Pharmaceutical Sciences, B.S.

UCI’s undergraduate degree in pharmaceutical sciences is among the top-10 pharmaceutical sciences departments in the nation. The Bachelor of Science (B.S.) program 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., as well as many others.

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. For more information, please visit the Latin H (https://www.reg.uci.edu/grades/latinhonors.html#&text=Of%20the%20graduating%20seniors%2C%20no,a%20University%20of%20California%20campus) page (https://www.reg.uci.edu/grades/latinhonors.html).

Students may be admitted to the Pharmaceutical Sciences major upon entering the University as freshmen, via change of major petition, 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 Chemistry 3 |
| CHEM 51LB- 51LC- 51LD | Organic Chemistry Laboratory and Organic Chemistry Laboratory and Organic Chemistry Laboratory |

2. Complete:

| MATH 2A- 2B | Single-Variable Calculus I and Single-Variable Calculus II |

and select one of the following:
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>MATH 2D</td>
<td>Multivariable Calculus I</td>
</tr>
<tr>
<td>MATH 3A</td>
<td>Introduction to Linear Algebra</td>
</tr>
<tr>
<td>STATS 7</td>
<td>Basic Statistics</td>
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<tr>
<td>STATS 8</td>
<td>Introduction to Biological Statistics</td>
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</table>

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:

- 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 E109
  - Human Physiology

- PHRMSCI 170A-170B
  - Molecular Pharmacology I and Molecular Pharmacology II

- PHRMSCI 171
  - Physical Biochemistry

- PHRMSCI 172
  - Topics in Pharmaceutical Sciences

- PHRMSCI 173
  - Pharmacotherapy

- PHRMSCI 174-174L
  - Biopharmaceutics and Nanomedicine and Biopharmaceutics and Nanomedicine Laboratory

- PHRMSCI 177-177L
  - Medicinal Chemistry and Medicinal Chemistry Laboratory

**C. Upper-Division Electives (8 units):**

The upper-division electives may be selected from the following:

- 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 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
<table>
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>BIO SCI M121</td>
<td>Immunology with Hematology</td>
</tr>
<tr>
<td>BIO SCI M122</td>
<td>General Microbiology</td>
</tr>
<tr>
<td>BIO SCI M123</td>
<td>Introduction to Computational Biology</td>
</tr>
<tr>
<td>BIO SCI M124A</td>
<td>Virology</td>
</tr>
<tr>
<td>BIO SCI M124B</td>
<td>Viral Pathogenesis and Immunity</td>
</tr>
<tr>
<td>BIO SCI M125</td>
<td>Molecular Biology of Cancer</td>
</tr>
<tr>
<td>BIO SCI M137</td>
<td>Microbial Genetics</td>
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<tr>
<td>BIO SCI M143</td>
<td>Human Parasitology</td>
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<tr>
<td>BIO SCI M144</td>
<td>Cell Organelles and Membranes</td>
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<tr>
<td>BIO SCI N110</td>
<td>Neurobiology and Behavior</td>
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<td>BIO SCI N113L</td>
<td>Neurobiology Laboratory</td>
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<td>BIO SCI N153</td>
<td>Neuropharmacology</td>
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<td>BIO SCI N154</td>
<td>Molecular Neurobiology</td>
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<td>CHEM 107</td>
<td>Inorganic Chemistry</td>
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<td>CHEM 107L</td>
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<td>CHEM 125</td>
<td>Advanced Organic Chemistry</td>
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<td>CHEM 128</td>
<td>Introduction to Chemical Biology</td>
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<tr>
<td>CHEM 128L</td>
<td>Introduction to Chemical Biology Laboratory Techniques</td>
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<td>CHEM 138</td>
<td>Introduction to Computational Organic Chemistry</td>
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<tr>
<td>CHEM 156</td>
<td>Advanced Laboratory in Chemistry and Synthesis of Materials</td>
</tr>
<tr>
<td>CHEM 160</td>
<td>Organic Synthesis Laboratory</td>
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</table>

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.
Pharmaceutical Sciences, B.S.

General Education
PHRMSCI 172

- STATS 7, 8, MATH 2D, or MATH 3A
- PHRMSCI 76

- Doctor of Pharmacy (Pharm.D.)
- Pharmacological Sciences, Ph.D.
- Pharmacology, M.S.