

Photonics, Instrumentation, Optical and Biotechnology Systems and Technology (Postgraduate)

Saint Petersburg Electrotechnical University "LETI"

Degree or qualification is awarded: **PhD**

Language of study: **Russian**

Mode of study: **full-time**

Duration: **4 years**

Availability of free education: **yes**

Price: **220 000 rubles per year**

Programme webpage at the university website:

<https://etu.ru/en/study/post-graduate-study/12.06.01-photonics-instrumentation-optical-and-biotechnical-systems-and-technologies>

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Graduate department: Department of Laser Measurement and Navigation Systems, Department of Quantum and Optical Electronics, Department of Bioengineering systems, Department of Engineering Environment protection, Department of Information and Measurement Systems and Technology

Program purposes

Main objective of training is formation of profound theoretical knowledge and practical skills in the field of laser physics, wave optics, integrated and fiber optics, nonlinear optics, optoelectronics, plazmonik, biomedicine, biotechnics, development of optical communication systems, registration and information processing, theories of production and use of devices and systems intended for receiving, registration and information processing about the environment, technical and biological objects, developments, modernization and creation of devices and systems based on various principles, creations of new materials (metamaterials), optical, optoelectronic, navigation, biotechnical and biomedical applications, work in advisory councils and commissions.

Field of professional activity

The field of professional activity includes: researches of physical phenomena and regularities in the field of photonics, laser physics, wave optics, integrated and fiber optics, nonlinear optics, materials science, integrated navigation systems, inertial sensitive elements, biomedical technologies, registration and information processing, measurement of parameters of environment, technical and biological objects; engineering directed to design, production and use of devices and systems intended for receiving, registration and information processing about technical and biological objects; expert and organizational and administrative activity connected with photon devices and technologies, instrumentation, navigation systems and complexes; pedagogical activities for training with higher education in the sphere of development and use of photon devices and technologies, instrumentation and optical and biotechnical systems and technologies.

Objects of professional activity

Objects of professional activity are: photon devices and technologies, light-wave devices, optical-information and optical-electronic systems and complexes; systems of telecommunication and technology of information processing about technical and biological objects; instruments, complexes, systems and element basis of photonics and instrument making; inertial sensitive elements (gyroscopes and accelerometers) based on different physical principles; inertial and integrated navigation systems; instruments, systems and complexes of biomedical optics, medicobiological and ecological assignment; expert estimates and inferences on questions in the field of photonics, instrument making, optical, biotechnical and biomedical systems and technologies.

Features of the curriculum

The curriculum includes mastering of modern theoretical questions, practical training, doing of laboratory practical works on modern and unique equipment, conducting research in the form of classroom occupations and in the form of independent work. The central place in training of graduate students is research and preparation and defense of thesis, preparation of PhD thesis under the leadership of outstanding scientists participating in research projects in relevant areas of basic and applied researches, that allows to create at graduate students ability to work in research team, to generate new ideas and also to show skill of independent research. In the course of research graduate students acquire skills of search and analysis of scientific and technical information, learn current problems of development of science and technology, acquire skills of setting research problems, representation, approbation and protection of results of researches. Special attention is paid to training of compilation of reviews, reports and preparation of publications, implementations of results of researches.

Specializations within this programme

Navigation devices

Optical and electrooptic devices and complexes

Devices and testing methods of environment, substances, materials and items

Data measuring and managing systems

Devices, systems and items for medical use