



## PHYSICS

The exciting field of Physics is sometimes called the mother of all natural sciences. One Nobel Laureate affectionately referred to Physics as the discipline that seeks to “know the mind of God.” With the Black Holes and the White Dwarfs of astrophysics, the Quarks and the Strings of fundamental particle physics, the exploding superhot Supernova in the skies and the ultracold superconductors in the lab, the world of contemporary physics seems truly charmed. As a physicist, you will study the patterns and connections among the fundamental forces of nature and develop simple and contemporary explanations for complex natural phenomena. As an undergraduate physics major, you will prepare for this exciting life by studying the fundamentals: from Newton’s gravity to Einstein’s relativity; from Maxwell’s electrodynamics to contemporary coherent optics; from Bohr-Heisenberg’s quantum mechanics to contemporary quantum chromodynamics.

Physics is the basis for developing and exploring technology and engineering in areas as diverse as electronics, telecommunications, computers, and nuclear energy. Critical medical technologies such as the CT scan, MRI, EEG, X-Ray, Ultrasound, PET, etc. are also grounded in physics. Applied physicists are continually advancing the power of these devices and inventing new ones. Elective courses in optics, electronics and materials physics can further prepare you to work in fields involving these applied aspects of physics.

The physics program at IWU offers solid preparation for anyone interested in becoming a scientist, a professor, an engineer, or an applied physicist. Above all, you will learn how to learn, in the manner of a careful, thoughtful, well-educated citizen. Of course, you will benefit from our University-wide emphasis on the liberal arts, which we see as an uncompromising search for truth and beauty. Writing, quantitative reasoning, critical thinking and discussion, oral communication and problem-solving are an integral part of every physics course you will take at Illinois Wesleyan. Moreover, the department offers students many opportunities to explore various areas of physics in both structured (classroom) and open (research) settings.

The facilities you will use are state-of-the-art, both experimentally and in computational platforms. From the freshman year onward, great emphasis is placed on extensive experimental work. In fact, the physics curriculum at Illinois Wesleyan is as much a hands-on, experiment-based investigation as it is a theoretical and mathematical discipline.

## LEARNING FROM A QUALITY FACULTY

Learning at Illinois Wesleyan is enhanced by the individualized instruction and attention you will receive from our faculty. The faculty will work closely with you answering your questions in and out of class, acting as your mentors and academic advisors, and collaborating with you on independent study or directed study projects. We feel that the student-faculty relationship is the most important element of undergraduate education. All our physics instructors hold doctorates or other advanced degrees in the field and all have had articles published in professional journals. Five of the faculty maintain an on-going research program in contemporary areas of physics.

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Our physics faculty members include:

- ▶ **Herman Detweiler**, MST, observational astronomy and electronics.
- ▶ **Dr. Curt Foltz**, experimental nuclear physics, electronics.
- ▶ **Dr. Narendra K. Jaggi**, department chair, condensed matter physics, Mossbauer spectroscopy, academic director of 'Sports and Scholars' program.
- ▶ **Dr. Gabriel C. Spalding**, condensed matter physics, optical and electronic technology for the new millennium.
- ▶ **Dr. Jeremiah Williams**, M.S., Plasma Physics, physics pedagogy.
- ▶ **Dr. Raymond Wilson (emeritus)**, optics, problems in nuclear disarmament.

## UNDERGRADUATE RESEARCH AT ILLINOIS WESLEYAN UNIVERSITY

Traditionally, one associates research in physics only with M.S. or Ph.D. programs. The Physics Department at Illinois Wesleyan, however, conducts world-class research in areas which have been chosen because they are approachable to undergraduates. Additionally, these areas appeal to a wide range of students—serving as useful paradigms in the classroom while providing valuable experience for the students working directly on each project. It is our belief that strong research experiences will engage our students, enhance their development, and lead to new and greater opportunities in their futures. During the past two years, three physics majors from Illinois Wesleyan University have won the prestigious national Barry Goldwater Scholarship in the sciences. Currently, research in the department is sponsored by the Council on Undergraduate Research, NASA, Research Corporation and National Science Foundation. It is truly an exciting capstone experience for our students to see their research work be recognized by scientists and professors. Many of our students also conduct research during the summer at leading national universities and federal research laboratories, shoulder-to-shoulder with Ph.D. students. These research activities are accompanied by generous scholarships and stipends to the students.

## YOUR PROFESSIONAL FUTURE

Graduates of our physics program participate in a vast array of exciting careers. Our alumni include the senior vice president of a major corporation, high school physics teachers, scientists, accelerator operators, university professors and applied industrial physicists all around the world. Many of our graduates have continued their study at leading research institutions nationwide, including University of Chicago, University of Minnesota, University of Illinois, Brown, Yale, Princeton, etc. Whatever professional course you take, the education you receive at Illinois Wesleyan will help you make an important contribution to society in general and to the vibrant and challenging field.

## SUGGESTED FOUR YEAR CURRICULUM IN PHYSICS

### FIRST YEAR

Fall Semester	Spring Semester	May Term
Physics I Calculus I Gateway Colloquium Foreign Language	Physics II Calculus II General Ed. Foreign Language	General Ed./Elective

### SECOND YEAR

Fall Semester	Spring Semester	May Term
Physics III Calculus III General Chemistry Foreign Language	Mathematical Methods of Physics Differential Equations/ Physics Elective General Chemistry Computer Science	General Ed./Elective

### THIRD YEAR

Fall Semester	Spring Semester	May Term
Theoretical Mechanics General Ed. Elective Elective	Electricity and Magnetism Elective Elective	Experimental Physics

### FOURTH YEAR

Fall Semester	Spring Semester	May Term
Physics Elective General Ed. Elective Elective Research	Physics Elective General Ed. Elective Elective Research	Physics Elective

### RECOMMENDED ELECTIVES, CHOSEN WITH ADVISOR:

For the major	Supplementary courses
Special Topics in Physics Electronics Optical Physics Quantum Mechanics Atomic and Nuclear Physics Astronomy and Astrophysics Individual Topics Materials Physics	Physical Chemistry Probability Linear Algebra Mathematical Statistics Numerical Analysis Vector Calculus Computer Science

## FOR FURTHER INFORMATION

For more information about the academic program and the faculty visit our website at:

<http://www2.iwu.edu/academics/departments>