#What_to_become: a Master’s degree Program in Smart Nanostructures and Condensed Matter Physics

To be an industrial engineer of a research scholar? To be a teacher at a top university or a developer of a hi-tech startup? To let each person reveal the individual potential for research and innovation, Polytechnic University is launching an international educational program in Smart Nanostructures and Condensed Matter Physics.

Today, the physics of condensed matter is one of the fastest growing areas of science; about 70% of all works in physics are performed in this field. This area is most closely associated with practical needs: all computers, telephones, and means of communication somehow use devices related to condensed matter physics.

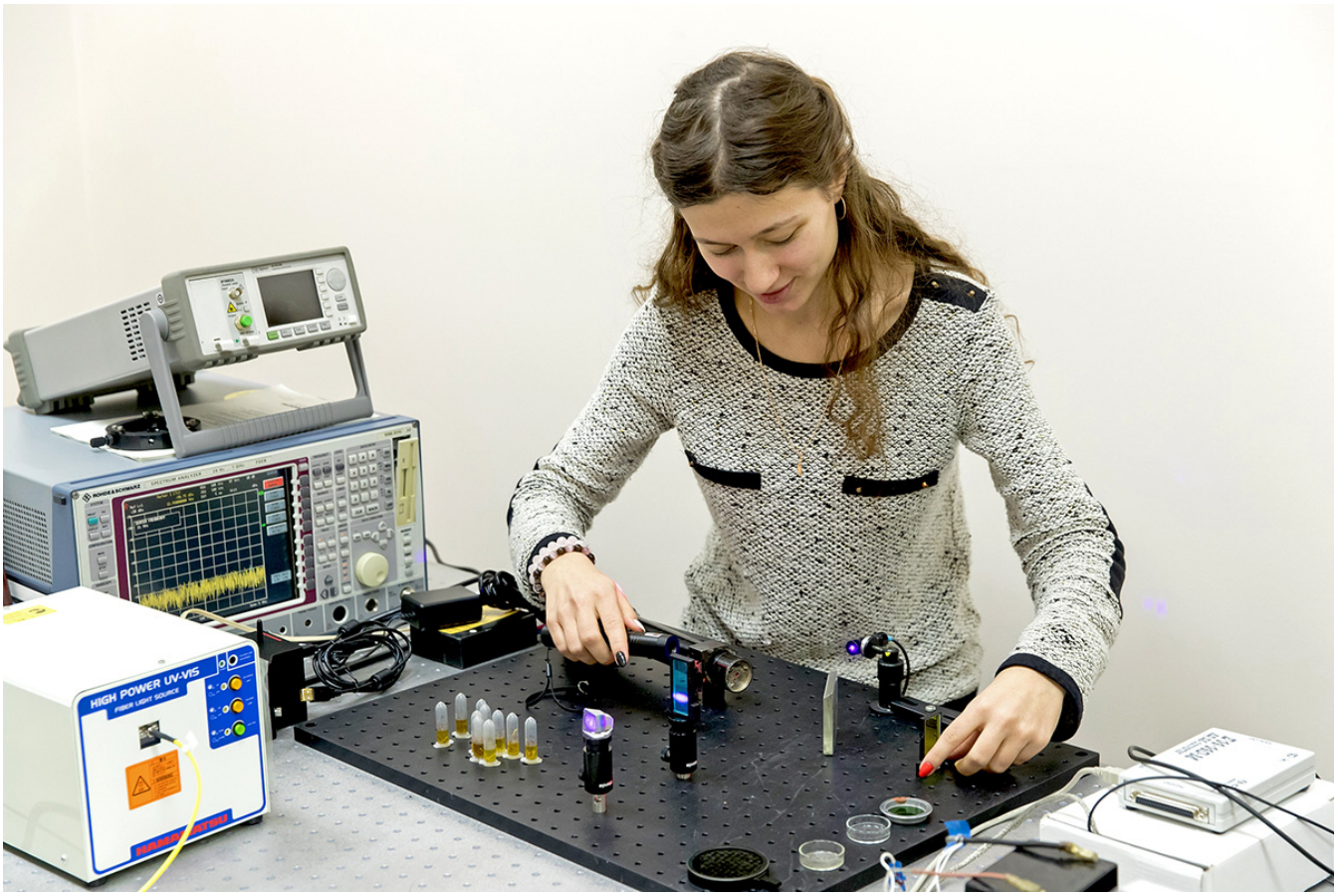
Exactly the need for specialists in the field of condensed matter physics became the key reason for creating a new international educational program, which SPbPU implements on the basis of the Institute of Physics, Nanotechnology and Telecommunications.

The Masters-to-be will listen lectures of leading Russian and foreign specialists. In addition, within the frame of the academic mobility program, the students will take internships in large scientific laboratories or foreign universities for an included semester. At present, Polytechnic University closely cooperates in the field of physics with the University of Troyes (France), the ParisTech network (France), Lappeenranta University of Technology (Finland), etc. In particular, professor from the University of Troyes Thomas MORE has already taught a course in nanooptics and photonics for undergraduate students in the Physics and Technology of Nanostructures Program.

Training is going in the form of lectures, seminars and work in laboratories. An interactive form of education is planned in the format of scientific seminars. Participation in scientific conferences will be an obligatory component of training.

The coordinators of the international educational program pay special attention to project activities. Within the frame of the educational process, the students will work in modern scientific laboratories of SPbPU and Ioffe PTI of the RAS starting from the first semester of studying. The most goal-oriented and talented students will have the opportunity to join projects of the Ministry of Education and Science, the RSF, the RFFR, and other scientific foundations. And within the framework of the teaching practice, future masters will lead scientific projects of Bachelor’s degree students and high school students and conduct thematic classes for those.

The program includes modules on condensed matter physics, nanostructures and nanomaterials, optics and spectroscopy, modern technological processes. Some disciplines will be taught by leading researchers of the Ioffe Physics and Technical Institute, one of the leading research institutions in Russia.



The list of major courses that students will study includes:

- Superconductivity
- Spintronics
- Physics of semiconductor devices
- Physics of two-dimensional systems and interfaces
- Spectroscopy of atoms, molecules and clusters
- Photoelectric phenomena in semiconductors
- Optics of dielectric materials and structures
- Nanocomposite materials
- Nanomechanics
- Physical and chemical fundamentals of semiconductor technology

The international educational program in Smart Nanostructures and Condensed Matter Physics is open to students with a Bachelor's degree / Specialist's degree in physics, applied physics, materials science or a related field. To enter the program, applicants must pass an entrance exam, which includes sections of solid state physics and quantum mechanics. Since the program is taught in English, the minimum level of proficiency in English should be no lower than B +.

Do you still have questions? You can get answers to those from the program coordinators:

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