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 an Engineering 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. Contact us to set up a campus visit, or come to one of ISU’s Open House days and visit us at our afternoon Physics Department Showcase.

For further information contact us:

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 lab proctor, lab grader, computer programming, and planetarium assistant positions.
The Illinois State University Engineering Physics degree combines a solid foundation in physics with specialized courses in a field of engineering. As an Engineering Physics major, you’ll receive two degrees in five years: one in Physics from ISU and another in Engineering from a partner engineering school. As a graduate of the program, you’ll know the physics underlying all fields of engineering as well as the specialized skills in your chosen field, so you’ll be well prepared for the increasingly interdisciplinary marketplace of technology careers. In addition, you’ll have two degrees, a fact that will make your application stand out to prospective employers or graduate schools.

Our solar car, Mercury 1, attracts attention in Canada during the North American Solar Challenge race, 2005

What do Engineering Physicists Do?

When you graduate with degrees in both physics and engineering, you’ll have a powerful combination of skills that will qualify you for a wide variety of career options. Of course you’ll be well prepared for jobs in your chosen field but, with the physics degree, you’ll also be competitive for positions in science-oriented careers and other engineering fields. If you decide to continue your education with graduate studies, your physics degree will again open doors to a much wider set of options than a single engineering degree, including other engineering departments and interdisciplinary programs.

What is Engineering Physics?

The Illinois State University Engineering Physics programs.

The Engineering Physics Degree at Illinois State University

The Engineering Physics degree at Illinois State University starts with the fundamental physics and math that all engineers take. The value-added is that our majors get a set of intermediate physics courses that give you a much deeper understanding of the physical world and provide you with the fundamental physics building blocks used in all fields of engineering. After three years in residence at Illinois State, you’ll transfer to your chosen partner engineering university. The great majority of our majors choose to move to the University of Illinois at Urbana-Champaign (UIUC) for their engineering studies, and they are highly successful there. We have also sent students to UI Chicago, NIU, SIU, and we have a new program with Bradley University -- so you have plenty of options for your second degree.

You’ll also find many opportunities for out-of-class experiences in our department, including the ISU Solar Car Team, forefront research in fields such as nanotechnology, laser science, and nonlinear control systems, and internships. We don’t have a graduate program so we are able to focus on our undergraduate students -- allowing you to do real-world projects and not just classroom courses.

Why Illinois State?

The Physics Department at Illinois State University has offered the Engineering Physics degree for more than 30 years with UIUC. We know their programs thoroughly and, through our individualized advising program, we make sure that you’re prepared for a smooth transfer. Our small department and favorable 10:1 student-faculty ratio allow close collaboration between professors and majors and provide a truly supportive educational environment. The physics department has a history of innovation in physics education and a nationally recognized undergraduate research program.

The Engineering 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 engineering courses for majors in relevant engineering fields.

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 Engineering 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 and Advanced 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) Specialized and Elective Courses

ITK 165 Computer Programming for Scientists
PHY 152 Engineering Statics
PHY 318 Methods of Computational Science
PHY 298 Professional Practice (internship)
PHY 299 Research in Physics

Of course we offer the full slate of math, chemistry, and biology courses required by each engineering field, as well as a broad set of general education classes that will transfer directly to your partner engineering university.