

BIOCHEMISTRY

<http://www.med.uvm.edu/biochemistry/grad> (<http://www.med.uvm.edu/biochemistry/grad/>)

OVERVIEW

The goal of the Biochemistry Graduate Program at the University of Vermont is to prepare students for careers in science as both researchers and educators. This is accomplished by expanding knowledge of both chemistry and biochemistry, while cultivating the ability for critical analysis, creativity and independent study.

DEGREES

- Biochemistry AMP (<http://catalogue.uvm.edu/graduate/biochemistry/biochemistryamp/>)
- Biochemistry M.S (<http://catalogue.uvm.edu/graduate/biochemistry/biochemistrys/>).

FACULTY

Berger, Christopher; Professor, Department of Molecular Physiology and Biophysics; PHD, University of Minnesota Twin Cities

Bouchard, Beth; Assistant Professor, Department of Biochemistry; PHD, University of Vermont

Chatterjee, Nimrat; Assistant Professor, Department of Microbiology and Molecular Genetics; PHD, Baylor College of Medicine

Doublié, Sylvie; Professor, Department of Microbiology and Molecular Genetics; PHD, University of North Carolina Chapel Hill

Everse, Stephen; Associate Professor, Department of Biochemistry; PHD, University of California San Diego

Francklyn, Christopher; Professor, Department of Biochemistry; PHD, University of California Santa Barbara

Gordon, Jonathan; Assistant Professor, Department of Biochemistry; PHD, University of Western Ontario

Heath, Jessica; Assistant Professor, Department of Pediatrics; Department of Biochemistry; MD, SUNY Stony Brook

Hondal, Robert; Associate Professor, Department of Biochemistry; PHD, Ohio State University

Kelm, Robert; Associate Professor, Department of Medicine-Cardiovascular; PHD, University of Vermont

Lee, Andrea; Assistant Professor, Department of Microbiology and Molecular Genetics; PHD, University of Wisconsin-Madison

Lian, Jane; Professor, Department of Biochemistry; PHD, Boston University

Morrice, Scott; Professor, Department of Biochemistry; PHD, University of Wisconsin-Madison

Pederson, David; Professor, Department of Microbiology and Molecular Genetics; PHD, University of Rochester

Quénet, Delphine; Assistant Professor, Department of Biochemistry, PHD; University of Strasbourg, France

Silveira, Jay; Assistant Professor, Department of Biochemistry; PHD, University of Vermont

Stein, Gary; Professor, Department of Biochemistry; PHD, University of Vermont

Stein, Janet; Professor, Department of Biochemistry; PHD, Princeton University

Tracy, Paula; Professor, Department of Biochemistry; PHD, Syracuse University

Tye, Coralee; Assistant Professor; Department of Biochemistry; PHD, Western University

Wargo, Matthew; Associate Professor, Department of Microbiology and Molecular Genetics; PHD, Dartmouth College

Courses

BIOC 201. Fundamentals of Biochemistry. 3 Credits.

Provides a broad introduction to the field of biochemistry. Students will explore the molecular basis and chemical principles of biochemistry pertinent to living systems. This course is taught by LCOM faculty and emphasizes the relevance of biochemistry to health, disease, physiology and medicine. Prerequisites: CHEM 026, CHEM 042, CHEM 048, CHEM 142, or equivalent; BIOL 002, BCOR 012, BCOR 103, or equivalent.

BIOC 205. Biochemistry I. 3 Credits.

Introduction to chemistry and structure of biological macromolecules; examination of mechanisms of chemical processes in biological systems including enzyme catalysis, biosynthesis, regulation, and information transfer. Prerequisite: CHEM 048 or CHEM 142 or CHEM 144. Cross-listed with: CHEM 205 and MMG 205.

BIOC 206. Biochemistry II. 3 Credits.

Continuation of Biochemistry I. Biochemistry of nucleic acids; nucleic acid based processes, such as replication and transcription; cellular information transfer, genomics, and proteomics. Prerequisite: BIOC 205, CHEM 205, or MMG 205. Cross-listed with: CHEM 206, MMG 206.

BIOC 207. Biochemistry Lab. 3 Credits.

Introduction to biochemical tools, including spectrometry, chromatography, and electrophoresis; natural and recombinant enzyme isolation; assays of DNA-modifying enzymes; computer-based structure/function exercises. Prerequisite: BIOC 205, CHEM 205, or MMG 205. Cross-listed with: CHEM 207, MMG 207.

BIOC 275. Adv Biochem of Human Disease. 3 Credits.

The course takes a deep dive into five distinct areas of biochemistry related to a disease or group of diseases primarily through group learning. Key biochemical principles are reviewed and extended. Additionally students will read and discuss a primary literature article with each area. Prerequisites: NSF 183, BIOC 201, or BIOC 205.

BIOC 301. General Biochemistry. 3 Credits.

Survey for science majors. Chemistry, structure, metabolism, and function of proteins, carbohydrates, lipids; enzymes, bioenergetics and respiratory processes. Prerequisite: CHEM 142 or CHEM 144, or Instructor permission.

BIOC 302. General Biochemistry. 3 Credits.

Survey for science majors. Amino acids, nucleic acids, protein synthesis, cellular and physiological control mechanisms.
Prerequisite: BIOC 301, or Instructor permission.

BIOC 351. Proteins I: Structure&Function. 3 Credits.

Special Topics: Introduction to concepts in protein structure and chemistry as well as exploration of ideas in a "hands on" fashion using computational resources. Prerequisite: BIOC 301, or Department permission. Alternate years.

BIOC 372. Cancer Biology. 3 Credits.

Overview of cancer biology for health science students. Foundation for cancer research. Lecture format; interdisciplinary viewpoint; outside lectures. Prerequisite: BIOC 301, or Department permission.

BIOC 390. Internship. 1-18 Credits.

On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

BIOC 391. Master's Thesis Research. 1-12 Credits.

Credit as arranged.

BIOC 393. Independent Study. 1-18 Credits.

A course which is tailored to fit the interests of a specific student, which occurs outside the traditional classroom/laboratory setting under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

BIOC 395. Special Topics. 1-12 Credits.**BIOC 396. Advanced Special Topics. 1-12 Credits.****BIOC 397. Independent Graduate Research. 1-18 Credits.**

Graduate student work on individual or small team research projects under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

BIOC 490. Internship. 1-18 Credits.

On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

BIOC 491. Doctoral Dissertation Research. 1-12 Credits.

Credit as arranged.

BIOC 492. Independent Graduate Research. 1-18 Credits.

Graduate student work on individual or small team research projects under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

BIOC 496. Advanced Special Topics. 1-18 Credits.

See Schedule of Courses for specific titles.