

2024-25 Biochemistry Curriculum Checklist

(updated 03/06/2024)

Biochemistry is an interdisciplinary major that is administered jointly by the Biology and Chemistry Departments. Students interested in the biochemistry major may consult Prof. Eric Folker (578 Higgins).

Required Courses

BIOLOGY

- BIOL 2000** Molecules & Cells (*fall/spring*)
- BIOL 2010** Ecology & Evolution (*fall/spring*) **OR** **BIOL 3030** Comparative Vertebrate Physiology (*fall only*)
OR **BIOL 4330** Human Physiology (*spring only*)
- BIOL 2040** Investigations in Molecular Cell Biology (*fall/spring*)
- One course in **cellular sciences** from the following list
 - BIOL 3040 Cell Biology (*fall/spring*)
 - BIOL 3090 Foundations of Microbiology (*spring only*)
 - BIOL 4140 Microbiology (*fall only*)
- One course in **genetics or genomics** from the following list
 - BIOL 3050 Genetics (***fall only***)
 - BIOL 3060 Introduction to Genetics (*summer only*)
 - BIOL 3150 Introduction to Genomics (*spring only*)

CHEMISTRY COURSES

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| <input type="checkbox"/> CHEM1109/1111 General Chemistry I with Lab
(or CHEM1117/1119) (<i>fall only</i>) | <input type="checkbox"/> CHEM1110/1112 General Chemistry II with Lab
(or CHEM1118/1120) (<i>spring only</i>) |
| <input type="checkbox"/> CHEM2231/2233 Organic Chemistry I with Lab
(or CHEM2241) (<i>fall only</i>) | <input type="checkbox"/> CHEM2232/2234 Organic Chemistry II with Lab
(or CHEM2242) (<i>spring only</i>) |
| <input type="checkbox"/> CHEM 3351/3353 Analytical Chemistry/Lab (<i>fall only</i>) | <input type="checkbox"/> CHEM 4473 Physical Chem/Biochem Majors (<i>spring only</i>) |

BIOCHEMISTRY COURSES

Option 1 (Biology) – may be taken in any order:

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| <input type="checkbox"/> BIOL4350 Biological Chemistry (<i>spring only</i>)
or CHEM 4461 Biochemistry 1 (<i>fall only</i>) | <input type="checkbox"/> BIOL4400 Molecular Biology (<i>spring only</i>) |
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Option 2 (Chemistry) – to be taken in sequence:

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| <input type="checkbox"/> CHEM4461 Biochemistry 1 (<i>fall only</i>) | <input type="checkbox"/> CHEM4462 Biochemistry 2 (<i>spring only</i>) |
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MATHEMATICS COURSES

- Calculus II: MATH 1101, MATH 1103 or MATH 1105 (*if credit through AP Calc BC, take another advanced math course*)

PHYSICS COURSES

- PHYS 2100 Intro to Physics I with Lab (calc-based) PHYS 2101 Intro to Physics II with Lab (calc-based)

ADVANCED ELECTIVES (2 courses, minimum of 5 credits total)

Students planning to pursue a science career are urged to become involved in Undergraduate Research or take an Advanced Laboratory course.

Fall 2024

Lecture/Seminar Options:

- Virology (BIOL 4090)
- Inflammation and Disease (BIOL 4120)
- Introduction to Bioinformatics (BIOL 4200)
- Metabolic Regulation and Human Disease (BIOL 4290)
- Nobel Winning Res in Medicine or Physio (BIOL 5010) (2 cr)
- Topics in Developmental Biology (BIOL 5040) (2 cr)
- Microbiomes/Human Disease (BIOL 5100) (2 cr)
- Environmental Disruptors of Development (BIOL 5130)
- Glycobiology and Human Disease (BIOL 5200)
- Cancer as a Metabolic Disease (BIOL 5420)
- Biology of the Nucleus (BIOL 5700)
- NMR Spectroscopy (CHEM 5539)
- Principles of Chemical Biology (CHEM 5560)

Advanced Labs Options:

- Research in Phylogenetics (BIOL4075)
- Research in Molecular Biology Lab (BIOL 4830)
- Investigations in Cellular Re-Programming (BIOL 4890)
- Two semesters of Undergraduate Research

Spring 2025

Lecture/Seminar Options:

- Developmental Biology (BIOL 3320)
- Cancer Biology (BIOL 4510)
- Principles of Immunology (BIOL 4570)
- Nobel Winning Res in Medicine or Physio (BIOL5010) (2 cr)
- Microbial Community Ecology (BIOL 5071) (2 cr)
- Environmental Disruptors of Development (BIOL 5130)
- Seminar in Cellular Dynamics (BIOL 5180) (2 cr)
- Movement in Biology (BIOL 5220) (2 cr)
- Immunity and Infectious Disease (BIOL 5230)
- Cancer as a Metabolic Disease (BIOL 5420)
- Genomics & Personalized Medicine (BIOL 5430)
- Drug Discovery and Medicinal Chemistry (CHEM 5510)
- Synthetic Biology: at the interface of Biology, Chemistry, and Engineering (CHEM 5513)
- Magnetic Resonance in Biology (CHEM 5540)
- Polymer Chemistry (CHEM5548)
- Principles and Methods in Biophysical Chemistry (CHEM5561)

Advanced Labs Options:

- Research in Molecular Biology Lab (BIOL 4830)
- Two semesters of Undergraduate Research