



Undergraduate Programs

MAJORS:

- Physics with emphases available in:
 - Astronomy
 - Computational Physics
 - Optics
- Physics with Biomedical Concentration
- Physics with Business Concentration
- Physics Education
- Physics/Engineering Dual Degree
- Physics/Physical Therapy Dual Degree

MINORS:

- Physics
- Physics with Astronomy Emphasis
- Physics Education

Dual-degree Programs

PHYSICS AND ENGINEERING

This dual degree program allows a student to receive both a bachelor of science (physics major) from UWL and a bachelor of science (engineering major) from UW-Madison, UW-Milwaukee, UW-Platteville, or the University of Minnesota. The total length of time to attain both degrees is expected to be five years, with approximately three years at UWL and approximately two years at one of the engineering schools.

PHYSICS AND PHYSICAL THERAPY

This dual degree program provides qualified students with the opportunity to receive both a bachelor of science (physics major with biomedical concentration) and a doctor of physical therapy degree from UWL. The total length of time to attain both degrees is expected to be about six years, with approximately three years in the physics program and approximately three years in the physical therapy program.

Department Overview

The Physics Department at the University of Wisconsin-La Crosse is one of the largest undergraduate physics programs in Wisconsin and is well-known for offering quality education, placing its graduates in successful career paths and attracting national recognition for its successful efforts.

The diverse nature of the UWL physics program makes our graduates highly sought after in modern industries where physics and engineering are applied. In addition, many UWL physics graduates are accepted into top graduate degree programs where they can pursue a master's or doctoral degree in physics, engineering, chemistry, astrophysics, optical science, mathematics, medicine, or computer science.

In addition to our unique programs, the department also stands out in its emphasis on involving its physics majors in undergraduate research. This engages students to work closely with individual members of the faculty, providing hands-on learning opportunities which are very different from the traditional classroom experience. The involvement of students in research contributes to the sense of community that pervades the UWL Physics Department. Research projects are available in the following areas: astrophysics, biomechanics, biophysics, computational physics, laser spectroscopy, quantum computing, material science, nuclear physics, solid-state physics, and physics education.

View degree requirements:
www.uwlax.edu/catalog

Physics Department
2005 Cowley Hall
608.785.8429
www.uwlax.edu/physics

Department Highlights

- In 2015, the American Physical Society (APS) ranked the UWL Physics Department number one in the nation of bachelor's degree-only institutions for having the highest average number of physics graduates (31) in the years 2011-2013. The department has consistently ranked in the top ten.
- The UWL Physics Department was a corecipient, together with the Massachusetts Institute of Technology (MIT), Kettering University, and the Colorado School of Mines, of the American Physical Society's 2013 Award for Improving Undergraduate Education which recognizes physics departments and/or undergraduate-serving programs in physics that support best practices in education at the undergraduate level.
- The Physics Department is a nationally-recognized leader in undergraduate physics education and in 2012 was chosen by the AIP Career Pathways Project for a site visit from which AIP could learn and promote the Physics Department's effective practices for the preparation of physics undergraduates for STEM careers.
- Every year the department hosts its annual Distinguished Lecture Series in Physics where a Nobel laureate in physics visits UWL to interact with students and faculty and to give a physics seminar and a public lecture. As of 2015, 15 Nobel laureates have visited the Physics Department.
- The department's chapter of the Society of Physics Students (SPS) received an Outstanding Chapter Award from the national SPS office in 2013. Additionally, the department sponsors a chapter of Sigma Pi Sigma (the physics honor society), a Physics Club, and a Women in Physics Club.
- The department was profiled as a successful undergraduate program in the American Association of Physics Teachers National Task Force on Undergraduate Physics report. The department was also featured in the Physics Today article, "Why Many Undergraduate Physics Programs are Good but Few are Great."
- Faculty in the department have received over \$1.5 million dollars in external funding from the National Science Foundation, NASA, and other external agencies to support faculty and student research activities.
- Students in the department have received a number of awards, fellowships, and scholarships based on their academic performance and ability to excel in research, including the following nationally competitive awards: Barry M. Goldwater Scholarship (three recipients), Department of Homeland Security Undergraduate Scholarship, research fellowships from the Council on Undergraduate Research, the Society of Physics Students, the American Physical Society, NASA, and multiple REU programs throughout the country.

Undergraduate Degrees

The physics major is the standard program for students interested in a broad study of physics and for those wishing to obtain the best possible preparation for physics graduate school. Additionally, emphases are available in the following areas:

ASTRONOMY EMPHASIS

This emphasis is designed for students who have a strong interest in astronomy/astrophysics and is the ideal preparation for astronomy/astrophysics graduate school. There are excellent student research opportunities in the study of interstellar gas and theoretical astrophysics. The department has a fully operational planetarium.

COMPUTATIONAL PHYSICS EMPHASIS

This program is designed for students who are interested in computer modeling and high-performance computation in scientific and engineering problems. It is excellent for students who wish to work in modern industry or government (e.g. NASA).

OPTICS EMPHASIS

This is an excellent preparation for students wishing to pursue a career in modern high-tech fields. Students develop a solid understanding of electronics, classical or modern optics, and lasers. This emphasis is also an excellent alternative to obtaining a standard engineering degree, allowing students to pursue optics-specific graduate programs and engineering fields.

BIOMEDICAL CONCENTRATION

This program is designed to provide a strong background in physics, and prepare students for graduate studies in biomedical engineering, physical therapy, and medical school, and for entry-level positions in industry and government in the field of biotechnology.

BUSINESS CONCENTRATION

Modern industry has a serious shortage of business managers with a solid grounding in the hard sciences. This concentration is designed for students who wish to enter business with the advantage of an excellent understanding of such areas as electronics, lasers, computers, etc.

PHYSICS EDUCATION

This integrated program provides an excellent background in physics and certification to teach physics at the high school and middle school level.

COLLEGE OF SCIENCE AND HEALTH

Career Opportunitites

ENTRY LEVEL

- Engineering Physicist
- Research Physicist (government or private industry)
- Laboratory Scientist
- Space Scientist
- Environmental Analyst
- Optical Engineer
- High School Science Teacher (with teacher certification)
- Planetarium Director
- Technical Writer

FURTHER EDUCATION

- Graduate study in physics, astronomy/astrophysics, chemistry, mathematics, engineering, computer science
- Medical School
- Law School
- Business Management

LONG-TERM CAREER DEVELOPMENT

- College or University Instructor (with advanced degree)
- Engineer
- Director of Research and Development
- Medical Physicist
- Industrial Administrator
- Patent Attorney
- Plant Manager

Occupational Outlook

Students seeking employment with a degree in physics from UWL have a wide variety of opportunities because of the diverse nature of the physics program. There are many opportunities to work in modern industries in applied physics or engineering/physics. Physicists find employment in research and design, quality control and testing, and mathematical and computer modeling.

In the medical field, a physicist may supervise the operation of a multitude of clinical instruments found in a hospital or assist in diagnosis and therapy using nuclear radiation, x-ray, and ultrasound techniques. Medical physics is a growing area with many employment opportunities. In addition, physicists often find themselves doing exactly the types of things that an engineer would do, such as designing electronic circuits and computers, working in manufacturing industries, and performing basic and applied research. It is common for physicists and engineers to work side by side. Because of the relative shortage of qualified physicists, employment prospects are excellent. A dramatic shortage of female physicists makes the prospects for female physicists outstanding!