



KEY FACTS

▶ Admission requirements	Participants of the program are required to have a Bachelor's degree in Telecommunications, Electrical Engineering, Microelectronics or an equivalent degree according to the educational system of the country they come from. All applicants should demonstrate English skills at B+ level.
▶ Admission tests	Written exam and an interview with a program coordinator.
▶ Admission procedure	On-line application. Application deadline is June, 30. More information is available at official web-site www.eng.spbstu.ru .
▶ Program starts	Autumn semester – September, 1
▶ Duration of program	2 years
▶ Total workload	120 ECTS
▶ Degrees awarded	Master of Science (MSc)
▶ Tuition fee	for Russian students — 150 000 RUB / year for foreign students — 210 000 RUB / year Individual financial support and a limited number of fee-waived places are provided.



CONTACT INFORMATION

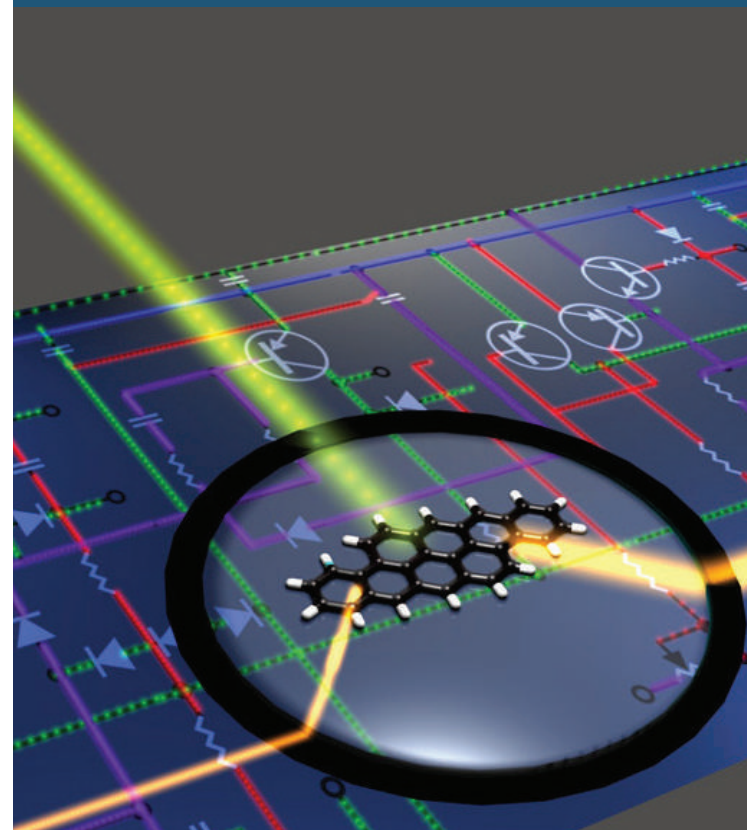
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MASTER OF SCIENCE IN MICROELECTRONIC ENGINEERING

Microelectronics of Telecommunications Systems

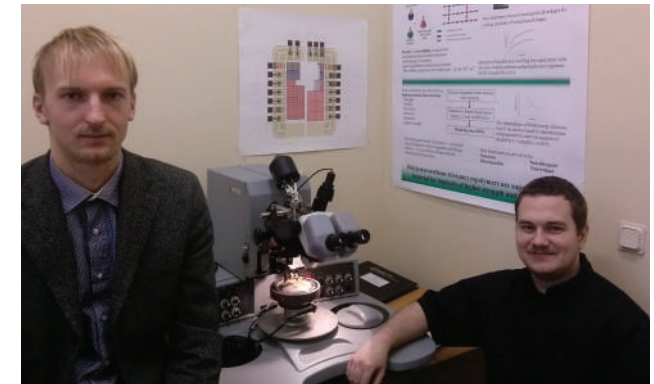
International Master's Degree Program in English

Key information about the study program in Saint-Petersburg, Russia



www.eng.spbstu.ru

- Master's Degree Program "Microelectronics of Telecommunications Systems" is delivered in English.
- World-famous Professors from Peter the Great St. Petersburg Polytechnic University and leading European Universities are involved in the teaching process.
- There are unique opportunities for international academic mobility, such as one semester abroad at academic partners of Peter the Great St. Petersburg Polytechnic University.
- Wide range of elective courses gives the possibilities to individually form the profile of the education depending on the field of interest.



Peter the Great St. Petersburg Polytechnic University

In 2010 Peter the Great St. Petersburg Polytechnic University gained the status of the National Research University. It is an acknowledged leader in the Russian engineering education. The Nobel Prize winners P.L. Kapitsa, N.N. Semenov and Zh.I. Alferov are only a few of hundreds of gifted and talented scientists whose professional activities are associated with St. Petersburg State Polytechnical University.

The program is implemented by Integrated Electronics Department which is the part of the Institute of Physics, Nanotechnology and Telecommunications. The main areas of research and educational activities of the Department are focused on telecommunications systems, microelectronics circuits design, integrated circuits technology, digital signal processing, optoelectronics and functional electronics. Academic staff of the department is involved in international research and known to have a great number of acknowledged publications, conference proceedings and patents.

Curriculum

1st SEMESTER (30 ECTS)

► Compulsory courses

- Philosophy of Natural Science (2 ECTS)
- Simulation and Optimization Methods in Integrated Circuits Design (5 ECTS)
- UNIX based Operational Platform (2 ECTS)
- Physics of Integrated Circuit Technology (5 ECTS)
- Programmable Digital Devices (4 ECTS)
- Scientific and Research Work (12 ECTS)

2nd SEMESTER (30 ECTS)

► Compulsory courses

- Basics of Nanotechnology (5 ECTS)
- Theory of Telecommunication Systems and Networks (5 ECTS)
- Design of Microelectronics Digital Circuits (4 ECTS)
- Scientific and Research Work (9 ECTS)

► Elective courses

- Group A (4 ECTS)
- Design of Microelectronics Analog and RF Circuits
 - Basics of Optical Communication Systems
- Group C (3 ECTS)
- Seminar on Design of Microelectronics Digital Circuits
 - Seminar on Design of Microelectronics Analog and RF Circuits

3rd SEMESTER (30 ECTS)

► Compulsory courses

- Psychology and Teaching. History and Methodology of Physics (2 ECTS)
- Functional and Organic Microelectronics, (5 ECTS)
- Theory of Electromagnetic Compatibility of Radio Electronic Means and Systems (3 ECTS)
- Microelectronics Filter Design (4 ECTS)
- Scientific and Research Work (9 ECTS)

► Elective courses

- Group B (3 ECTS)
- Methods of Optimal Synthesis of Microelectronics Devices
 - Optoelectronic Devices
- Group D (4 ECTS)
- Seminar on Methods of Optimal Synthesis of Microelectronics Devices
 - Seminar on Basics of Optical Communication Systems

4th SEMESTER (30 ECTS)

- Scientific and Research Work (27 ECTS)
- Master's Thesis completion (3 ECTS)

MSc in Microelectronics of Telecommunications Systems

Master's students are trained to do research and development in the field of integrated circuits design as well as in micro- and nanoelectronics for up-to-date wireless telecommunications systems. The program covers RF, analog, and digital circuits design for receivers and transmitters and digital signal processing based on FPGA and microcontrollers.

Participants of the program are required to have a Bachelor degree in Telecommunications, Electrical Engineering, Microelectronics or an equivalent degree according to the educational system of the country they come from.

Objective of the program

The objective of the program is to train highly qualified professionals capable of solving complex problems in microelectronics for telecommunications systems with the focus on wireless communication. Upon graduation the participants will become proficient in the field of modern telecommunications systems, microelectronics circuits design, integrated circuits technology, digital signal processing, optoelectronics and functional electronics.

KEY ADVANTAGES

1. solid background in the field of advanced microelectronics;
2. communication and learning skills: the ability to write coherent and consistent science papers and documents, the ability to manage your learning and make use of primary research sources and reviews;
3. the opportunity to take a semester abroad at one of the partner Universities;
4. participation in Russian and International scientific conferences and seminars;
5. up-to-date software for computer integrated circuits simulations;
6. excellent analytical, critical and problem solving skills;
7. transferable skills necessary for further professional career: the initiative, decision making and motivation to undertake further professional training.

Duration and format

2 years, full time, classes are held 3-4 days per week.

Total workload: 120 credits.

Teaching methods: The curriculum is of a modular type. It includes lectures, seminars, laboratory research and computer simulation of microelectronics devices and circuits. Research work in international scientific teams and participation in international research projects develop practical skills and enrich the fundamental knowledge of the participants. E-learning support of the educational process is provided.

THEORETICAL KNOWLEDGE AND PRACTICAL SKILLS

The program aims at developing practical skills and enriching the knowledge in the following fields:

- wire and wireless network design;
- design of analog and RF microelectronics circuits for communications;
- design of digital microelectronics circuits for communications;
- integrated circuits technology;
- digital signal processing based on programmable devices of FPGA and microcontroller types;
- optoelectronics and functional electronics;
- nanotechnology fundamentals.

PROGRAM PARTNERS

1. Technische Universität Hamburg-Harburg, Germany. The University's main principles are: the priority for research, interdisciplinary approach, innovation, and international cooperation. International Master's degree program in "Microelectronics and Microsystems".



2. Joseph Fourier University, Grenoble, France. Featuring in all major international rankings (Top 150 World Universities - Shanghai Ranking), the University offers higher education in a wide range of fields: Physics, Mathematics and Computer Science, Electrical Engineering and Electronics.



International Master's degree program in "Nanoelectronics and Nanotechnologies".

3. Tampere University of Technology, Finland. The University combines a strong tradition of research in the field of natural sciences and engineering with research related to industry and business. The University's cuttingedge fields of research are information technology and electrical engineering, optics and photonics.



International Master's Degree Programs in "Information Technology" and in "Electrical Engineering".

4. Fraunhofer Institute for Integrated Circuits, Erlangen, Germany. The Fraunhofer Institute for Integrated Circuits conducts research and development for industry and public authorities. The Institute researchers develop microelectronic systems and devices along with the required integrated circuits and software.

