| Program name | Master’s degree program  
Optical physics and quantum electronics |
|---|---|
| Key facts | Graduates’ professional engagement:  
Scientific research in the field of optical instrumentation, optical materials and technologies.  

**The program is implemented by:**  
5 Doctors of Science,  
4 Candidates of Science.  
  
Over the 20 years of the program’s existence, 21 graduates have defended their Cand.Sc. theses, including 2 PhD theses. |
| Program length | 2 years |
| Starting date | September, 1st |
| Language of instruction | Russian |
| Prerequisites | • Higher professional education (bachelor’s, specialist’s or master’s degree)  
• Entrance exam in General Physics  
• Preference is given to students who have publications in this or related areas, as well as to students, previously participated in creative contests and (or) olympiads of the corresponding field of study |
| Tuition fee per year | 181 856 roubles (~ 2,448 USD) |
| Program leader/team | Head of Department:  
Aleksandr Vtyurin, Dr.Sc. (Physics and Mathematics), senior researcher, head of Specialized Department of Photonics and Laser Technologies, School of Engineering Physics and Radio Electronics, Siberian Federal University  
  
Research interests:  
Experimental studies of the optical and spectral properties of dielectric crystals, automation of a physical experiment.  

**Head of Master’s degree program:**  
Vitaliy Slabko, Dr. Sc. (Physics and Mathematics), professor  
Specialized Department of Photonics and Laser Technologies, School of Engineering Physics and Radio Electronics, Siberian Federal University  
  
Research interests:  
Research in the field of nonlinear optics and spectroscopy of atomic, molecular and cluster media.  

**Leading lecturers:**  
Evgeniya Slusareva,  
Dr. Sc. (Physics and Mathematics), assistant professor,  
professor of the Specialized Department of Photonics and Laser Technologies, School of Engineering Physics and Radio Electronics, Siberian Federal University  
  
Research interests:  
Photophysics and photochemistry of organic dyes, semiconductor quantum dots for biosensorics, biopolymer nanoparticles |
Aleksey Tsipotan, Cand. Sc. (Physics and Mathematics), assistant professor of the Specialized Department of Photonics and Laser Technologies, School of Engineering Physics and Radio Electronics, Siberian Federal University

Research interests:
Nanophotonics, nanotechnology, nanoengineering.

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<th>Qualification</th>
<th>Master of Science</th>
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| Skills/ objectives | **A graduate student will be able to:**  
- analyze complex physical, technological and organizational tasks using the methods of modern information technology;  
- to develop, create and use experimental samples of new types of lasers and optical materials;  
- apply modern optical methods to study various materials, including materials of modern semiconductor and molecular microelectronics;  
- to solve technological problems of materials processing by laser radiation;  
- to analyze the composition of a substance using the methods of practical atomic-molecular spectroscopy (including laser);  
- to apply modern optical methods and new optical materials in medicine and biology. |
| Curriculum | Nonlinear optics;  
Nanophotonics;  
Optical spectroscopy;  
Laser technology;  
Optical methods and devices in biology and medicine;  
Vibrational spectroscopy;  
Technical optics;  
Elements and devices of optoelectronics and nanophotonics;  
Photonic crystal optics;  
Solid state spectroscopy;  
Research Seminar;  
Special workshop on technical physics;  
Special technology workshop;  
Mathematical modeling in technical physics;  
Information technology in technical physics;  
Contemporary aspects of technical physics;  
Electron spectroscopy of molecular and quantum-sized particles;  
Applied holography;  
Project management in technical systems;  
Professional English;  
Business English;  
Modern scientific and technical translation; |
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