

## **03.03.02 Physics**

### **Nuclear Technologies in Medicine**

*Department: "Radionuclide medicine"*

#### **Program objective**

preparation of bachelors in the field of nuclear technologies in relation to nuclear medicine, possessing deep physical, mathematical and medical knowledge.

involvement in treatment and diagnostic process, in the process of implementing methods of radiation medicine high accuracy level, quality assurance of radiation therapy and diagnostic radiation protection and safety of patients, personnel and the environment from the use of radiation medical technologies; measurement, processing and analysis of diagnostic imaging; dosimetry planning and control; organizational and economic aspects of the development, implementation and use of healthphysical complexes; export of medical and physical equipment and its service.

#### **Curriculum features**

the program refers to the basic part of the professional cycle of the undergraduate program. To study the program, the knowledge, skills and abilities formed in students in secondary educational institutions are necessary. As a result of the development of the program, the student must have basic knowledge to the extent required to obtain ideas about modern methods, technologies and materials for the diagnosis and treatment of tumor diseases, to acquire initial experience of knowledge about modern methods and technologies for diagnosis and therapy of diseases, for subsequent research and practice.

#### **Research areas**

development of advanced methods of radiation therapy and diagnostics, knowledge of new radiopharmaceuticals and technologies of their application, support of clinical procedures with high-tech equipment, radioimmune analysis, diagnostic research on the basis of x-ray, magnetic resonance, single-photon emission and positron emission tomographs, external therapy using sources of gamma rays, neutrons, protons, alpha particles, internal therapy using radiation injected into nuclides, radiation detection.

#### **Practical training and future employment opportunities**

- Research and Production Enterprise "Dose"
- Agency for Innovative Development – Center of Cluster Development of Kaluga Region
- Blokhin National Cancer Research Center of Oncology
- Institute of Nuclear Research of the Russian Academy of Sciences
- Leipunsky Institute of Physics and Energy
- Karpov Research Institute of Physics and Chemistry
- Tsyba Medical Radiological Research Center
- All-Russian Research Institute of Radiology and Agroecology
- Physical and Technical Center of the Physical Institute of the Academy of Sciences
- Logunov High Energy Physics Institute