

2023-24 Biochemistry Curriculum Checklist

(updated 03/22/2023)

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) or Prof. Rebecca Dunn (411 Higgins).

Required Courses

BIOLOGY

- BIOL 2000** Molecules & Cells (*fall/spring*)
- BIOL 2010** Ecology & Evolution (*fall/spring*) OR **BIOL 3030** Introduction to Physiology (*fall*) OR **BIOL 3300** Human Physiology (*spring*)
- BIOL 2040** Investigations in Molecular Cell Biology (*fall/spring*)
- One course in **cell biology** from the following list
 - BIOL 3040 Cell Biology (*fall/spring*)
 - BIOL 3090 Foundations of Microbiology (*fall*)
 - BIOL 4140 Microbiology (*spring*)
- One course in **genetics or genomics** from the following list
 - BIOL 3050 Genetics (*fall/spring*)
 - BIOL 3060 Introduction to Genetics (*summer only*)
 - BIOL 3150 Introduction to Genomics (*spring*)

Biochemistry Majors who have a five on the AP Biology exam in their senior year may elect to bypass the 2000 lecture series (BIOL 2000 & BIOL 2010). These students will begin the major with BIOL 3040 Cell Biology and then take six credits of additional biology courses, level 3000 or above.

CHEMISTRY COURSES

- CHEM1109/1111 General Chemistry I with Lab (or CHEM1117/1119) (*fall*)
- CHEM1110/1112 General Chemistry II with Lab (or CHEM1118/1120) (*spring*)
- CHEM2231/2233 Organic Chemistry I with Lab (or CHEM2241) (*fall*)
- CHEM2232/2234 Organic Chemistry II with Lab (or CHEM2242) (*spring*)
- CHEM 3351/3353 Analytical Chemistry/Lab (*fall*)
- CHEM 4473 Physical Chem/Biochem Majors (*spring*)

BIOCHEMISTRY COURSES

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

- BIOL4350 Biological Chemistry (*spring*)
or CHEM 4461 Biochemistry 1 (*fall*)
- BIOL4400 Molecular Biology (*spring only*)

Option 2 (Chemistry) – to be taken in sequence:

- CHEM4461 Biochemistry 1 (*fall*)
- CHEM4462 Biochemistry 2 (*spring*)

MATHEMATICS COURSES

- Calculus II: MATH 1101 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 2023

Lecture/Seminar Options:

- Virology (BIOL 4090)
- Introduction to Bioinformatics (BIOL 4200)
- Environmental Disruptors of Development (BIOL 5130)
- Glycobiology and Human Disease (BIOL5200)
- 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 Evolutionary Genomics (BIOL4802)
- Research in Molecular Biology Lab (BIOL 4830)
- Investigations in Cellular Re-Programming (BIOL 4890)
- Two semesters of Undergraduate Research

Spring 2024

Lecture/Seminar Options:

- Metabolic Regulation and Human Disease (BIOL4290)
- Developmental Biology (BIOL 4320)
- Cancer Biology (BIOL 4510)
- Principles of Immunology (BIOL4570)
- Microbial Community Ecology (BIOL 5071) **(2 cr)**
- Microbiomes/Human Disease (BIOL5100) **(2 cr)**
- Immunity and Infectious Disease (BIOL 5230)
- Cancer as a Metabolic Disease (BIOL 5420)
- Genomics & Personalized Medicine (BIOL 5430)
- Modern Lab Techniques of Photocontrolled Radical Polymerization (CHEM 4450) **(if offered)**
- Synthetic Biology: at the interface of Biology, Chemistry, and Engineering (CHEM 5513)
- Magnetic Resonance in Biology (CHEM 5540)

Advanced Labs Options:

- Research in Molecular Biology Lab (BIOL 4830)
- Research in Molecular Genetics Lab (BIOL 4870)
- Two semesters of Undergraduate Research