

Experience.  
Explore.  
Discover.  
Achieve.

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

# Biochemistry & Biophysics

...the chemistry and physics of life processes. What is the chemical mechanism by which enzyme catalysts increase reaction rates by several million-fold? What controls the readout of genetic information in chromosomes, and how do the control mechanisms order the development of a plant or animal? How do environmental changes alter genetic and metabolic patterns, helping the organism adjust to the changes? What do genome base sequences tell us about the proteins they encode and their functions? How does the unique genetic makeup of individuals help in criminal investigations? Such questions are asked by biochemists.

## Career Opportunities

Ph.D. students at major universities in fields ranging from biochemistry to bioethics

Research fellows in biochemistry, tumor virology and molecular biology

Research scientists and executives in biotechnology companies

Laboratory assistants in food processing plants and pharmaceutical facilities

Laboratory technicians for university or medical school research laboratories

Health professionals (physicians, dentists, pharmacists, etc.)

Technicians in clinical laboratories

Forensic scientists

All life processes, even our thinking and learning, have a biochemical basis. Biochemists explore the chemical structure of living matter and the chemical reactions occurring in living cells.

Biophysicists use the methods of physical science to study life processes at a fundamental level. The methods of biochemistry and biophysics are applied in medical and agricultural research, drug discovery, environmental science, behavioral science, food science, nutrition, and industrial chemistry.

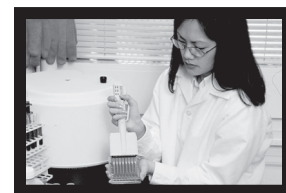
At Oregon State University, the Department of Biochemistry and Biophysics offers undergraduate and advanced degrees. Faculty members, who are noted leaders in their specialties, are active in research as well as teaching. Their research programs provide excellent opportunities for qualified undergraduate students, who are urged to join an ongoing research program where they will work side-by-side with a faculty research advisor. The departmental offices, laboratories, and classrooms are located in the Agriculture and Life Sciences building. This structure, especially designed to house sev-

eral life sciences departments, the Center for Genome Research and Biocomputing, and the Environmental Health Sciences Center, offers state-of-the-art laboratories and research equipment.

Recent years have witnessed a revolution in biology, resulting from the development of powerful research tools, including recombinant DNA technology, large-scale genome analysis, and new methods in computational and structural biology. Newly formed companies tap the practical potential of these technologies for medicine and agriculture, and established companies redirect their research programs. Such new efforts create exciting employment opportunities.

Biochemists and biophysicists are employed by colleges and universities, in government and private research institutes, in hospitals, and in industry. Industrial employers include chemical companies, food processing plants, drug manufacturers, the cosmetics industry, and manufacturers of agricultural chemicals. The food industry employs biochemists and

biophysicists for research on nutritive supplements, preservatives, and additives. Many students use a biochemistry or biophysics degree as a springboard to medical school. Although the best career opportunities require postgraduate training, graduates with a B.S. degree in biochemistry and biophysics pursue a variety of interesting careers.



# Biochemistry & Biophysics

## 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>

## For more information, please contact:

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<http://oregonstate.edu/dept/biochem/>

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Equal Opportunity Employer and complies with  
Section 504 of the Rehabilitation Act of 1973.

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## Course of Study

The undergraduate major in biochemistry and biophysics may emphasize either physical or biological sciences or pre-professional preparation for medicine, dentistry, clinical biochemistry, or veterinary medicine. Courses required for the B.S. degree in biochemistry and biophysics include one year each of general chemistry, organic chemistry, physics, physical chemistry, and biology; four terms of calculus; one term of genetics; and two terms of experimental chemistry. Within the department, majors take one year each of biochemistry, biochemistry lab, and biophysics. Graduation requirements must include 48 credits in courses needed for the baccalaureate core (BC), consisting of writing/speech (9 cr.), mathematics (3 cr.), fitness (3 cr.), physical and biological sciences (12 cr.), western culture/cultural diversity/literature & arts/social processes/difference, power, and discrimination (15 cr.), and contemporary global issues/science, technology and society (6 cr.). Research is strongly encouraged but not required.

## Sample Curriculum

An official graduation checklist may be obtained from an advisor.

Freshman Year		credits
General Chemistry	CH 221, 222, 223	15
Calculus	MTH 251, 252, 254	12
BC: Writing I	WR 121	3
BC: Fitness		3
Biology	BI 211, 212, 213	12
Intro to BB Research	BB 111	1
BC courses and electives		0-3

Sophomore Year		credits
Genetics	BI 311	4
Organic Chemistry	CH 334, 335, 336	9
Calculus	MTH 253	4
Scientific Theory and Practice	BB 317	3
Experimental Chemistry	CH 361, 362*	6
Physics	PH 211, 212, 213	12
BC courses and electives		7

Junior Year		credits
Biochemistry	BB 490, 491, 492	9
Biochemistry Laboratory	BB 493, 494, 495	9
Physical Chemistry	CH 440, 441, 442	9
BC courses and electives		17

Senior Year		credits
Biophysics	BB 481, 482, 483	9
BC courses and electives		36

\*CH 361-362 can be taken in either the sophomore or junior year. If taken as a junior, then BB 493, BB 494, BB 495 should be taken in the senior year.

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Oregon State  
UNIVERSITY