BEST BANG FOR THE BUCK
The Washington Monthly ranked Queens College in the top 5 among all master’s universities in the United States for giving students the “Best Bang for the Buck.”

A WEALTH OF RESOURCES
Located on a quiet, tree-lined, 80-acre campus, Queens College offers you a wealth of resources. The Rosenthal Library holds more than 900,000 volumes and subscribes to 5,800 print and electronic journals. You will have access to state-of-the-art science labs, dining halls, and athletic facilities. You can also take advantage of our professional Child Development Center, which provides inexpensive day care.

THE FLEXIBILITY YOU NEED
We make it easier for you to earn your degree by scheduling most classes in the late afternoon or evening and on weekends. Four Summer Sessions offer further flexibility for completing your studies.

LIVE WHERE YOU LEARN
And love where you live. The Summit Apartments, our beautiful on-campus residence hall, has areas reserved exclusively for graduate students. Features include study lounges, a fitness center, laundry, high-speed wireless, basic cable TV, and more.

www.qc.cuny.edu/summitapartments

MASTER OF SCIENCE IN Photonics
Certified Professional Science Master’s Program

QUEENS COLLEGE
www.qc.cuny.edu/Photonics
Photonics is the area of applied physics and technology that studies and exploits the properties of light. More and more technologies rely on light to control machines, record and transfer information, provide security, and perform countless other tasks.

The ever-increasing role of photonics in our economy and in our lives is reflected in the recent development of the National Photonics Initiative (NPI) (www.lightourfuture.org), an alliance of industry, academia, and government that seeks to increase awareness of photonics. A White Paper published by NPI characterizes photonics in the following way: “photronics generates, controls and detects light to advance robotics, manufacturing, medical imaging, next-generation displays, defense technologies, biometric security, image processing, communications, astronomy, and much more.

FACILITIES
Faculty and students work with state-of-the-art, research-grade equipment, which includes the following:

- Class 1000 cleanroom for nano/micro-fabrication
- Scanning electron microscope with electron beam lithography capability
- Growth facilities utilizing sputtering, evaporation, and chemical vapor-deposition systems
- Multiple steady-state and pulsed-laser systems covering spectral range from near infra-red to deep ultra-violet
- Time-correlated single-photon counting system for sub-nanosecond time-resolved measurements
- Near-field scanning optical microscope
- Microwave facilities (network analyzer, pulsed microwave spectrometer with sub-nanosecond time resolution, and more)
- Equipment for photoluminescence, Raman and Fourier-transform infrared spectroscopy covering spectral range from near infrared to ultra-violet.
- Superconducting magnet system, equipped for optical and transport measurements
- Solar simulator

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FACULTY
Many faculty members in Queens College’s Physics Department are engaged in cutting-edge research in optics and photonics. Their work will help develop next-generation solar cells, flexible display technologies, sub-systems necessary for quantum information processing, and theoretical tools to understand the interaction of light at the nanoscale.

Our professors have received such prestigious honors as National Science Foundation (NSF) CAREER Awards and Department of Defense, Department of Energy, and NSF research grants. They have published in such leading journals as Nature, Science, and Physical Review Letters and frequently speak at international conferences.

Lev Deych, Professor
Theory of optical resonators, optomechanics, and coupled light–matter excitations in periodic semiconductor nanostructures

Timothy Benseman, Asst. Professor
Experimental studies of sources of electromagnetic radiation in the terahertz frequency range based on intrinsic Josephson junctions in anisotropic high-temperature superconductors

Azriel Genack, Professor
Experimental studies of the transport of light and microwaves in disordered and periodic structures

Alexander B. Khanikaev, Asst. Professor
Experimental and theoretical studies of photonic nanostructures and infrared spectroscopy for sensing and biosensing applications

Igor Kuskovsky, Professor
Experimental optics and magneto-optics of quantum dots, nanocrystals, nanowires, and nanorods

Alexander Lisyansky, Professor
Theoretical studies of spatio-temporal dynamics of the SPASER, a new nanometallic device

Lev Murokh, Asst. Professor
Theoretical studies of charge and energy transfer in nanoscale structures, including living organisms

Luat T. Vuong, Asst. Professor
Experimental studies of the self-assembly and pattern-formation dynamics of chiral nanocomposites such as solution-processed metamaterials

David Goldberg, Lecturer
Experimental studies of solar cells based on organic materials and amplified emission of organic quantum dots embedded in engineered photonic structures

Industrial Advisory Board
The Industrial Advisory Board is an integral part of our Master’s in Photonics program. It provides guidance in curriculum development and helps the department develop an educationally valuable internship program. The board includes representatives from:
- Amplification Technology
- Brookhaven Instruments
- Chiral Photonics
- DDC Technology
- IBM Watson Research Center
- Infra-Otica
- Lockheed Martin
- New York Hall of Science
- Photonics Industries
- Spectrum Thin Films
- U.S. Navy (Program Management Office, Strategic Systems Programs, Shipboard Systems Detachment)
- Veeco Instruments
- Verizon

Our fully accredited photonics program is certified as a Professional Science Master’s Program by the Council of Graduate Studies.

Photonics forms the backbone of the Internet; guides energy exploration; and keeps our men and women in uniform safe with night vision, GPS, and physiological feedback on the battlefield. . . . photonics addresses and solves the challenges of a modern world while enhancing our quality of life.”

Employers point out the difficulties in finding qualified candidates for existing and new positions in the field of photonics. A major reason cited is the wide gap between the skill level of academically trained college graduates and the skills employers expect.

Queens College’s Physics Department responded to this challenge by offering a new degree program designed to narrow that gap. Our fully accredited photonics program, which leads to a Master of Science degree, is certified by the Council of Graduate Studies as a Professional Science Master’s (PSM) program. In this innovative two-year program, students receive rigorous academic training in photonics and related physical disciplines while gaining valuable workplace skills—through extensive lab work, additional business courses, industrial internships, and team projects—that will make them more valuable to future employers.

Developed with the assistance of an Industrial Advisory Board, this is the first physics PSM program offered by the City University of New York and one of the only such programs in the tristate area. To quote a member of the advisory board, Dr. James J. Wynne, a program manager at IBM, co-inventor of excimer laser surgery, and the recipient of the 2013 National Medal of Technology and Innovation: “It is essential that we train a workforce that can drive this photonics revolution. Queens College is playing a major role in this revolution with its Professional Science Master’s Degree program in Photonics.”

A photonics degree from Queens College significantly improves your chances of being able to take advantage of opportunities created by fast developments in these industries. As noted recently by Science magazine, “the available evidence indicates that PSM graduates are finding work, and it’s mostly well-paid.”

Our curriculum ensures that the Master of Science in Photonics program provides skills that are highly sought by employers. To make it easier for students who wish to work while studying, we schedule most of our classes in the evening.

www.qc.cuny.edu/photronics
Apply now: www.qc.cuny.edu/gradapp
The photonics degree prepares you for a successful career in the high-tech industries by:

- Providing cutting-edge knowledge and technical hands-on skills expected of the workforce
- Developing your oral and written communications as well as team-building skills, which are often mentioned as lacking in college graduates
- Increasing your understanding of the business and economics aspects of high-tech companies
- Developing your learning agility—a skill recently identified by such companies as Verizon as “essential” in their hiring strategy

The NPI White Paper identified the following industries whose development heavily depends on workers with training in photonics:

- Advanced Manufacturing (laser tooling, 3-D printing, etc.)
- Communication and Information Technology (fiber optics, on-processor optical interconnects, etc.)
- Defense and National Security (high-resolution imaging, remote sensing, photonic integrated circuit and advanced laser manufacturing, etc.)
- Energy and the Environment (solar energy, efficient solid-state light sources, photonic sensing, optical pollution sensing, etc.)
- Health and Medicine (real-time optical testing, optical endoscopy, optical bio-imaging, laser surgery, etc.)

PROGRAM REQUIREMENTS
This is a competitive program designed to attract the best students with undergraduate degrees in physics, applied mathematics, electrical engineering, and computer engineering (GPA of at least 3.0 in the major). Students with degrees in other fields, but with extensive coursework in physics and mathematics, are also encouraged to apply.

TUITION AND FINANCIAL AID
Queens College offers one of the most affordable graduate tuition rates in the nation. Our low tuition makes it possible for many of our students to graduate debt-free. For more information, visit www.qc.cuny.edu/tuition. Financial aid includes grants, work-study, and loans from New York State and the federal government, all of which can help pay related expenses beyond tuition and fees. For more information, call 718-997-5100 or visit www.qc.cuny.edu/fao.

INTERNATIONAL STUDENTS
If you were educated outside of the United States and wish to apply to Queens College, you will need credentials similar to those required by universities in your home country. You also will need to demonstrate competence in English and apply for an F-20 visa.

Through our Path program, Queens offers conditional acceptance if you meet all the college’s admission standards except for language proficiency. You will be admitted to our English Language Institute and issued an F-20. Upon successful completion of the ELI program and achieving the target language goal, you can enroll. For more information visit www.qc.cuny.edu/path.

After graduation, international students receive a one-year F1 visa to live in the U.S. and look for work. For more information, contact International Students and Scholars at 718-997-4440 or visit www.qc.cuny.edu/ISS.

APPLICATION DEADLINE
The deadline for filing an application is July 31. To apply online, please visit www.qc.cuny.edu/gradapp.

FOR MORE INFORMATION
To learn more about the Master of Science in Photonics, contact:

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718-997-3380 or lev.deych@qc.cuny.edu