

Biochemistry

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 biomedical sciences.

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 Exercise and for the Honors Program. Students interested in these majors should contact either of the program codirectors.

REQUIREMENTS FOR THE MAJORS

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

Courses required for both majors (5.25 units):

BIOL 263 must be completed by the end of junior year.

- BIOL 115 Energy in Living Systems (.5 unit)
- BIOL 116 Information in Living Systems (.5 unit)
- CHEM 121 and 124 or CHEM 122; Introductory Chemistry (1 unit)
- CHEM 123 and 126; Introductory Chemistry Lab (.5 unit)
- CHEM 231, 232 Organic Chemistry (1 unit)

- CHEM 233 Organic Chemistry Lab (.25 unit)
- CHEM 256 Biochemistry (.5 unit)
- BIOL 263 Molecular Biology and Genomics (.5 unit)
- CHEM 335 Chemical Kinetics and Thermodynamics (.5 unit)

Additional courses required for the major in biochemistry (2.25 units):

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

- CHEM 234 Organic Chemistry Lab (.25 unit)
- CHEM 341 Instrumental Analysis (.5 unit)
- CHEM 371 Advanced Lab: Biochemistry (.25 unit)
- Three advanced lab courses from: BIOL 264, CHEM 370, 372, 373, 374 and 375 (.5 unit of CHEM 375 must be completed to count as an advanced lab)
- One course from: BIOL 109Y-110Y, 233, 238, 245, 255, 266, 315, 321, 333, 358 or 375 (.75 unit)
- The Senior Exercise, under the supervision of the Department of Chemistry

Additional courses required for the major in molecular biology (2.25 units):

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

- BIOL 109Y-110Y Introduction to Experimental Biology (.5 unit)
- BIOL 264 Gene Manipulation (lab) (.25 unit)
- Two additional lecture/discussion courses in biology at the 200- or 300-level (1 unit). At least one course must be taken from the "cellular and molecular biology" category (BIOL 238, 255, 266, 315, 321, 333, 375)
- Two advanced laboratories from: BIOL 234, 239, 256, 267, 322, 346 or CHEM 371 (.5 unit). Two semesters of Research in Biology (BIOL 385/386) count toward this requirement.

- The Senior Exercise, under the supervision of the Department of Biology

SENIOR EXERCISE

Students majoring in biochemistry perform the Senior Exercise under the supervision of the Department of Chemistry. Molecular biology majors perform the Senior Exercise with the Department of Biology. For details, please refer to each department's Senior Exercise 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 will be made in consultation with the program codirectors 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.

PLANNING FOR GRE

Majors planning to take the GRE in Biochemistry, Cell and Molecular Biology should consider selecting BIOL 266 as an elective.

Biochemistry

Courses

COURSES THAT MEET THE REQUIREMENTS FOR THIS CONCENTRATION:

BIOL 109Y: Introduction to Experimental Biology
BIOL 110Y: Introduction to Experimental Biology
BIOL 115: Energy in Living Systems
BIOL 116: Information in Living Systems
BIOL 233: Plant Biology
BIOL 234: Laboratory Experience in Plant Biology
BIOL 238: Microbiology
BIOL 239: Experimental Microbiology
BIOL 245: Environmental Plant Physiology
BIOL 255: Genetic Analysis
BIOL 256: Experimental Genetic Analysis
BIOL 263: Molecular Biology and Genomics
BIOL 264: Gene Manipulation
BIOL 266: Cell Biology
BIOL 267: Experimental Cell Biology
BIOL 315: Cell Signaling
BIOL 321: Developmental Biology
BIOL 322: Experiments in Developmental Biology
BIOL 333: Environmental Toxicology
BIOL 346: Introduction to Microscopy and Image Analysis
BIOL 358: Neurobiology
BIOL 375: Virology
CHEM 121: Introductory Chemistry
CHEM 122: Chemical Principles
CHEM 123: Introductory Chemistry Lab I
CHEM 124: Introductory Chemistry II
CHEM 126: Introductory Chemistry Lab II
CHEM 231: Organic Chemistry I
CHEM 232: Organic Chemistry II
CHEM 233: Organic Chemistry Lab I
CHEM 234: Organic Chemistry Lab II
CHEM 256: Biochemistry
CHEM 335: Chemical Kinetics and Thermodynamics
CHEM 341: Instrumental Analysis
CHEM 370: Advanced Lab: Computational Chemistry

CHEM 371: Advanced Lab: Biochemistry

CHEM 372: Advanced Lab: Inorganic

CHEM 373: Advanced Lab: Organic

CHEM 374: Advanced Lab: Spectroscopy

CHEM 375: Chemical Research