



Physics

“Physics at Pacific is definitely hands-on, where students work closely with professors. We get crucial experience conducting advanced independent study.”

Through our strong educational program featuring hands-on learning, our students develop a deep understanding of physics and have fun doing it.

THE PROGRAM

Physics—the study of the physical universe—underlies all other sciences. From black holes to quarks, solar systems to atoms, tornados to blood flow, physics provides the fundamental description of how nature works. Physics is also the foundation of engineering and the high-tech, multifaceted electronics industry. Pacific University’s program captures both the theoretical and practical aspects of this fundamental science.

INNOVATIVE TEACHING

The centerpiece of our program is cutting-edge teaching. We are guided by the best ideas from leading physics education researchers around the world, which emphasize that students learn best by doing. This approach begins in the first year with our calculus-based introductory physics class taught without formal lectures. Students work in teams using a wide variety of computer-

operated measuring instruments (such as motion sensors, force probes, radiation detectors, etc.) to master the physics principles they are studying. By taking and analyzing data, they determine how physics works in exactly the same way a professional scientist does. Our learn-by-doing approach continues in upper division courses where students work on increasingly sophisticated and open-ended projects, culminating in a senior capstone research project or internship.

THE STUDENTS

Physics students at Pacific want to get involved and participate, whether it’s working in the new laser lab, coauthoring research articles, or firing the potato gun at a physics function. They construct their own knowledge through hands-on learning. By being actively engaged in the materials, students develop a deep appreciation of physics principles. For students who really want to learn and understand physics, not just listen passively to a lecture, Pacific University is the place to study.



For more information, go to www.pacificu.edu/as/physics/

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THE PROFESSORS

All of our professors are active scholars who are dedicated to educating students in their research laboratories as well as their classrooms. Our professors have a strong track record of obtaining grants and involving students in research. We have active research programs in lasers and nonlinear fiber optics, crystal growth and the glass transition, physics education, nuclear physics, fluid dynamics, and chaos.

“My research experience at Pacific was fun, interesting, and rewarding. I learned a ton, and it was great preparation for graduate school.”

—Kristine Callan, '05

Juliet W. Brosing **Professor of Physics**

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RECENT CONFERENCE PRESENTATIONS BY STUDENTS

Karsten Gimre, '09, and Kerensa Gimre, '09

“An Upper-Level Thermodynamics Lab Comparing Gas and Rubber Band Systems,” presented at the Murdock Conference, Portland, Oregon, 2006

Kyle Motta, '07, and Judi Reasoner, '08

“Investigation of Anomalous Crystal Growth in Supercooled Liquids,” presented at the Murdock Conference, Portland, Oregon, 2006

Stacey Sueoka, '07

“Optical Limiting in Solid-Core Holey Fibers,” presented at the Society of Physics Students/American Association of Physics Teachers meeting, Seattle, Washington, 2007

Nick Carroll, '06, and Matt McCord, '06

“Turbulent Taylor-Couette Flow and Hi-Speed Cameras,” presented at the Murdock Conference, Nampa, Idaho, 2005

Kristine Callan, '05

“Controlling Chaotic Dynamics in a Simple Electronic Oscillator,” presented at the NW section of the American Physical Society, Victoria, British Columbia, 2005

Lawrence Davis, '05

“Nonlinear Capillary Waveguides for Infrared Optical Limiting,” presented at the National Conference on Undergraduate Research, Lexington, Virginia, 2005

THE PREPARATION

Our graduates have a wide range of career options because of the broad training provided by a physics degree. Many of our students go on to graduate school to continue their physics education. Others pursue additional education in engineering. Still others begin their careers directly after graduation, often in the high-tech industry. Some students decide to teach, often completing an M.A.T. at Pacific University.

THE PROOF

Here is just a sampling of the accomplishments of some recent graduates of the physics program and what they are doing today:

Stephen Abang, '06

Technician, Oregon Health and Science University
Senior capstone—“Study of Bicycle Helmet Ability to Reduce Impact Force to the Head”

Brysen Yoshimori, '06

M.S. student, mechanical engineering, Portland State University
Senior capstone—“Anomalous Crystal Growth in Supercooled Salol and OTP”

Kristine Callan, '05

Ph.D. student, Duke University
Senior capstone—“Exploring Chaotic Dynamics Numerically and Experimentally”

Lawrence Davis, '05

Ph.D. student, University of Oregon
Senior capstone—“Nonlinear Capillary Waveguides for Infrared Optical Limiting”

Teresa Garcia, '04

Ph.D. student, University of Alaska
Senior capstone—“Making Maestro and the Soloist Sing: Experiments in Alpha Particle Spectroscopy”

Ben Lopez, '04

Ph.D. student, University of Oregon
Senior capstone—“Hopping Hoop: The Controversial Dynamics of an Eccentrically Loaded Wheel”

Kaha' Rezantes, '03

Structural engineer, State of Washington
Senior capstone—“Investigation of the Rotation of Bubbly-Fluid Filled Cylinders”

Eric Ashbaker, '02

Health physicist, Battelle Northwest Labs
Senior capstone—“Characterizing Taylor Vortex Flow Patterns Using a Light Sensitive Detector”

Katie Marston, '02

Physicist, Health Physics Northwest
Senior capstone—“Crystal Growth in OTP”

Brady Richmond, '02

Coastal engineer, Coastal Frontiers Corp.
Senior capstone—“Internship with Idaho Department of Transportation”

Greg Losli, '00

M.S., electrical engineering, Washington University
Senior capstone—“Biomechanics of Swinging from Rest in the Seated Position”

PACIFIC UNIVERSITY

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O R E G O N

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