Biochemistry

The major in biochemistry is administered by the Biochemistry Committee: Professors Chen (chemistry, chair), Frary (biological sciences), Hamilton (chemistry), Knight (biological sciences), Woodard (biological sciences); Assistant Professors Andras (biological sciences), Broaders (chemistry), Camp (biological sciences; on leave 2015-16), McMenimen (chemistry; on leave 2015-16), van Giessen.

Overview

The major in biochemistry is intended to provide a strong background in the fundamentals of both biology and chemistry and to develop an awareness of the unique principles of biochemistry.

Biochemistry is the study of reactions that underpin the living system. These include the vital metabolic reactions that provide cells with energy to perform myriad activities and functions, and the biosynthetic reactions that enable cells to renew, repair, grow, and divide. The linkage of biochemistry with molecular biology for the past 30 years has brought revolutionary advances in our understanding of the living world, the human organism, disease etiology, and medicine.

The interdisciplinary major in biochemistry offers a rigorous course of study that builds on two years of fundamental course work in biology and chemistry. With this broad preparation, students engage with biochemistry and molecular biology builds on two years of fundamental course work in biology and chemistry. With

Students with Advanced Credits

A student coming to the College with advanced credits from IB or A-level course work or Advanced Placement examinations, in accordance with the number of advanced credits she has received, can skip up to four courses at the introductory level: Biological Sciences 145 (or 160), 200; Chemistry 101 (or 160), 201. However, advanced placement courses cannot replace more than 8 credits of the major. A student considering skipping introductory-level courses should consult with the program chair or other members of the Biochemistry Program Committee.

Course Offerings

BIOCH-295 Independent Study
Fall and Spring
Independent work in biochemistry can be conducted with any member of the biochemistry committee and, upon approval, also with other members of the biological sciences and chemistry departments and program in neuroscience and behavior.

The department
Instructor permission required.
Notes: Students conducting an independent lab research project for credit in a department, program, or lab covered by the College's chemical hygiene plan must participate in a safety training session before beginning research.
Credits: 1-4
Course can be repeated for credit.

BIOCH-311 Protein Biochemistry and Cellular Metabolism
Fall
This course is a rigorous introduction to the study of protein molecules and their role as catalysts in the cell. Topics include general principles of protein folding, protein structure-function correlation, enzyme kinetics and mechanism, carbohydrate and lipid biochemistry, and metabolic pathways (catabolic and anabolic) and their interaction and cross-regulation. Biological transformation of energy is considered in light of the principles of thermodynamics.

Crosslisted as: Biological Sciences 311, Chemistry 311
Applies to requirement(s): Math & Sciences
V. Lukose
Prereq: Biological Sciences 210 and Chemistry 302.; Coreq: BIOCH-311L.
Advisory: Biological Sciences 210 can be taken concurrently
Credits: 4

BIOCH-314 Nucleic Acids Biochemistry and Molecular Biology
Spring
This course is an in-depth examination of DNA and RNA structures and how these structures support their respective functions during replication, transcription, and translation of the genetic material. Emphasis is on the detailed mechanisms associated with each step of gene expression. Discussions incorporate many recent advances brought about by recombinant DNA technology.

Crosslisted as: Biological Sciences 314, Chemistry 314
Applies to requirement(s): Math & Sciences
V. Lukose
Prereq: Biological Sciences 210 and Chemistry 302.; Coreq: BIOCH-314L.
Advisory: Chemistry 302 can be taken concurrently
Credits: 4

BIOCH-395  Independent Study
Fall and Spring
Independent work in biochemistry can be conducted with any member of the biochemistry committee and, upon approval, also with other members of the biological sciences and chemistry departments and program in neuroscience and behavior.
The department
Instructor permission required.
Notes: See safety training restrictions in the course description for Biochemistry 295
Credits: 1-8
Course can be repeated for credit.

BIOCH-399  Comprehensive Seminar
Fall
A seminar series consisting of meetings to discuss articles and material from the current biochemical literature. Students will attend lectures, write papers, and give presentations in culmination of their biochemistry experience. Discussions relevant to graduate school applications and careers in biochemical fields will also be held.
Applies to requirement(s): Meets No Distribution Requirement
K. Broaders
Restrictions: This course is open to Juniors and Seniors.; This course is limited to Biochemistry majors only.
Advisory: Juniors and senior biochemistry majors only.
Notes: Highly recommended for junior biochemistry majors; Biochemistry majors are required to complete one semester of this course for graduation.
Credits: 2
Course can be repeated for credit.
Grading: CR/NC Grading only (no letter grading).

See Also
- Chemistry
- Biological Sciences