

# *Physics* at Brooklyn College

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The Department of Physics at Brooklyn College offers degree programs that students may tailor to their individual interests. Either a **bachelor of science in physics** or a **bachelor of arts in physics** may be obtained, depending on the total number of science and mathematics credits completed. Within these programs students may pursue a traditional course of study to prepare for admission to graduate school in physics or astronomy or a course plan that includes more work in liberal arts subjects and is appropriate for careers in a number of professional fields. In cooperation with the School of Education, the department offers the **bachelor of arts for physics teacher** (grades 7–12).

Brooklyn College also maintains a **coordinated engineering program** with Polytechnic University in Brooklyn, the City College of New York, and the College of Staten Island. Through this program, Brooklyn College provides the first two years of study toward a degree in electrical, computer, mechanical, chemical, civil, or environmental engineering. Students who make the requisite academic progress in the coordinated engineering program are guaranteed acceptance as juniors to the corresponding engineering program at one of the three cooperating institutions. The majority of students who transfer to Polytechnic University receive substantial financial aid offers for their final two years of study.

## *Students*

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Physics and engineering majors must possess strong mathematical skills and be able to reason logically. The well-prepared student will have completed precalculus in high school and taken numerous science courses.

## *Career opportunities for graduates*

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Brooklyn College graduates have gained admission to the country's most prestigious graduate and professional schools, including Dartmouth, Carnegie Mellon, Wisconsin, and the State University of New York Downstate Medical Center. Graduates with a traditional physics major who go on to complete the Ph.D. in physics are prepared for employment in research and education either in a college or university or in an industrial setting with such companies as IBM and Xerox. Research positions are also available at government laboratories, such as Brookhaven National Laboratory on Long Island. The physics major with a larger liberal arts component provides graduates a competitive edge in other professions, including medicine or dentistry, law, and business.

## *Course requirements*

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Course requirements are described in detail in the *Brooklyn College Undergraduate Bulletin* and on the Physics Department Web site (<http://depthome.brooklyn.cuny.edu/physics/>). The traditional B.A. degree in physics requires 65½ credits, including mathematics, computer science, and one year of chemistry. The B.A. in physics with a liberal arts orientation requires 52 to 53½ credits. The B.S. degree requires at least 60 credits in science and mathematics, with at least 24 credits in advanced physics courses. Students in the B.A. program for physics teacher pursue the liberal arts-oriented course of study and also complete a sequence of courses in the School of Education.

## *Course requirements* (continued)

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A student intending to major in physics or engineering is advised to speak with a Physics Department counselor as early as possible in the freshman year.

## *Special facilities and equipment*

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The Physics Department maintains extensive, state-of-the-art facilities for research in experimental condensed matter (solid state) physics and materials analysis. Equipment is available for a wide variety of fabrication and analysis techniques, including MBE scanning tunneling microscopy, atomic force microscopy, and electron diffraction.

Laboratories are staffed by faculty members, postdoctoral research associates, and graduate students in the City University of New York Ph.D. program.

## *Research opportunities*

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Students may take advanced seminars and independent study and research. Physics majors may also work on a senior project under the supervision of a faculty mentor. The senior project offers an opportunity to interact with research associates and graduate students in the team effort characteristic of most physics research. Students who prefer to work on their own may do so in the Advanced Laboratory, an instructional lab that houses equipment suitable for research projects.

## *The faculty and their specializations*

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**Carl Shakin** Chairperson; theoretical nuclear physics.

**Albert Bond** Experimental nuclear physics.

**Louis Celenza** Theoretical nuclear physics.

**Zhonghui Chen** Experimental condensed matter physics.

**Victor Franco** Theoretical atomic and nuclear physics.

**Todd Holden** Experimental condensed matter physics.

**Joseph Krieger** Theoretical atomic and condensed matter physics.

**Peter Lesser** Experimental nuclear physics.

**Ming-Kung Liou** Theoretical nuclear physics.

**Ken Miyano** Experimental condensed matter physics.

**Fred Pollak** Experimental condensed matter physics.

**Viraht Sahni** Theoretical electronic structure of matter.

**Michael Sobel** Theoretical nuclear physics, physics education research.

**Micha Tomkiewicz** Environmental physics and chemistry.

**Raymond Tung** Experimental condensed matter physics.

For additional information, please contact the Department of Physics, 3438 Ingersoll Hall, (718) 951-5418. Web site: <http://dephome.brooklyn.cuny.edu/physics/>

