professional module focused on formation of knowledge and skills required to conduct research in the field of mathematical modeling of physical processes.

The centerpiece of the program takes research work under the guidance of prominent scientists involved in research projects in the relevant areas of fundamental and applied studies, which allows to generate the bachelor's ability to work in a scientific team, to generate new ideas and to demonstrate the skills of independent research work.

The program of the continuous training: Master of Science-Post graduate

Programs for which the bachelors are trained:

"Training for the research centers"

"Nuclear Power of the New Generation in 2010 - 2020",

"Innovative development Program of the Rosatom" and etc.

Specializations within this programme

Applied Mathematics and Informatics

Objects of professional activity:

mathematical physics; mathematical modeling; inverse and ill-posed problems; numerical methods; theory of probability and mathematical statistics; operations research and systems analysis; optimization and optimal control; mathematical cybernetics; discrete mathematics; nonlinear dynamics, computer science and management; mathematical models of complex systems theory, algorithms and applications; mathematical and computer image processing techniques; mathematical and information support of economic activity; mathematical methods and software for information security; mathematical and software of computer networks; information systems and research methods of mathematical forecasting and system analysis, etc.;

mathematical models and methods in the design of VLSI (over large integrated circuits); analytic theory of differential equations; group theory; the mathematical theory of games; mathematical methods of theoretical physics; mathematical methods of data processing; high-performance computing and parallel programming technology; computational nanotechnology; intelligent systems; bioinformatics;

software engineering; system programming; tools, technologies, resources and services of e-learning and mobile learning; Internet technology applications; automation of scientific research; programming languages, algorithms, libraries and software packages, the products of the system and application software; system and application software; automated computer systems; application developer; database; enterprise management system; network technologies.