

CHEMISTRY AND BIOCHEMISTRY

Kent Sugden, Chair

Chemistry

Chemistry is the central science that involves the study of molecules, their structures, their combinations, their interactions, and the energy changes accompanying chemical processes.

The Department offers the following degrees: B.S., B.A., M.S., M.A., and Ph.D.

Prospective students desiring further information on programs in the Department of Chemistry and Biochemistry should visit the websites of the Department of Chemistry and Biochemistry (<http://hs.umd.edu/chemistry/default.php>) and the Biochemistry Program (<http://hs.umd.edu/biochemistry/>).

High School Preparation: In addition to the general University admission requirements, it is strongly recommended that a student take four years of mathematics, four (or more) years of science (earth and space science, biology, chemistry, and physics), four years of a modern or classical language, and four years of English.

Biochemistry

The Biochemistry Program is a joint program between the Department of Chemistry and Biochemistry and the Division of Biological Sciences. Biochemistry is an interdisciplinary science that integrates chemistry and biology to understand the molecular basis of life. The program offers a B.S. in Biochemistry, a B.S. in Computational Biochemistry, and M.S. and Ph.D. degrees in Biochemistry & Biophysics. The Biochemistry Program is accredited by the American Society for Biochemistry and Molecular Biology (ASBMB).

Undergraduate majors receive a solid foundation in both chemistry and biology. Biochemistry courses are usually taken in the junior year allowing majors to become involved in research with faculty and to take electives in their senior year. The major also introduces students to computer science, an essential tool in modern biochemistry. The B.S. in Biochemistry prepares students for advanced degrees in biochemistry or biophysics, for medical, dental or veterinary schools and for careers in the pharmaceutical and biotechnology industries. A Health Professions option is also offered within the B.S. in Biochemistry for students whose career goals are in fields related to biochemistry, particularly medical school. This option is designed so that students can complete all coursework necessary for the MCAT and other exams required for health-related professional schools by the end of their third year. The program also offers a B.S. in Computational Biochemistry. This degree incorporates both foundational and advanced level courses in chemistry, biology, computer science and biochemistry to prepare students who plan to pursue careers in computationally intensive fields including bioinformatics, molecular modeling, and structure-based design. Students desiring a basic grounding in biochemistry to complement their primary major can choose to pursue a minor in Biochemistry. All students completing a major or minor in Biochemistry are eligible to take the ASBMB certification exam in their junior or senior year.

The graduate degrees in Biochemistry & Biophysics prepare students to be independent researchers in academic laboratories or in the

biotechnology and pharmaceutical industries. Through coursework and independent research, graduate students in this program will become adept at the physical and structural methods necessary to probe important problems in the life sciences at the molecular level. In collaboration with the Center for Biomolecular Structure & Dynamics, the Biochemistry Program provides state-of-the-art facilities for research in biochemistry, biophysics and structural biology.

Prospective students desiring further information on these degrees should contact the Program Director by visiting the Biochemistry Program web site (<http://hs.umd.edu/biochemistry/>).

High School Preparation: In addition to the general University admission requirements, it is strongly recommended that a student take four years of mathematics, four years of science, and a foreign language.

Baccalaureate Degrees

Biochemistry

- Biochemistry B.S. (<http://catalog.umd.edu/colleges-schools-programs/humanities-sciences/chemistry/bs-biochemistry/>)
- Biochemistry B.S. - Health Professions Concentration (<http://catalog.umd.edu/colleges-schools-programs/humanities-sciences/chemistry/bs-biochemistry-health-professions/>)
- Computational Biochemistry B.S. (<http://catalog.umd.edu/colleges-schools-programs/humanities-sciences/chemistry/bs-computational-biochemistry/>)

Chemistry

- Chemistry B.A. (<http://catalog.umd.edu/colleges-schools-programs/humanities-sciences/chemistry/ba-chemistry/>)
- Chemistry B.A. - Chemistry Education (<http://catalog.umd.edu/colleges-schools-programs/humanities-sciences/chemistry/ba-chemistry-education/>)
- Chemistry B.S. (<http://catalog.umd.edu/colleges-schools-programs/humanities-sciences/chemistry/bs-chemistry/>)
- Chemistry B.S., Environmental Chemistry Concentration (<http://catalog.umd.edu/colleges-schools-programs/humanities-sciences/chemistry/bs-environmental-chemistry/>)
- Chemistry B.S., Forensic Chemistry Concentration (<http://catalog.umd.edu/colleges-schools-programs/humanities-sciences/chemistry/bs-forensic-chemistry/>)
- Chemistry B.S., Pharmacology Concentration (<http://catalog.umd.edu/colleges-schools-programs/humanities-sciences/chemistry/bs-pharmacology/>)

Minors

- Biochemistry Minor (<http://catalog.umd.edu/colleges-schools-programs/humanities-sciences/chemistry/biochemistry-minor/>)
- Chemistry Minor (<http://catalog.umd.edu/colleges-schools-programs/humanities-sciences/chemistry/minor-chemistry/>)
- Chemistry Education Minor (<http://catalog.umd.edu/colleges-schools-programs/humanities-sciences/chemistry/minor-chemistry-education/>)

Undergraduate Certificates

- Brewing Science Certificate (<http://catalog.umt.edu/colleges-schools-programs/humanities-sciences/chemistry/brewing-science/cert-brewing-science/>)
- Certificate of Applied Science (C.A.S.) in Brewing Science (<http://catalog.umt.edu/colleges-schools-programs/humanities-sciences/chemistry/brewing-science/cas-brewing-science/>)