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 research project (typically a written honors thesis). For more information, see Undergraduate Research (https://chemistry.ucdavis.edu/undergraduate/undergraduate-research/) on the department's website.

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/).

Code    Title                                          Units
Preparatory Subject Matter
Chemistry

Choose a series:
CHE 002A & CHE 002B & CHE 002C
CHE 004A & CHE 004B & CHE 004C

General Chemistry and General Chemistry
General Chemistry for the Physical Sciences & Engineering
General Chemistry for the Physical Sciences & Engineering

Physics

Choose a series:
PHY 007A & PHY 007B & PHY 007C
PHY 009A & PHY 009B & PHY 009C

General Physics
General Physics
Classical Physics
Classical Physics

Mathematics

Choose a series:
MAT 016A & MAT 016B & MAT 016C
MAT 017A & MAT 017B & MAT 017C
MAT 021A & MAT 021B & MAT 021C

Short Calculus and Short Calculus
Calculus for Biology & Medicine and Calculus for Biology & Medicine
Calculus and Calculus

Biology

BIS 002A Introduction to Biology: Essentials of Life on Earth
BIS 002B Introduction to Biology: Principles of Ecology & Evolution
or BIS 002C Introduction to Biology: Biodiversity & the Tree of Life

Statistics

Choose one:
STA 013 Elementary Statistics
or STA 013Y Elementary Statistics
STA 032 Gateway to Statistical Data Science
STA 100 Applied Statistics for Biological Sciences

Preparatory Subject Matter Subtotal 50-56

Depth Subject Matter

Chemistry

CHE 124A Inorganic Chemistry: Fundamentals
CHE 130A Principles of Medicinal Chemistry
CHE 130B Computational Drug Design
CHE 135 Drug Development Laboratory

Choose a series:
CHE 107A & CHE 107B

Physical Chemistry for the Life Sciences and Physical Chemistry for the Life Sciences
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>CHE 118A &amp; CHE 118B &amp; CHE 118C</td>
<td>Organic Chemistry for Health &amp; Life Sciences and Organic Chemistry for Health &amp; Life Sciences</td>
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<tr>
<td>CHE 129A &amp; CHE 129B &amp; CHE 129C</td>
<td>Organic Chemistry Laboratory and Organic Chemistry Laboratory and Organic Chemistry Laboratory</td>
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</tbody>
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Choose 118 series or 128 & 129 series: 12-15

Choose two: 6

BIS 102 | Structure & Function of Biomolecules |
---|---|
CHE 131 | Modern Methods of Organic Synthesis |
CHE 150 | Chemistry of Natural Products |

Choose at least four; not used to satisfy the above requirements: 11-16

ANS 170 | Ethics of Animal Use |
BIS 102 | Structure & Function of Biomolecules |
BIS 103 | Bioenergetics & Metabolism |
BIT 171 | Professionalism & Ethics in Genomics & Biotechnology |
CHE 131 | Modern Methods of Organic Synthesis |
CHE 150 | Chemistry of Natural Products |
CHE 199 | Special Study for Advanced Undergraduates (For a minimum 3 units.) |

or CHE 194HA | Undergraduate Honors Research |
ETX 103A | Biological Effects of Toxicants |
MCB 123 | Behavior & Analysis of Enzyme & Receptor Systems |
MCB 124 | Macromolecular Structure & Function |
MCB/PLB 126 | Plant Biochemistry |
MIC 102 | Introductory Microbiology |
NPB 100 | Neurobiology |
NPB 101 | Systemic Physiology |
NPB 168 | Neurobiology of Addictive Drugs |
PLB/MCB 126 | Plant Biochemistry |
VMB 101Y | Principles of Pharmacology & Toxicology (For a minimum 3 units.) |

or VMB 101V | Principles of Pharmacology & Toxicology |

Depth Subject Matter Subtotal 47-61

Total Units 97-117