PHARMACEUTICAL CHEMISTRY, BACHELOR OF SCIENCE

College of Letters & Science

The Major Programs
Chemistry studies the composition of matter, its structure, and the means by which it is converted from one form to another.

The Program
We offer several degree programs leading to the Bachelor of Arts (A.B.) and the Bachelor of Science (B.S.). To meet and discuss these programs with our staff advisors, see Academic Advising (https://chemistry.ucdavis.edu/undergraduate/academic-advising/).

The B.S. in Pharmaceutical Chemistry is strongly focused on basic science while providing students with a greater understanding of the experimental and computational processes and societal issues that surround the synthesis, discovery and design of modern pharmaceuticals. Important relevant topics include potential drug targets, physical principles of drug action, drug synthesis & screening, computational drug design, drug delivery and ethical concerns. The demand for pharmaceutical chemists is high and anticipated to grow, as modern chemistry allows a wide range of choices for drug synthesis and our growing knowledge of biological processes presents challenging targets for novel therapeutics.

Career Alternatives
Graduates in Pharmaceutical Chemistry will be able to successfully pursue their career objectives in advanced education in professional and/or graduate schools and in a range of scientific careers in academia, government or industry including the pharmaceutical, medicinal & biological sciences, medicine, pharmacy, pharmacology and biotechnology.

Major Advisor
To contact a major advisor in the Department of Chemistry, see Academic Advising (https://chemistry.ucdavis.edu/undergraduate/academic-advising/).

Honors & Honors Program
The student must take courses CHE 194HA, CHE 194HB, and CHE 194HC, and complete a capstone project (typically a written honors thesis).

Graduate Study
The Department of Chemistry offers programs of study and research leading to M.S. and Ph.D. degrees in Chemistry. Detailed information regarding graduate study may be obtained by contacting the Graduate Advisor, Department of Chemistry. See also Graduate Studies (http://gradstudies.ucdavis.edu/).

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>CHE 002A</td>
<td>General Chemistry</td>
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<td>&amp; CHE 002C</td>
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<td>CHE 004A</td>
<td>General Chemistry for the Physical Sciences &amp; Engineering</td>
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<tbody>
<tr>
<td>BIS 002A</td>
<td>Introduction to Biology. Essentials of Life on Earth</td>
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<tr>
<td>BIS 002B</td>
<td>Introduction to Biology. Principles of Ecology &amp; Evolution</td>
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<td>or BIS 002C</td>
<td>Introduction to Biology. Biodiversity &amp; the Tree of Life</td>
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<td>STA 032</td>
<td>Gateway to Statistical Data Science</td>
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<td>STA 100</td>
<td>Applied Statistics for Biological Sciences</td>
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Preparatory Subject Matter Subtotal 50-56

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<td>CHE 124A</td>
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<td>CHE 130A</td>
<td>Pharmaceutical Chemistry</td>
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<td>CHE 130B</td>
<td>Pharmaceutical Chemistry</td>
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Choose a series: 6-12

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<td>CHE 107A</td>
<td>Physical Chemistry for the Life Sciences and Physical Chemistry for the Life Sciences</td>
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Preparatory Subject Matter

Chemistry

Choose a series: 15
### Pharmaceutical Chemistry, Bachelor of Science

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<tr>
<th>Code</th>
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<tbody>
<tr>
<td>CHE 110A</td>
<td>Physical Chemistry: Introduction to Quantum Mechanics</td>
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<td>&amp; CHE 110B</td>
<td>and Physical Chemistry: Properties of Atoms &amp; Molecules</td>
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<tr>
<td>&amp; CHE 110C</td>
<td>and Physical Chemistry: Thermodynamics, Equilibria &amp; Kinetics</td>
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**Choose 118 series or 128 & 129 series:** 12-15

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<tr>
<td>CHE 118A</td>
<td>Organic Chemistry for Health &amp; Life Sciences</td>
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<td>and Organic Chemistry for Health &amp; Life Sciences</td>
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<tr>
<td>&amp; CHE 118C</td>
<td>and Organic Chemistry for Health &amp; Life Sciences</td>
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or

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<tr>
<td>CHE 128A</td>
<td>Organic Chemistry</td>
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<td>&amp; CHE 128B</td>
<td>and Organic Chemistry</td>
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<tr>
<td>&amp; CHE 128C</td>
<td>and Organic Chemistry</td>
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<tr>
<td>CHE 129A</td>
<td>Organic Chemistry Laboratory</td>
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<td>&amp; CHE 129B</td>
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<td>&amp; CHE 129C</td>
<td>and Organic Chemistry Laboratory</td>
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**Choose two:** 6

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<tr>
<td>BIS 102</td>
<td>Structure &amp; Function of Biomolecules</td>
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<tr>
<td>CHE 131</td>
<td>Modern Methods of Organic Synthesis</td>
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<tr>
<td>CHE 150</td>
<td>Chemistry of Natural Products</td>
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**Choose at least four; not used to satisfy the above requirements:** 11-16

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<tr>
<td>ANS 170</td>
<td>Ethics of Animal Use</td>
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<tr>
<td>BIS 102</td>
<td>Structure &amp; Function of Biomolecules</td>
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<tr>
<td>BIS 103</td>
<td>Bioenergetics &amp; Metabolism</td>
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<tr>
<td>BIT 171</td>
<td>Professionalism &amp; Ethics in Genomics &amp; Biotechnology</td>
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<tr>
<td>CHE 131</td>
<td>Modern Methods of Organic Synthesis</td>
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<tr>
<td>CHE 150</td>
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<tr>
<td>CHE 199</td>
<td>Special Study for Advanced Undergraduates (For a minimum 3 units.)</td>
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<td>Undergraduate Honors Research</td>
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<td>ETX 103A</td>
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<tr>
<td>MCB 123</td>
<td>Behavior &amp; Analysis of Enzyme &amp; Receptor Systems</td>
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<tr>
<td>MCB 124</td>
<td>Macromolecular Structure &amp; Function</td>
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<td>MCB/PLB 126</td>
<td>Plant Biochemistry</td>
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<td>MIC 102</td>
<td>Introductory Microbiology</td>
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<td>NPB 100</td>
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<td>Systemic Physiology</td>
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<td>PLB/MCB 126</td>
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<td>VMB 101Y</td>
<td>Principles of Pharmacology &amp; Toxicology (For a minimum 3 units.)</td>
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<td>or VMB 101V</td>
<td>Principles of Pharmacology &amp; Toxicology</td>
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**Depth Subject Matter Subtotal** 47-61

**Total Units** 97-117