Guilford COLLEGE
5800 West Friendly Ave.
Greensboro, NC 27410
www.guilford.edu

Physics

Physics is the study of how the Universe works. From the smallest of sub-atomic particles to the largest clusters of galaxies, physicists try to take apart the pieces of reality and observe how they fit together. When a piece of the puzzle fits into place in your understanding, the world around you looks different. From this understanding, one can see more clearly the dance of nature and the rules that govern it.

Physics students at Guilford come from a variety of backgrounds and have a broad spectrum of interests and career goals. About one third of our physics majors plan for employment in a technical field immediately after graduation. Another third pursue graduate study in physics or astronomy. The remaining third go on to advanced study in another field. Recent graduates, for example, have been engaged in a wide range of activities: attending graduate school in astronomy, computer science, educational leadership, engineering, history, mathematics, medical physics, security studies, and theology; attending medical school; running software companies; teaching high school math and physics; doing scientific research in academia and industry; and serving in AmeriCorps. To embrace the diverse interests of our student population, the physics curriculum is flexible and personalized. Course scheduling encourages off-campus research internships, independent study, and study abroad.

The common thread connecting the different goals and focuses of our students and faculty is the physicist's approach to thinking about, modeling, and understanding the universe. This process relies on clear, analytical, and often abstract thinking but is ultimately grounded in concrete reality as exposed by experiment. Reaching a clear, realistic understanding of some aspect of the world is of value in not only science and engineering but also business, law, medicine, and many other fields.

The physics program at Guilford emphasizes research and experimentation throughout its curriculum. Students in introductory courses learn to work with equipment, quantify experimental uncertainties, and present results in journal format. The experimental physics sequence stresses laboratory techniques, cooperative research, and clear, thoughtful presentation of results. In this sequence of courses, students design experiments, act as principal investigators, write journal articles, and give talks for peer review.

This research experience culminates in a thesis research project that must be original and designed by the student. The results are presented in a written thesis and public talk. Students frequently present papers at the National Conference on Undergraduate Research (NCUR) and other conferences. Each year the department grants the Jeglinski Physics Award, in memory of Boleslaw Jeglinksi and Michael Jeglinski, the Helen and Winslow Womack Physics Research Award, and the Adelberger Research Fund to those students whose research projects were selected from all proposals submitted to the department. These awards may be used to help purchase equipment, fund a stipend, and support travel to a professional conference. This support enables students to develop initiative, self-confidence, and skills that will serve them well wherever life leads them.

Why Guilford College?

Consistently rated nationally by *The Princeton Review* as well as being one of the 40 colleges in *Colleges that Change Lives* by Loren Pope, Guilford College inspires each student to achieve excellence through an engaging community, rooted in Quaker values, which nurtures creativity and social responsibility.

What can a Guilford education offer you?

- An urban setting near other colleges & universities with an area student population of over 27,000 students
- A consortium agreement with University of North Carolina at Greensboro, Greensboro College, Bennett College, North Carolina A&T State University, Elon University and High Point University provides students with access to courses free of charge
- A college mission statement & core values based on, and consistent with, Quaker testimonies. Guilford's core values are: Community, Diversity, Equality, Excellence, Integrity, Justice & Stewardship.
- A challenging academic program which emphasizes not only academic tracks and the learning process, but also the interconnection between curricular and co-curricular pursuits
- A diverse student population providing a stimulating peer environment
- Excellent study abroad programs in China, England, France, Germany, Ghana, Ireland, Italy, Japan, Mexico, Netherlands, Scotland, Spain, and Wales

The academic program in Physics

The Bachelor of Science degree is offered in Physics.
Minors are offered in Physics and Astronomy.

Required courses for the Physics major

A total of 36 credit hours in physics is required, including at least two semesters of Experimental Physics, an internship (either industrial or academic) or at least 4 credit hours of Portfolio Development, 4 credits in theory above the PHYS 320 level, and a thesis with defense. An individualized course of study will be planned by the student, in consultation with faculty advisers, based on models appropriate for her or his chosen career path.

Internships

Students may elect to complete an internship under the supervision of a faculty member in this department and receive credit for the experience. Such internships give majors the "hands-on" experience which is so necessary in this field. Among locations where recent Physics majors have completed internships are the following:

- American Association for the Advancement of Science in Washington, D.C.
- College of Wooster
- Institute for Systems Research at the University of Maryland
- Max Planck Institute for Space Physics in Germany
- Oak Ridge National Laboratory
- Trufina Corp.
- PROMPT: Panchromatic Robotic Optical Monitoring and Polarimetry Telescopes" at UNC Chapel Hill
- Various study abroad locations around the world

Where do graduates go?

Alumni have entered a variety of graduate school programs and career fields. Here are a few examples of where recent graduates have gone after their time at Guilford:

- Carnegie Mellon University (Security Studies)
- Duke University (Physics)
- Wireless Generation Inc. (New York City)
- The Ohio State University (Nuclear Engineering)
- University of Arkansas (Astronomy)
- University of Kentucky (Medical Physics)
- University of North Carolina--Charlotte (Center for Precision Metrology)
- University of Pennsylvania (Educational Leadership)

Faculty

Thomas P. Espinola, Glaxo Wellcome Professor of Physics, Chair; tespinol@guilford.edu; 336-316-2193
Steven S. Shapiro, Associate Professor, sshapiro@guilford.edu; 336-316-2196
Donald A. Smith, Assistant Professor; dsmith4@guilford.edu; 336-316-2162

For additional information about Physics at Guilford College visit www.guilford.edu/academics