

THE DEPARTMENT OF PHYSICS

Your time in the Department of Physics at Drexel will help you understand the laws of nature at the deepest level. You'll explore the span of universal phenomenon—from the farthest reaches of astrophysics and cosmology, to molecular biophysics and subatomic particle physics—giving you a solid foundation for continued study and exploration.

Along the way, you'll gain a firm understanding of physical principles, develop strong problem-solving skills, continue to advance your mathematical and computational abilities and receive broad experimental training.

You'll also benefit from small classes and hands-on laboratories, along with numerous research opportunities with faculty advisors and worldwide collaborations.

DEGREES OFFERED

PHYSICS BS, MS, PhD

MINORS

Physics
Astrophysics

ABOUT THE CURRICULUM

The vast majority of your physics courses will integrate classroom theory with hands-on computer simulations and technology. This approach teaches you to solve real-world problems using state-of-the-art techniques. Your scientific computing education begins immediately, as you learn the Maple (mathematical and analytical software) and Python (computer programming language) systems during your freshman year.

Students preparing to enter biophysics or medicine can choose elective sequences in biology. The Physics program also offers advanced topics for students interested in atomic, nuclear, solid-state or theoretical physics.

THE DREXEL CO-OP

Drexel University's nationally recognized cooperative education program (Co-op) lets you combine periods of full-time professional employment with periods of academic study.

CO-OP OPTIONS

5 3
YEAR CO-OP

4 1
YEAR CO-OP

4 0
YEAR CO-OP

Among many national and international research opportunities, Drexel physics students have recently completed Co-ops with Cambridge University, Sandia National Labs, INTEL, Trinity College in Dublin, Lockheed Martin, Thomas Jefferson University Hospital, Exelon Corporation and Penn State University. And some students have chosen to do their Co-ops within the Department of Physics at Drexel.

Past Co-op positions have included research assistant, software engineer, physicist, teaching assistant and scientific programmer and developer.

RESEARCH OPPORTUNITIES

The Drexel Physics program is driven by curiosity and research. Our faculty members lead world-class research programs in a wide variety of disciplines, including astrophysics, biophysics, high-performance computing, low temperature physics, nanotechnology, nonlinear dynamics, particle physics and quantum computing.

Students have participated in worldwide collaborations, including Double-Chooz and KamLAND neutrino oscillation experiments, Sloan Digital Sky Survey and observations at Kitt Peak National Observatory.

COOL COURSES

CONTEMPORARY PHYSICS SEQUENCE

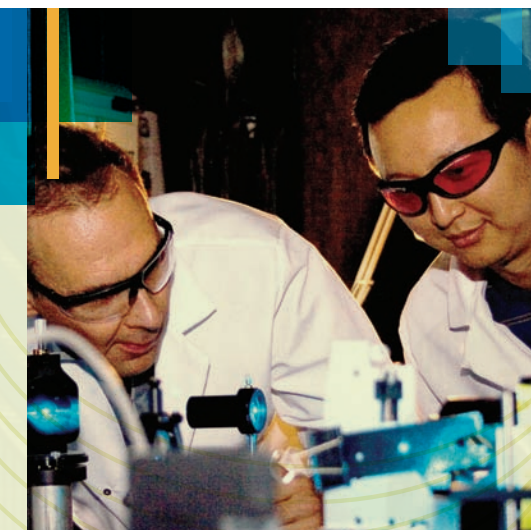
This unique freshman sequence integrates many seemingly disparate areas of classical and modern physics. Students are exposed to exciting topics from the start—from the structure of an atom to astrophysics, relativity to thermodynamics—all while mastering basic physics concepts. Moreover, students develop visual computer models, making the sequence truly interactive.

OBSERVATIONAL ASTROPHYSICS

This course covers the fundamental astrophysics of stars, galaxies and quasars. It describes how telescopes and astronomical detectors work and uses the Joseph R. Lynch Observatory for hands-on observations and data analysis.

NANOSCIENCE

One of our many topical courses offered as an introduction to modern research areas. This course discusses low-dimensional structures and their physical properties, the self-assembly of nanostructures, applications in various fields of science and technology, and techniques for fabrication and characterization on the nanoscale.



STUDENT ENGAGEMENT

WEEKLY COLLOQUIUM SERIES

Complements coursework with the opportunity to learn from and interact with leading scientists.

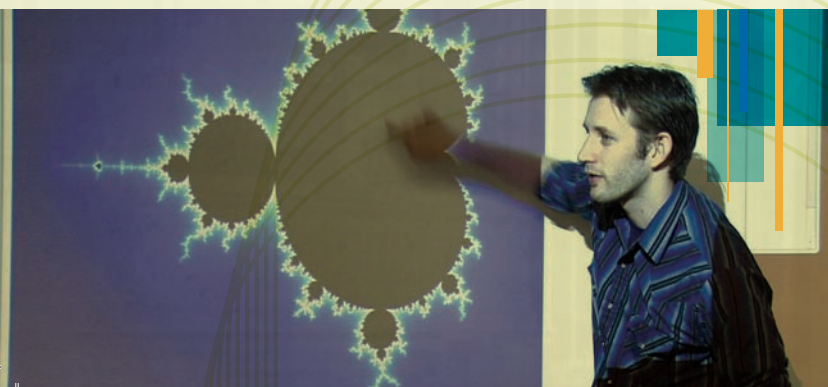
KACZMARCZIK LECTURE SERIES

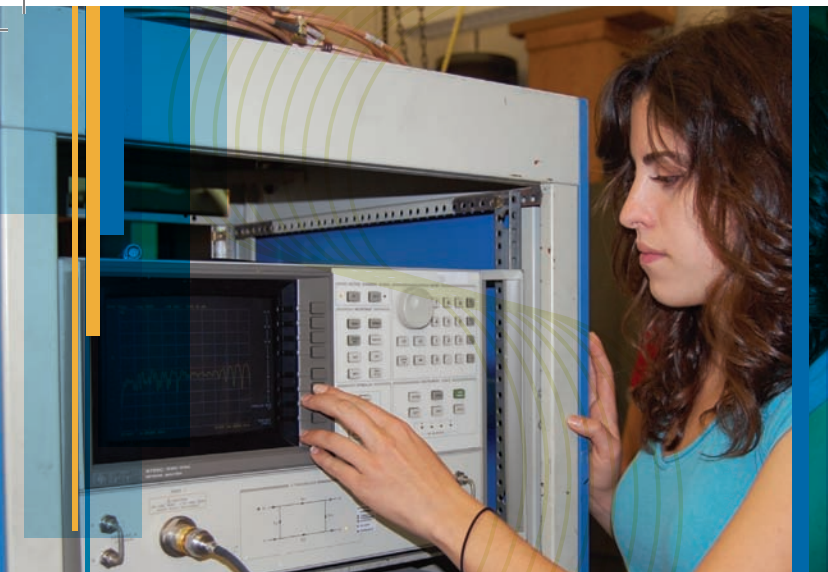
Nobel Prize-winning physicists visit campus every spring, offering students the opportunity to see a lecture and share an informal chat over breakfast. Recent guests include Nobel Laureates Drs. John C. Mather, William Phillips, Frank Wilczek and David Gross.

CHAPTER OF THE SOCIETY OF PHYSICS STUDENTS

Recognized four years in a row with the Marsh W. White Outreach Award, the Chapter has also received the Outstanding Chapter Award and two Sigma Pi Sigma Undergraduate Research Awards for society member research proposals.

“The physics department has first class professors and interesting courses, but it is the opportunity to get involved in research that sets Drexel apart. It is hard to know if a major, or even a research field, is really the right path without sitting in the laboratory and doing the work. Drexel offers the opportunity to get involved and actually explore your degree.” — J.T. Mlack, B.S. Physics, 2010





CAREERS IN PHYSICS

Your Drexel physics degree opens new doors to a lifetime of learning and earning in a number of exciting careers in the science and engineering fields, including:

Universities and national laboratories like NASA, Los Alamos National Laboratory, Sandia, NIH and NIST

Semiconductor companies, including Intel and AMD

Pharmaceutical industry

Defense agencies and contractors, like the National Security Agency, Boeing, and Raytheon

Information Technology

Financial Services



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FACILITIES

Drexel's Physics department gives you plenty of room to experiment in a variety of special areas, facilities and specialized laboratories.

ASTROPHYSICS FACILITIES

The *numerical astrophysics facilities* include access to the Sloan Digital Sky Survey data, and a super computer that can achieve computational speeds of up to a trillion floating point operations per second. The *Joseph R. Lynch Observatory* houses a 16-inch MEAD Schmidt-Cassegrain telescope equipped with an SBIG CCD camera.

BIOPHYSICS FACILITIES

Facilities include a *modulated excitation kinetics laboratory*, a *spatially resolved kinetics laboratory*, the *Atomic Force Microscope (AFM) facility*, a *preparative laboratory*, and a *computational biophysics facility* that houses two Beowulf clusters.

CONDENSED MATTER FACILITIES

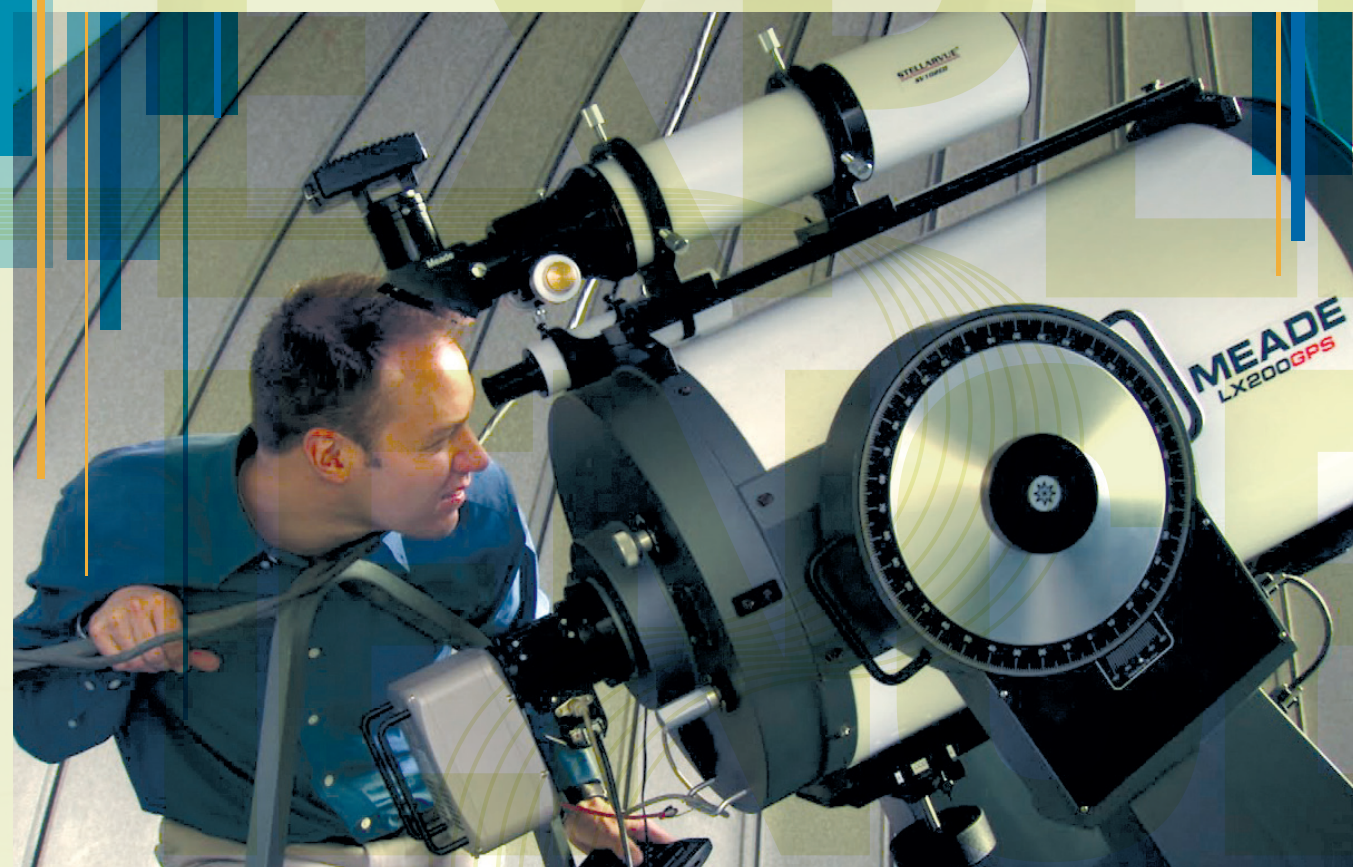
The *Ultra-low Temperature Laboratory* includes a dilution refrigerator, 3He and 4He cryostats and microwave sources to study quantum phenomena in nano and microscale devices, superconducting qubits, nanostructures and quantum fluids and solids. A *magnetic material laboratory* conducts research on amorphous magnetic thin films and optical sensors. And a *surface science laboratory* houses scanning probe microscopes for studying surface structure interfaces at the atomic level.

PARTICLE PHYSICS FACILITIES

A *detector development laboratory* provides experimental support for an international research program in nonaccelerator particle and nuclear physics performing tests of invariance principles and conservation laws, and neutrino oscillations.

"It's easy to talk to professors and graduate students in the department to get answers to your puzzling questions, and have all the mentoring you might need while going through your college life." — Othmane Rifki, B.S. Physics, 2012

life. experience.



PHYSICS

