

Physics



Physics has fundamentally changed our world. Advances in technology such as transistors, lasers and microwaves all resulted from physics research. During the last century, there has been a steady stream of devices from physics laboratories to applications in industry, medicine and everyday life. Beyond practical applications, however, physics gives us tools to see and explore aspects of the world around us that are invisible to our ordinary senses. In essence, the study of physics is an exploration of the universe in which we all live.

Degree Opportunities

We offer the B.S. degree in physics with an emphasis in professional physics, applied physics or physics secondary education (teacher licensure).

You will experience traditional classroom instruction as well as laboratory courses. All undergraduate physics majors also complete a capstone research project as part of their degree.

Research and Engaged Learning

Since NIU is located near Fermilab and Argonne National Laboratory, most faculty and a large number of undergraduate and graduate students are involved in research at these two national laboratories. Our faculty also have research programs affiliated with CERN in Geneva, Switzerland. We have active research programs in many areas — including condensed matter physics, particle-beam physics and particle accelerators technology and high-energy physics — nearly all of which involve our students. The department is home to the Northern Illinois Center for Accelerator and Detector Development (NICADD), which provides research and development opportunities nationally and internationally as well as graduate fellowships.

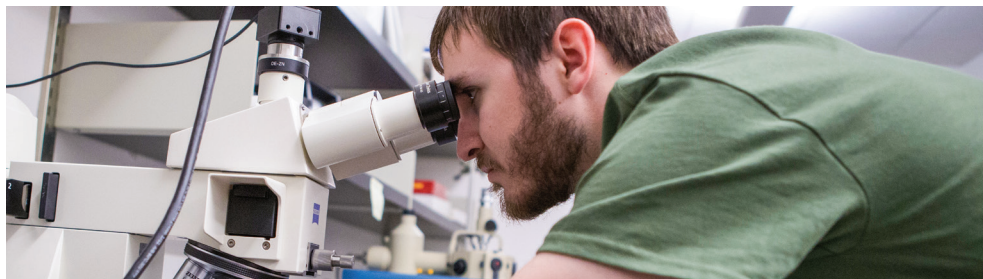
Distinguished Faculty

You will learn from high-quality, student-focused faculty, who have earned national and international recognition for their teaching and research. Seven of our 20 full-time faculty members have joint appointments with Fermilab or Argonne National laboratories.



B.S. in Physics

Because physics emphasizes practical applications as well as problem-solving and abstract thinking, graduates are highly sought-after for careers in medicine, engineering, chemistry, ecology and the military. They work in laboratories, orbit the Earth, explore ocean depths and develop instruments to diagnose and treat disease. Physicists were instrumental in scores of pivotal discoveries and inventions: X-rays; DNA's double helix structure; the electron microscope; wireless communications; cleaner and more efficient fuels, lasers; PET, MRI and CT scans; and the World Wide Web.



Course Listing

Degree requirements and sequences can be found at go.niu.edu/physicsdegree.

PHYS 101	Introduction to the Physics Major	PHYS 410	Computational Physics
PHYS 150	Physics	PHYS 430	Optics
PHYS 151	Physics Laboratory	PHYS 434	Nuclear and Particle Physics
PHYS 162	Elementary Astronomy	PHYS 459	Special Problems in Physics
PHYS 180	Acoustics, Music, and Hearing	PHYS 460	Quantum Physics
PHYS 181	Acoustics Laboratory	PHYS 461	Modern Physics
PHYS 201X	The Professional Secondary Science Teacher	PHYS 463	Thermodynamics, Kinetic Theory and Statistical Mechanics
PHYS 210	General Physics I	PHYS 470	Electricity and Magnetism II
PHYS 211	General Physics II	PHYS 472	Physical Measurements
PHYS 252	Intermediate General Physics	PHYS 474	Methods of Experimental Physics
PHYS 253	Fundamentals of Physics I: Mechanics	PHYS 475	Laboratory Electronics II
PHYS 273	Fundamentals of Physics II: Electromagnetism	PHYS 477	Astrophysics
PHYS 283	Fundamentals of Physics III: Quantum Physics	PHYS 480	Condensed Matter Physics and Materials Science
PHYS 284	Quantum Physics Laboratory	PHYS 485	Methods of Math. Physics II
PHYS 300	Analytical Mechanics I	PHYS 490X	Science Across Time and Culture
PHYS 301X	The Interdisciplinary Secondary Science Teacher	PHYS 492	Science Teaching in the Elementary, Middle and Junior High School: Grades K-9
PHYS 320	Thermodynamics and Statistical Physics	PHYS 493X	Interdisciplinary Teaching of Science in Secondary Education
PHYS 335	Biophysics	PHYS 494	Use of Technology in Secondary Science Teaching
PHYS 344	Astronomy	PHYS 495	Teaching of Physical Sciences
PHYS 359	Topics in Physics	PHYS 496	Transition to the Professional Physics Teacher
PHYS 367	Waves and Vibrations	PHYS 497	Student Teaching (Secondary) in Physics/Physical Sciences
PHYS 370	Electricity and Magnetism I	PHYS 498	Senior Seminar
PHYS 374	Introduction to Experimental Physics	PHYS 499H	Senior Project in Physics
PHYS 375	Laboratory Electronics I		
PHYS 383	Intermediate Quantum Physics		
PHYS 385	Methods of Math. Physics I		
PHYS 400	Analytical Mechanics II		
PHYS 401	The Professional Physics Teacher		



Northern Illinois University

Contact Information

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physics.niu.edu

Career Opportunities

According to the American Institute of Physics, graduates with bachelor's degrees often find careers in education, engineering, medical, military and science fields or enroll in graduate programs. While more than half of our students go onto graduate programs, our students have secured positions in a variety of sectors.

Graduate Schools

Physics

Yale, UIUC, University of Michigan

Other

Rensselaer (Acoustical Engineering)
MSU (Materials Science and Engineering)
UCLA (Oceanography)
University of Nebraska (Architectural Engineering)
Clemson University (Astronomy)
Florida State University (Astronomy)
University of Pennsylvania (Medical School)
University of Michigan (Medical Physics)
UIC (Mechanical Engineering)

Government

Media Relations for NASA
Research Scientist for Argonne National Laboratory
Optical Engineer for NASA/JPL

Software Development

Software Engineer for Wolfram Research
Product Development for Matlab Inc.
C++ Developer for Sterling Trader Inc.
Software Engineer for Ameritrade

Military

Intelligence Officer for Department of Defense
Navy Officer for U.S. Navy
Program Manager for DARPA

Medicine

Medical Physicist at the University of Michigan
Medical Physicist at the Mayo Clinic

Industry

Geophysicist for PGS Geophysical
Laboratory Technician for Arthur Daniels Midland
Energy Specialist for Loeb Electric
Acoustical Consultant for JE Acoustics
Actuarial Analyst for American Modern Insurance
Director for Quad City Manufacturing Lab