

# Biomedical photonics

National Research Nuclear University MEPhI (Moscow Engineering Physics Institute)

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

Language of study: **Russian**

Mode of study: **full-time**

Duration: **2 years**

Availability of free education: **yes**

Price: **178 750 rubles per semester**

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**The purpose of the program** is to train the highly-qualified scientific-pedagogical personnel for activities related to creation of new tools, equipment and techniques of diagnostics and treating of cancer, cardiovascular, infectious and other diseases with the latest developments in the area of interaction of radiation with matter, laser technology, fiber optics, spectroscopy, confocal microscopy and nanoplasmonics.

**The curriculum** is organized so that the graduates obtain a wide spectrum of competences allowing them to perform the basic research and solve applied problems, as well as conduct pedagogical activities in the fields of laser physics, physics of semiconductors, solid state, plasma, fast processes, interaction of radiation with matter, control systems and automatic control, disease diagnosis, surface physics, micro- and nanotechnologies etc.

**The graduates can work** in leading scientific centers of Russian Federation and other countries, and are claimed on leading high-tech enterprises of the Russian industrial sector.

**Competitive advantages of the program.** The students perform their research work and practical training on the bases of Natural Sciences Center of Prokhorov institute, Ulm University, and other institutions and laboratories of RAS performing research in the same field in collaboration with European and American universities and scientific companies.

The research work of students is supervised by leading researchers specialized and having wide experience in the development of semiconductor lasers and their application, both in Natural Sciences Center of Prokhorov institute and Ulm University.

The program includes conducting research work and training on the base of the Partner University for time period not less than 1-1,5 years.

The curriculum is composed in such a way that students can vary their education trajectory, take their courses from either NRNU MEPhI or the Partner University.

## **The courses taught at MEPhI:**

- Nanobiology,
- Diagnosis and analysis methods of micro and nanosystems

## **The courses taught at Ulm University:**

- Molecular and cellular biology
- Diagnostics methods of molecular biology

**The following types of practice training are provided:** pedagogical, industrial, research.

**The bases for the industrial and scientific practices** are the Ulm University, Natural Sciences Center of

Prokhorov General Physics Institute RAS, and other institutions and laboratories of RAS performing research in the same field in collaboration with European and American universities and scientific companies.

### **International partnership**

Ulm University

### **Specializations within this programme**

#### **Nuclear Physics and Technologies**

The objects of the professional activity include laser technology, micro- and nanotechnology, action of laser radiation on biological tissues, optics, spectroscopy, biological and physiological study, colloidal chemistry, photonics.