

Bioengineering Systems and Technologies (Master)

Saint Petersburg Electrotechnical University "LETI"

Degree or qualification is awarded: **Master**

Language of study: **Russian**

Mode of study: **full-time**

Duration: **2 years**

Availability of free education: **yes**

Price: **208 000 rubles per year**

Programme webpage at the university website:

<https://etu.ru/en/study/masters-degree/bioengineering-systems-and-technologies>

Programme curator: **Maria Titarenko**

Tel.: **+7 812 234-35-53**

E-mail: mytitarenko@etu.ru

The program is aimed at training specialists in the field of medical rehabilitation technologies for disabled people, computer-aided design tools for technical devices of rehabilitation, methods for biomedical information processing and analyzing. Skills in the development and maintenance of biotechnical information and measurement systems for the disabled people rehabilitation and in software and hardware for medical rehabilitation are acquired by the program graduates. Master's programs

Within the framework of the direction 12.04.04 Bioengineering Systems and Technologies the following programs are presented:

- Bioengineering Systems and Technologies for Prosthetics and Rehabilitation (Department of Biotechnical Systems);
- Information Systems in Rehabilitation (Department of Biotechnical Systems);
- Bioengineering Systems and Technologies for Environmental Protection (Department of Engineering & Environmental Protection);
- Biocompatible Materials (Department of Physical Chemistry).

Key points

Focused research of the medical rehabilitation technology, overview of the objects of prosthetics and rehabilitation, assistive technology development, and development of the information-measuring systems for rehabilitation analysis;

The program focuses on forming professional competence in the usage of modern information and computer technologies for diagnostics, control, and monitoring health status in hospitals. Students acquire skills of developing and maintaining databases; skills in using application packages for biomedical info analysis; skills in developing decision support systems for doctors using high-level programming language.

Preparing students for using special technology for environmental control and protection:

- Being able to prognose the outcomes of environmental pollution as a result of poor natural resource management;
- Being able to choose and provide a scientific basis for optimal biotechnical methods of environmental protection;
- Being able to specify the requirements for the ecology-focused tech-in-making considering specifics of the environment and its monitoring results.

The program also focuses on forming professional competences in utilizing modern advances in biophysics, biomechanics, electronics, and information and computer technology for lost organs and/or systems of human body. International internships and training

The best students are given the opportunity to get enrolled in a double-degree program abroad and, in particular, within the framework of joint educational programs. Students, renowned by the University, have a possibility to study at:

- Metropolia University of Applied Sciences (Helsinki);
- Salford University (Manchester, UK);
- Department of Clinical Science, Intervention and Technology, Karolinska Institute (Sweden);
- Institute for Radiological Protection and Nuclear Safety (France);
- Institute for Transuranium Elements (Germany);
- Polytechnic University in Gdansk (Poland).

Specializations within this programme

Biotechnical systems and technologies in prosthetics and rehabilitation

This master program allows students to receive qualification in the field of development and operation of technical means of medical aftertreatment, the lost functions of organs and the systems of the person. In the course of training the student gains skills of development of methods and technical means of medical aftertreatment of the person, projection and designing of technical means of medical aftertreatment of the lost functions of organs and the systems of the person, studies technological processes of medical aftertreatment, mathematical models of objects of aftertreatment and prosthetics, modern program and information support for automation of projection of technical means of medical aftertreatment.

Informational systems and technologies in medical centers

Students of this master program receive qualification in the development area and service of information systems of medical assignment. The acquired skills allow to participate in development of the information systems used in medical medical and scientific institutions, to study technologies of information support of the doctor, to develop the database and medical knowledge, algorithms of diagnostics and treatment of the patient, the modern program and information support for design of information systems of medical assignment.

Biotechnical systems and technologies in environmental protection

The purpose of this Master program is training of specialists in the field of development and operation of devices, systems and complexes of medicobiological and ecological appointment. As a result graduates get skills of use of special technical means of monitoring and environment protection ; forecasting of ecological consequences of environmental pollution as a result of environmental management, industrial and household wastes. They learn to choose and to scientifically prove optimum biotechnical methods and technologies of environment protection; to formulate requirements to characteristics of the designed equipment of ecological appointment and the technological processes of her development taking into account properties of ecological system and requirements shown to results of its monitoring.

Biocompatible materials

Professional activity of the graduate includes creation of new methods of the directed synthesis and technologies of biocompatible materials, physical and chemical analysis and functional diagnostics of materials of medical appointment including nanomaterials.