

BIOCHEMISTRY

Program Website: Biochemistry – Hiram College (<https://www.hiram.edu/academics/undergraduate-studies/undergraduate-programs/biochemistry/>)

Introduction

Recent advances in molecular biology and bio-analytical chemistry have spawned new areas of interest in biochemistry, such as the field of metabolomics (identification of unique fingerprints that the cell leaves behind). The laboratory portion of the biochemistry courses incorporate such technological advances as gel electrophoresis, mass spectrometry and cell culture in a variety of ongoing research projects at Hiram College. Laboratory experience and training allows students to become familiar with how biochemistry can be used to understand problems of human health, agriculture, and the environment. The potential and limits of knowledge in the discipline are also considered. The coursework for the major will prepare the student for further study in graduate school (in either biology or chemistry), or professional school (medical, veterinary, etc.), and for entry into other careers in the life and chemical sciences (i.e. pharmaceutical/biotech industry).

Training in biochemistry at the undergraduate level is based upon a firm foundation in the basic sciences and mathematics with an emphasis on research as part of the classroom experience. Core courses introduce the student to the principles that organize and maintain the complex inter-workings of living cells and organisms. Knowledge of basic cell structure and of the molecules of which cells are composed is required. Topics in the biochemistry courses range from protein structure in BCHM 36600 BASIC BIOCHEMISTRY-W/LAB to cancer biology in BCHM 36800 INTERMED BIOCHEMISTRY-W/LAB.

Faculty

Steven P Romberger, (2014) Associate Professor of Chemistry; Biochemistry Program Director; Director of the Office of Scholarly Endeavors; Faculty Chair
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Course Descriptions

BCHM 18000: WKSP. 1 Hour(s)

WORKSHOP. ~ Workshops may be taken Pass/No Credit only. Students may take no more than nine workshops for credit toward graduation. Workshops can be used as elective credit only.

BCHM 28000: SEM:: 1-4 Hour(s) SEMINAR ~

BCHM 28100: INDEPENDENT STUDY: 1-4 Hour(s) INDEPENDENT STUDY ~

BCHM 29800: FIELD EXPERIENCE: 1-4 Hour(s) FIELD EXPERIENCE ~

BCHM 36600: BASIC BIOCHEMISTRY-W/LAB: 4 Hour(s)

BASIC BIOCHEMISTRY-W/LAB ~ Biochemistry studies the molecules and chemical reactions in living organisms. Topics include the structure and chemical properties of major macromolecules (carbohydrates, lipids, nucleotides) of living organisms, the role of enzymes and enzyme pathways by which these molecules are synthesized and degraded, and the cellular mechanisms which regulate and integrate metabolic processes. The laboratory emphasizes tools of biochemical analysis (protein and lipid isolation, chromatography, electrophoresis, centrifugation, mass spectrometry, enzyme and antibody studies) in an examination of physical, chemical, and biological properties of biologically important molecules. Must register for a BCHM 36600 lab. The breakdown between lecture and lab hours is for administrative office use only. This course may only be taken as 4 credit hours.

Prerequisite: CHEM 32000

BCHM 36800: INTERMED BIOCHEMISTRY-W/LAB: 4 Hour(s)

INTERMEDIATE BIOCHEMISTRY-W/LAB ~ This course will examine some topics introduced in Basic Biochemistry expounds on the principles learned in Basic Biochemistry to the study of cancer, diabetes, toxicology, drug discovery and environmental and genetic factors to contribute to disease. Pathways associated with these diseases are also studied. Correlatively, students grow cells in the laboratory and study a variety of effects to these cells. Must also register for a BCHM 36800 lab. The breakdown between lecture and lab hours is for administrative office use only. This course may only be taken as 4 credit hours.

Prerequisite: BCHM 36600

BCHM 38000: SEM:: 4 Hour(s) SEMINAR ~

BCHM 38100: SPC TPC:: 3-4 Hour(s) SPECIAL TOPICS ~

BCHM 48000: SENIOR SEMINAR: 1-4 Hour(s) SENIOR SEMINAR ~

BCHM 48100: INDEPENDENT RESEARCH: 1-4 Hour(s) INDEPENDENT RESEARCH ~

BCHM 48300: RESEARCH TECHNIQUES BIOCHEM: 1-4 Hour(s)
RESEARCH TECHNIQUES BIOCHEMISTRY ~ This course provides an opportunity for collaborative research among students and faculty. No more than six students will work with a faculty member on a defined research project. While the faculty member will guide the research project, all members of the team will work together to delineate the role(s) each will play. Students may use this research as the basis for their senior seminar (Chemistry) or APEX requirement, but only with the prior written consent of the instructor.

BCHM 49800: INTERNSHIP: 4 Hour(s) INTERNSHIP ~

Academic Offerings

- Biochemistry Major (<https://catalog.hiram.edu/undergraduate/academic-programs/biochemistry/biochemistry-major/>)
- Entrepreneurship Minor - Biochemistry (<https://catalog.hiram.edu/undergraduate/academic-programs/biochemistry/entrepreneurship-minor/>)