

Pharmaceutical Sciences, B.S.

The B.S. program in Pharmaceutical Sciences trains students in a multidisciplinary approach so that they can contribute to the advancement of new pharmaceutical technologies such as accelerated chemical synthesis, molecular-based assays using cloned enzymes, biopharmaceutical techniques, novel diagnostics, computational chemistry, and gene therapies. Pharmaceutical scientists are rapidly changing the field of drug discovery and development. The graduates of this program may seek employment in public and private sectors or choose to pursue graduate degrees such as a Ph.D., M.D., or Pharm.D.

Undergraduate Honors. Honors at graduation, e.g., *cum laude*, *magna cum laude*, *summa cum laude*, are awarded to approximately the top 16 percent of the graduating seniors. To be eligible for honors, a general criterion is that students must have completed at least 72 units in residence at a University of California campus. Other important factors are considered visit at Honors Recognition (<http://catalogue.uci.edu/honors/>).

Students may be admitted to the Pharmaceutical Sciences major upon entering the University as freshmen, via change of major, or as transfer students from other colleges and universities.

Information about change-of-major policies is available in the Department of Pharmaceutical Sciences office and at the UCI Change of Major Criteria website (<http://www.changeofmajor.uci.edu/>).

Transfer Students: All applicants must have completed the following required courses with a grade of B- or better in all courses: one year of general chemistry with laboratory equivalent to UCI's CHEM 1A-CHEM 1B-CHEM 1C and CHEM 1LC-CHEM 1LD **AND** one year of organic chemistry with laboratory equivalent to UCI's CHEM 51A-CHEM 51B-CHEM 51C and CHEM 51LB-CHEM 51LC-CHEM 51LD. Transfer students must also complete two years of biology courses equivalent to UCI's BIO SCI 93, BIO SCI 94, BIO SCI 97, BIO SCI 98, and BIO SCI 99. Moreover, all transfer applicants must have a cumulative GPA of 3.0 or better. Additional courses that are recommended, but not required: one year of calculus and one year of calculus-based physics.

All students must meet the University Requirements (<http://catalogue.uci.edu/informationforadmittedstudents/requirementsforabachelorsdegree/>).

Major Requirements

A. Lower-Division Requirements:

1. Select one of the following sequences:

CHEM 1A- 1B- 1C

General Chemistry
and General Chemistry
and General Chemistry

CHEM H2A- H2B- H2C

Honors General Chemistry
and Honors General Chemistry
and Honors General Chemistry

and select one of the following lab sequences:

CHEM 1LC- 1LD

General Chemistry Laboratory
and General Chemistry Laboratory

CHEM H2LA- H2LB- H2LC

Honors General Chemistry Laboratory
and Honors General Chemistry Laboratory
and Honors General Chemistry Laboratory

CHEM M2LA- M2LB- M3LC

Majors General Chemistry Laboratory
and Majors General Chemistry Laboratory
and Majors Quantitative Analytical Chemistry Laboratory

Complete the following organic chemistry sequence and accompanying labs:

CHEM 51A- 51B- 51C

Organic Chemistry
and Organic Chemistry
and Organic Chemistry³

CHEM 51LB- 51LC- 51LD

Organic Chemistry Laboratory
and Organic Chemistry Laboratory
and Organic Chemistry Laboratory

2. Complete:

MATH 2A- 2B

Single-Variable Calculus
and Single-Variable Calculus

and select one of the following:

MATH 2D

Multivariable Calculus

MATH 3A

Introduction to Linear Algebra

STATS 7	Basic Statistics
STATS 8	Introduction to Biological Statistics
3. Select one of the following physics sequences:	
PHYSICS 3A- 3B- 3C	Basic Physics I and Basic Physics II and Basic Physics III
or	
PHYSICS 7C- 7D- 7E	Classical Physics and Classical Physics and Classical Physics
4. Complete:	
BIO SCI 93	From DNA to Organisms
BIO SCI 94	From Organisms to Ecosystems
BIO SCI 97	Genetics
BIO SCI 98	Biochemistry
BIO SCI 99	Molecular Biology
5. Complete: ²	
PHRMSCI 1	New Student Seminar
PHRMSCI 42	Life 101
PHRMSCI 76	Ethical Conduct of Research
B. Upper-Division Requirements:	
Complete:	
BIO SCI 100	Scientific Writing
BIO SCI 194S	Safety and Ethics for Research
PHRMSCI 120- 120L	Human Physiology and Human Physiology Lab ²
PHRMSCI 170A- 170B	Molecular Pharmacology I and Molecular Pharmacology II ²
PHRMSCI 171	Physical Biochemistry ²
PHRMSCI 172	Topics in Pharmaceutical Sciences ²
PHRMSCI 173	Pharmacotherapy ²
PHRMSCI 174- 174L	Biopharmaceutics and Nanomedicine and Biopharmaceutics and Nanomedicine Lab ²
PHRMSCI 177- 177L	Medicinal Chemistry and Medicinal Chemistry Laboratory ²
C. Upper-Division Electives (8 units):	
The upper-division electives may be selected from the following: ^{1,2}	
BIO SCI D103	Cell Biology
BIO SCI D104	Developmental Biology
BIO SCI D111L	Developmental and Cell Biology Laboratory
BIO SCI D136	Human Anatomy
BIO SCI D137	Eukaryotic and Human Genetics
BIO SCI D145	Genomics, Development, and Medicine
BIO SCI D148	Development and Disease
BIO SCI D170	Applied Human Anatomy
BIO SCI E136	The Physiology of Human Nutrition
BIO SCI E142W	Writing/Philosophy of Biology
BIO SCI E189	Environmental Ethics
BIO SCI M114	Advanced Biochemistry
BIO SCI M114L	Biochemistry Laboratory
BIO SCI M116L	Molecular Biology Laboratory
BIO SCI M118L	Experimental Microbiology Laboratory
BIO SCI M120	Signal Transduction in Mammalian Cells

BIO SCI M121	Immunology with Hematology
BIO SCI M122	General Microbiology
BIO SCI M123	Introduction to Computational Biology
BIO SCI M124A	Virology
BIO SCI M124B	Viral Pathogenesis and Immunity
BIO SCI M125	Molecular Biology of Cancer
BIO SCI M137	Microbial Genetics
BIO SCI M143	Human Parasitology
BIO SCI M144	Cell Organelles and Membranes
BIO SCI N110	Neurobiology and Behavior
BIO SCI N113L	Neurobiology Laboratory
BIO SCI N153	Neuropharmacology
BIO SCI N154	Molecular Neurobiology
CHEM 107	Inorganic Chemistry
CHEM 107L	Inorganic Chemistry Laboratory
CHEM 125	Advanced Organic Chemistry
CHEM 128	Introduction to Chemical Biology
CHEM 128L	Introduction to Chemical Biology Laboratory Techniques
CHEM 138	Introduction to Computational Organic Chemistry
CHEM 156	Advanced Laboratory in Chemistry and Synthesis of Materials
CHEM 160	Organic Synthesis Laboratory
CHEM 170	Radioisotope Techniques
PUBHLTH 121	Introduction to Complementary and Alternative Medicine

- 1 Course may not be used to satisfy more than one requirement.
- 2 Courses must be completed with a grade of C- or better.
- 3 Courses must be completed with a grade of C- or better by winter quarter of the second year.

Upper-Division Writing Requirement: Pharmaceutical Sciences majors satisfy the upper-division writing requirement by completing BIO SCI 100 with a grade of C or better, followed by the completion of PHRMSCI 174L and PHRMSCI 177L.

NOTE: Double majors with Pharmaceutical Sciences, Public Health Sciences, Nursing Science, Biomedical Engineering: Premedical, or with any of the School of Biological Sciences majors are not permitted.

Freshman		
Fall	Winter	Spring
BIO SCI 93	BIO SCI 94	CHEM 1C- 1LC
CHEM 1A	CHEM 1B	MATH 2A
HUMAN 1A	WRITING 39B	WRITING 39C or HUMAN 1C
PHRMSCI 1	General Education	General Education
General Education		
Sophomore		
Fall	Winter	Spring
BIO SCI 97	BIO SCI 98	BIO SCI 99
CHEM 51A- 1LD	CHEM 51B- 51LB	CHEM 51C- 51LC
MATH 2B	PHRMSCI 42	General Education
BIO SCI 194S	General Education	
Junior		
Fall	Winter	Spring
PHRMSCI 120- 120L	PHRMSCI 170A	PHRMSCI 170B
BIO SCI 100	General Education	Elective
PHYSICS 3A, 7C, or 7LD	PHYSICS 3B, 7D, or 7LD	PHYSICS 3C or 7E
CHEM 51LD	Elective	PHRMSCI 76
	STATS 7, 8, MATH 2D, or MATH 3A	
Senior		
Fall	Winter	Spring
PHRMSCI 171	PHRMSCI 177- 177L	General Education
PHRMSCI 174- 174L	General Education	Upper-Division Elective

General Education
PHRMSCI 172

Upper-Division Elective

PHRMSCI 173