National Research Nuclear University MEPhI
(Moscow Engineering Physics Institute)
Institute of Nuclear Physics and Engineering

Nuclear power installations, including design, operation and decommissioning

Direction: 24.06.01 Aviation and Rocket-Space Technology
Scientific specialty: 05.14.03 Nuclear power installations, including design, operation and decommissioning
Program: Nuclear power installations, including design, operation and decommissioning
Certificate, degree or qualification: Researcher, Lecturer-researcher
Language of instruction: English
Duration and mode of study: 4 years, full-time
Program curator: Nikolay V. Shchukin

Graduation department: Department of Theoretical and Experimental Physics of Nuclear Reactors (#5)

Goals of the Program: higher professional-profiled education, that allows graduates to work successfully in the field of activities related to basic and applied problems of nuclear technology for space applications, and to have universal and subject-specialized competencies, promoting his/her social mobility and stability in the labour market.

Characteristics of the scope and objects of professional activity of future graduates
Theoretical and experimental research on the formation of shape, design of structures, propulsion systems, components, assemblies and systems of new aerial vehicles (AV) and improvement of existing ones, including aerospace systems (also on the basis of nuclear reactors for space applications), atmospheric manned and unmanned AVs. Methods for making project and technology decisions for choosing composition, optimal parameters and process organization of the life cycle of AVs, as well as the relation of these processes with the properties of the products, technical, economic and organizational characteristics of their production. Corresponding mathematical and computer codes.

Objects of the professional activity
Development of mathematical models of the cores and other equipment of nuclear reactors for space applications, including megawatt-class nuclear space power systems. Experimental studies to develop and design the technologies of nuclear reactors for space applications, including megawatt-class nuclear space power systems. New space means of high power for the implementation of the ambitious programs of study and exploration of outer space.

Brief description of the curriculum
The program includes the following special courses: "Nuclear power installations, including design, operation and decommissioning", "Technologies of creation of computational models of nuclear reactors for space applications." Scientific-research activity has an essential role in the learning process. PhD students acquire skills in research and analysis of scientific and technical information on the subject of research, modeling processes and objects on the basis of standard packages, performing experiments and development of methods of research, description of ongoing research and results analysis; development of process models. The focus is on teaching how to prepare survey, report, publication, patent, and implement research results. PhD students have scientific practice, perform research work and prepare the final qualifying work in the following organizations: the organizations of the State Corporation "Rosatom"; National Research Centre “Kurchatov Institute”.

The base of industrial and/or scientific practice and employment
Organizations of the State Corporation "Rosatom", National Research Centre “Kurchatov Institute”.