

Nanoelectronics, spintronics and photonics

National Research Nuclear University MEPhI (Moscow Engineering Physics Institute)

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

Language of study: **Russian**

Mode of study: **full-time**

Duration: **4 years**

Availability of free education: **yes**

Price: **129 000 rubles per semester**

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Purpose of the program: obtaining the higher professional education by a graduate of the program, which will allow him/her to successfully work in the field of experimental research, technologies for preparation and modeling of solid-state (semiconductor) nanoscale multilayer structures (nanoheterostructures), have the general cultural and professional competencies promoting his/her social mobility and firmness in the labor market.

Competitive advantages of the program: the relevance of disciplines under study and the high technological level of the experimental basis (academic subjects are taught by acting scientists), the possibility of postgraduate work in areas that are extensively demanded at the present time and are the key areas for the applied science and technology: physics and technology of semiconductor electronic and optoelectronic devices (light-emitting diodes, photovoltaic cells, thin-film field-effect transistors, memory elements, etc.), based on nano-scale multilayer dielectric and semiconductor heterostructures.

Characteristics of the scope and objects of professional activity of graduates:

- development of physical principles and promising technologies for creating electronic, spintronic and optoelectronic devices;
- work in the nuclear industry and at academic institutions (e.g., National Research Centre "Kurchatov Institute," Lebedev Physical Institute of the Russian Academy of Sciences, Ioffe Physico-Technical Institute of the Russian Academy of Sciences), continuation of the research as a post-graduate (including the National Research Nuclear University "Moscow Engineering Physics Institute").

The base of industrial and/or research practice: laboratory facilities of the Institute of Functional Nuclear Electronics, MEPhI.

This program is also available in English language.

Specializations within this programme

The objects of professional activity: the atomic nucleus, elementary particles and plasma, the condensed state of matter, lasers and their applications, nuclear reactors, materials, nuclear reactors, nuclear materials and systems to ensure their safety, particle accelerators, advanced electronic circuit design, electronic systems of nuclear and physical installations, automated control system of nuclear installations, development of technology and use of devices and installations for the separation of isotopic and molecular mixtures, and the analysis of substances, radiation effect of ionizing radiation on humans and the environment, radiation technology in medicine, mathematical models for theoretical and experimental studies of phenomena and laws in physics, nucleus, particle, plasma, condensed matter, nuclear reactors, diffusion and interaction of radiation with objects of animate and inanimate nature, ecological environmental monitoring, security of nuclear materials, facilities and installations of atomic industry.