Research Experiences

One of the benefits of being in a department without graduate students is that your professors can devote their time and energy to you, our undergraduate majors. One major advantage is the opportunity to work on forefront research projects in collaboration with faculty, other students, and post-doctoral researchers. Working with a small team on a research project will give you a feel for how science and engineering are done in the real world, often a very different experience than coursework.

As an undergraduate research student, you’ll have the chance to make important contributions to a research project, you’ll and have ample opportunity to present your results at a science and engineering conferences, to co-author a journal article, and to receive regional and national awards for undergraduate research – all wonderful experiences for whatever career you choose after graduation. In addition to the excitement of doing research, the department offers many paid Research Assistantships both during the academic year and in the summer.

Our Facilities

As a Physics major, you’ll have access to state-of-the-art laboratory facilities and an enormous amount of computing power. The department supports five active research labs with equipment ranging from materials characterization to precision optical devices. Our classroom labs boast computer data-taking and analysis and in our Advanced Lab course you’ll have access to a machine shop and funds to construct experiments of your own design.

The Physics Department is also the home of a modern scientific computing network, including a bank of high-speed scientific Unix workstation computers and an “X-Grid” parallel supercomputer. Also available, as are our scientific visualization lab which includes facilities for three-dimensional stereovision modeling and data visualization and the College of Arts and Science’s multi-media lab.

Interested?

If you find the prospect of learning both physics and engineering, and involving yourself in cutting edge research, please let us know. We’d be happy to show you around the department and introduce you to our enthusiastic teachers and students.

For further information contact us:

Dr. Richard Martin, Chair
Physics Department
Illinois State University
Campus Box 4560
Normal, IL 61790-4560
Phone: 309-438-8756
Fax: 309-438-5413
Email: info@phy.ilstu.edu
web: www.phy.ilstu.edu

Departmental Student Support

We encourage you to apply for University-wide scholarships and financial aid, and for our majors-only Physics Department scholarships and awards. Our scholarships require submission of a one-page application form, available on our website. We also offer employment opportunities such as research assistant, lab proctor, lab grader, computer programming, and planetarium assistant positions.

A Physics major presents his research project at the Argonne Symposium on Undergraduate Research
**Why Physics?**

Physics is the fundamental science. It provides the underpinning for other sciences and engineering and its methods and ideas can be widely applied in a variety of careers. The Illinois State University Physics degree is a very flexible credential that graduates can use as a springboard for many possible future careers. As a graduate of the program, you’ll know the basic physics underlying all physical phenomena, but in addition you’ll know how to model and distill complex problems into their simplest form and you’ll have the analytical tools to solve those problems. The physicist’s approach to understanding the universe is a powerful tool that is useful across disciplines.

**What do Physicists Do?**

When you graduate with a degree in physics you’ll be qualified for a surprising variety of career options. Just as a sampling, recent graduates have followed the following paths: graduate study in physics and in engineering; law school; medical school; employment at the Fermi National Accelerator Lab and the Argonne National Lab; employment at a wide variety of engineering, computer, and other technical companies; and even employment in the business and financial world. A degree in Physics is truly a ticket to many possible futures.

**Why Illinois State?**

The Illinois State University Physics Department is the perfect blend of small size and major opportunity. National studies indicate that physics students in undergraduate-only departments rate their educational experience significantly higher than their counterparts in large graduate degree-granting departments. At the same time, students from departments that graduate more than 10 physics majors per year rate their technical education more highly. ISU Physics is that rare undergraduate-only department that graduates nearly 20 majors annually, allowing us to provide both individual attention and major opportunities.

**The Physics Degree at Illinois State University**

The Physics degree at Illinois State University provides a well-balanced set of courses that will bring you from novice to expert in four years. You’ll learn all fundamental theories of physics that help humanity understand the physical universe; you’ll get hands-on experience in laboratory methods and experimental analysis; you’ll learn how to model physical systems and simulate them with high-performance computers.

You’ll also find many opportunities for out-of-class experiences in our department, including working with professors on cutting-edge research projects. We offer research experiences in laser physics, nanoscience, space physics, nonlinear systems, and atomic physics. Since we don’t have a graduate program we’re able to focus on our undergraduate students -- allowing you to do real-world projects and not just classroom courses. In addition, you could work with the ISU Solar Car Team, join the ISU Physics Club and participate in trebuchet competitions, “Physics on the Road” outreach program, or learn to present planetarium shows at the ISU planetarium.

**The Physics Sequence at a Glance**

The program provides a firm foundation in physics through a well-structured sequence of courses. We also offer some specialized courses to give you a taste of the variety of physics applications.

Our classes are small, allowing ample opportunity for individualized attention. All courses are taught by professors, who are committed to undergraduate education.

Courses taken by Physics majors are listed below. A brief description of each course is provided in the Illinois State University catalog or on our website (www.phy.ilstu.edu).

(1) Basic Physics Courses

- PHY 107  Frontiers of Physics
- PHY 110  Physics for Science and Engineering I
- PHY 111  Physics for Science and Engineering II
- PHY 112  Physics for Science and Engineering III

(2) Intermediate Physics Courses

- PHY 217  Methods of Theoretical Physics
- PHY 220  Mechanics I
- PHY 240  Electricity and Magnetism I
- PHY 270  Experimental Physics
- PHY 284  Quantum Mechanics I

(3) Advanced Physics Courses

- PHY 325  Thermal Physics
- PHY 340  Electricity and Magnetism I
- PHY 384  Quantum Mechanics I

(3) Advanced Electives

- PHY 320  Mechanics II
- PHY 330  Optical Physics
- PHY 355  Solid State Physics
- PHY 380.03 Nonlinear Systems

Of course we offer the full slate of math and science courses to complement your studies, as well as a broad set of general education classes to enrich your experience.