Biochemistry and Molecular Biology: Requirements

Interdisciplinary

The intersection of chemistry and biology provides a creative focus for understanding the molecular processes of life. Kenyon's biology and chemistry departments administer an interdisciplinary program offering two majors: biochemistry and molecular biology. Each major combines courses from both departments.

The Curriculum

The biochemistry major provides a chemistry-based curriculum with a significant biology component. The molecular biology major combines a substantial chemistry background with detailed studies in cellular and molecular biology. Both majors prepare students for postgraduate studies in related fields.

An oversight committee for biochemistry and molecular biology, composed of faculty members from the chemistry and biology departments, administers the program and determines requirements for the Senior Capstone and the Honors Program. Students interested in these majors should contact either of the program co-directors.

Requirements for the Major

The biochemistry major and the molecular biology major have many requirements in common. In addition, each has its own set of required courses.

Courses required for BOTH majors (typically 4.75 units):

- Introductory biology (two semesters or equivalent placement)
    - BIOL 115: Energy in Living Systems
    - BIOL 116: Information in Living Systems
- Introductory chemistry (two semesters or equivalent)
    - CHEM 121: Introductory Chemistry and CHEM 124: Introductory Chemistry II
    - Or CHEM 122: Chemical Principles
- Introductory chemistry labs (two semesters)
    - CHEM 123: Introductory Chemistry Lab I
    - CHEM 126: Introductory Chemistry Lab II
- Organic chemistry (two semesters)
    - CHEM 231: Organic Chemistry I
    - CHEM 232: Organic Chemistry II
- Organic Chemistry Lab (one semester)
    - CHEM 233: Organic Chemistry Lab I

    - CHEM 256: Biochemistry
- BIOL 263: Molecular Biology — **must** be completed before senior year

In addition to the requirements listed above for both majors, students majoring in biochemistry must complete the following courses (typically 2.75 units):

- Chemistry courses
    - CHEM 335: Kinetics and Thermodynamics
    - CHEM 341: Instrumental Analysis
    - CHEM 371: Advanced Lab: Biochemistry
- Biology courses
    - One course from BIOL 109Y-110Y, 230, 238, 255, 266, 315, 321, 333, 345, 358 or 375
- Chemistry labs
    - CHEM 234: Organic Chemistry Lab II
    - Three advanced lab courses chosen from CHEM 370, 372, 373, 374 or 375. BIOL 264 also satisfies this requirement. (Note: 0.5 units of CHEM 375 must be completed to count as a single advanced lab).

In addition to the requirements listed above for both majors, students majoring in molecular biology must complete the following courses (typically 2.75 units):

- Biology courses
    - One additional lecture/discussion course in biology at the 200 or 300 level. MATH 258 and CHEM 335 also satisfy this requirement.
    - One additional lecture/discussion course from the cellular and molecular biology category (BIOL 230, 238, 255, 266, 315, 321, 333, 345 351D or 375).
- Biology labs
    - BIOL 109Y-110Y: Introduction to Experimental Biology
    - BIOL 264: Gene Manipulation
    - Two advanced labs from BIOL 230, 239, 256, 267, CHEM 371, or NEUR 350. Two semesters of BIOL 385 (Research in Biology) can count toward this requirement.
- BIOL 475: Senior Seminar. Honors students instead take BIOL 497 and 498.

Senior Capstone

Students majoring in biochemistry perform the Senior Capstone under the supervision of the Department of Chemistry. Students majoring in molecular biology perform the Senior Capstone under the supervision of the Department of Biology. For details, please refer to each department's Senior Capstone requirements listed in the course catalog.

Honors

Honors thesis projects may be conducted under the direct supervision of a faculty member in either department (biology or chemistry) for either major (molecular biology or biochemistry). Discussion between the student and research advisor regarding the department in which honors will be conducted should begin by the spring of the junior year, and a preliminary decision should be made by the end of the semester. A final decision is made in consultation with the program co-directors by the end of the drop-add period in the fall of the senior year. Honors are awarded according to the degree with which the student graduates, regardless of the department under which the honors process is conducted.

Transfer Credit Policy

Students studying off campus may count one upper-level lecture/discussion course and one upper-level lab course toward the major.

Transfer students must consult with the registrar and a program co-director to assess appropriate course equivalency credit.