

# Micro- and nanoelectronic devices and systems for the physical installations

National Research Nuclear University MEPhI (Moscow Engineering Physics Institute)

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

Language of study: **Russian, English**

Mode of study: **full-time**

Duration: **2 years**

Availability of free education: **yes**

Price: **137 500 rubles per semester**

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**Basic department:** Micro- and Nanoelectronics (27)

**The program goal** is training of masters for fundamental research, organizational and management activities in areas related to the research and experimental studies in areas related to developing and designing micro - and nanoelectronic devices for modern physical facilities.

## **Characteristics of the scope and objects of professional activity of future graduates**

Research and development of new principles of operation of micro- and nanoelectronic devices, the creation of methods and means of designing and manufacturing; study of the properties of optoelectronic devices, micro- and nanoelectronic sensors and actuators, the organization of their operation in the control, measuring and control systems; development of theoretical models for the effects of ionizing, laser and electromagnetic radiation on electronic equipment; development of control systems, data acquisition and processing based on modern microprocessors, programmable logic chips, analog devices, optoelectronic and nanoelectronic devices; the design of new types of integrated circuits, systems on a chip, sensors and transducers, optoelectronic and nanoelectronic devices and equipment; the development of manufacturing technology of modern micro- and nanoelectronic devices and systems, including the creation of radiation-resistant products and products.

## **Brief description of the curriculum**

The curriculum provides the study of theoretical and fundamental subjects, such as nuclear and theoretical physics, physics of micro and nano structures, research methods of micro - and nanostructures, architecture of microprocessors, the study of technological problems of nuclear industry, electronic and telecommunication systems. Part of the curriculum is also implemented in English.

## **The base of industrial and/or scientific practice and employment**

The All-Russia Research Institute of Automatics (VNIIA), Research Institute of Scientific Instruments (RISI), JSC FCS&HT "SNPO "Eleron", Research Institute for System Studies of RAS, Institute of Space Instrument Making, Research Center "Module", Research Center of computer technology, PLC "MCST" and other Russian scientific centers; Rosatom; RAS institutes.

## **Specializations within this programme**

**Micro- and Nanoelectronics**

## **Objects of the professional activity**

Work in the research and design organizations and enterprises of nuclear, aerospace, electronic and allied industries as professionals - research and development of new types of micro- and nanoelectronic devices and electronic systems for various applications, including systems implemented on the chip.