

Physics

Departments
and Programs
in the College
of Science

Biochemistry &
Biophysics

Biology

Botany & Plant
Pathology

Chemistry

Environmental
Sciences

Geosciences

Mathematics

Microbiology

Molecular &
Cellular Biology*

Physics

Pre-professional
Programs in the
Health Sciences

Professional
Science Masters*

Science &
Mathematics
Education*

Statistics*

Zoology

*graduate program only

...the behavior of the physical universe. Physics is the science that studies the nature of things—the fundamental structure of matter and the interaction of its parts. Physicists seek first to understand the way in which the most elementary systems in nature operate. Their goal is to explain all natural phenomena in terms of a few basic concepts and relationships. Are you curious about how nature works? Are you intellectually well disciplined? Do you grasp abstract concepts easily? If so, consider this exciting field.

Career Opportunities

A bachelor's degree in physics is a platform from which you can undertake a career in pure physics or one in such allied fields as astrophysics, atmospheric physics, biophysics, chemical physics, geophysics, mathematical physics, and physical oceanography. Many opportunities exist in the semiconductor industry and in solid-state physics—strong specialty areas at OSU. Lasers and optical communication technology, atomic, molecular, and nuclear physics offer career opportunities in both applied and basic research. Many physicists find challenging careers in the computer industry, both as programmers and as system designers. A sample of recent positions for OSU graduates includes:

Product engineer at major electronics firm

Physics instructor in community college

Graduate assistant, biophysics

Graduate assistant, atmospheric science

Field service engineer for a medical laser-systems firm

Noise engineer at a major airplane manufacturing firm

Microwave integrated circuit designer with a high tech firm

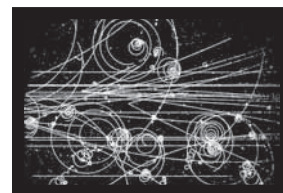
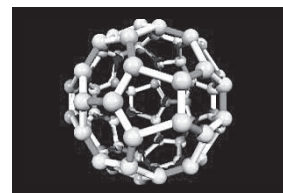
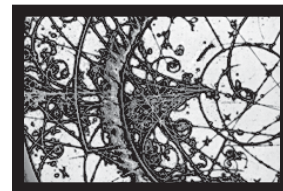
Software development with an oil and gas exploration firm

The Department of Physics at Oregon State University grants undergraduate and advanced degrees. Faculty members in the department are involved in a variety of research projects in both theoretical and applied physics. Atomic, optical, solid-state, nuclear, and particle physics are all represented.

Students at the junior and senior level are encouraged to work on some of these projects and even carry out independent research projects of current topical interest under the direction of a faculty member. Thus, undergraduates interact closely with graduate students and faculty members.

An essential part of the physics training at OSU is computing. Computers are used in instruction throughout the curriculum, from introductory to advanced courses. Our new, junior-year paradigms curriculum emphasizes the use of computers to solve complex mathematical problems and visualize the results. Research-grade, super-minicomputers are available for computations in theoretical atomic, nuclear, and solid-state physics.

A special laboratory has been established to train students to interface computers to laboratory equipment, and undergraduate courses in computational physics are offered.



Physics

What to know about Oregon State University

Head Advisor
College of Science
128 Kidder Hall
541-737-4811

OSU Admissions
104 Kerr Administration
541-737-4411
800-291-4192

OSU Financial Aid
Student Employment
Loans & Scholarships
College Work Study
218 Kerr Administration
541-737-2241

OSU Registrar
102 Kerr Administration
541-737-4331

OSU Housing
102 Buxton Hall
541-737-4771

OSU Website
<http://oregonstate.edu>

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Course of Study

The Department of Physics at OSU offers two approaches to the study of physics. One stresses basic physics and is designed for students who plan on graduate study or careers in physics-related research and development. The other emphasizes any one of the options in applied physics, biophysics, chemical physics, computational physics, geophysics, mathematical physics, or optical physics. The program is flexible so that you may follow either approach or a combination of both. Separate programs for degrees in computational physics and engineering physics are also available.

Course work during the last two years supports individual areas of emphasis. Upper division students take mechanics, thermodynamics, electromagnetic theory, statistical mechanics, and quantum theory, including applications to current developments in atomic, solid-state, nuclear, and particle physics. Skills are developed through lab courses in electronics, computer interfacing, computational physics, and optical technology. Graduation requirements also include 48 credits of baccalaureate core (BC) courses, consisting of writing/speech (9 cr.), mathematics (3 cr.), fitness (3 cr.), physical and biological sciences (12 cr.), perspectives: western culture/cultural diversity/literature & arts/social processes/difference, power, and discrimination (15 cr.), and synthesis: contemporary global issues/science, technology and society (6cr.).

Sample Curriculum

Freshman Year			credits		
General Physics with Calculus	PH 211	4	Physics Recitation	PH 221	1
Calculus	MTH 251, 252, 254	12	General Chemistry	CH 221, 222, 223	15
BC: Fitness		3	BC: Writing I, II		6
BC: Perspectives		3	Scientific Computing	PH 265	3

Sophomore Year			credits		
General Physics with Calculus	PH 212, 213	8	Physics Recitation	PH 222, 223	2
Introductory Modern Physics	PH 314	4	Calculus & Differential Equations	MTH 253, 255, 256	12
Linear Algebra	MTH 341	3	Biological Science		4
BC: Writing III		3	BC: Perspectives		9

Junior Year			credits		
Electronics Laboratory	PH 411, 412	6	Paradigms in Physics	PH 320, 421, 422, 423, 424, 425, 426, 427, 428/9	18
Computer Interfacing	PH 415	3			
Classical Mechanics	PH 435	3			
BC: Perspectives		3	BC: Synthesis		3
Electives		9			

Senior Year			credits		
Electromagnetism	PH 431	3	Thermal and Statistical Physics	PH 441	3
Quantum Physics	PH 451	3	Mathematical Physics	PH 461	3
Optics	PH 481	4	Thesis	PH 403	
BC: Synthesis		3	Physics elective		3
Other electives		18			

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