Mathematical Cybernetics in information systems

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**

Programme curator: **Yuriy P. Kulyabichev**
Tel.: **Contact name: Olga N. Petukhova, Phone number. +74957885699, ext. 8045.**
E-mail: ONPetukhova@mephi.ru

Brief characteristic of the program: The educational program is aimed at training highly skilled masters in the field of software of systems and technologies of various physical natures for staffing enterprises of the nuclear industry and other high-tech branches of the Russian science and industry.

Graduates are prepared for the following programs: "Program of innovative development of the Rosatom State Corporation," "National Technological Base," and "Scientific and Scientific and Pedagogical Personnel of Innovative Russia."Brief characteristic of the program: The educational program is aimed at training highly skilled masters in the field of software of systems and technologies of various physical natures for staffing enterprises of the nuclear industry and other high-tech branches of the Russian science and industry.

Area of professional activity

The area of professional activity of masters includes state organizations and enterprises of the industry, which carry out design and development of information systems, products, and services in the field of applied mathematics and informatics:

- Rosatom State Corporation enterprises;
- research organizations engaged in development of innovative technologies;
- computer centers and data-processing centers;
- establishments of the system of higher education.

Graduates of the department will be able to perform works in the field of development of the following products:

- mathematical models of physical and dynamic processes, methods of numerical and computer realization of models and the systems based on realization of these models;
- automated systems of data processing, control, and management;
- program and algorithmic support of automated control and management systems and information processing systems;
- automated systems of data processing and management.

Part of the curriculum is also implemented in English.

The areas of professional activity are: mathematical models of physical and dynamic processes, methods of numerical and computer realization of models and the systems based on realization of these models; automated information processing systems, control and management; program and algorithmic support of automated control and management systems, information processing systems, bank and stock information systems.

The curriculum completely corresponds to the federal state educational standards. Programs contains the intensified training on disciplines of the physical and mathematical cycle and disciplines on studying of the principles of simulation of processes proceeding in nuclear, power, and dynamic systems, and also on the disciplines devoted to methods for developing systems of automated control, management and processing of information, database systems, and large program complexes.

The feature of the curriculum is the existence of two trajectories of training provided by elective courses and basic courses: "Asymptotic Analysis of Nonlinear Control Systems", "Bases of Certification of Software Products" and "Technology of Development of Large Program Complexes;" "WEB Programming Bases" and "Topical Issues of Computer Facilities and Mathematical Modeling;" "Digital Data Processing of Control in Information Systems;" and "Programming of Parallel Computing Systems."

Science modile: includes inparticular following courses - "Asymptotic Analysis of Nonlinear Control Systems", "Bases of Certification of Software Products", "Statistical data processing". Professional module - "Digital data processing", "Programming of Parallel Computing Systems" and others, Practics module.

The list of the enterprises for practice and for graduates:

- All-Russia Research Institute of Control Automation in the Non-industrial Sphere named after V.V. Solomatin (VNIINS);
- Systemprom Concern;
- Dollezhal Research and Development Institute of Power Engineering;
- Central Research Institute of Automatics and Hydraulics;
- CMA Small Systems AB;
- National Research Centre "Kurchatov Institute;"
- JSC MICEX;
- Aeroflot - Russian Airlines OJSC.

The program of continuous training: Bachelor's Degree - Master of Science - Post Graduate

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Manager of the Program: Yuriy P. Kulyabichev

Contact e-mail: YPKulyabichev@mephi.ru

Specializations within this programme