

## Biochemistry

Biochemistry is the study of the chemical reactions in living organisms, and it contains aspects of organic and inorganic chemistry as well as biology. Topics covered in biochemistry include protein structure and function, as well as cell metabolic processes that include lipids, carbohydrates, proteins, and nucleic acids. Biochemistry includes fundamental concepts that can be applied to molecular biology, immunochemistry, neurochemistry, and biophysical chemistry. It has a wide range of applications which can be applied to fields such as medicine, agriculture, toxicology, and engineering to name a few. Biochemists often work in modern research laboratories and participate in stimulating, creative work. They interact with scientists from other fields because their research is intertwined. The application of biochemistry to other fields focuses on improving the quality of life. Opportunities for employment in this field are expected to grow in industry, medicine, and genetic research.

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BIOC 1730	Biochemical Laboratory Exploration	4
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BIOC 2790	Biochemistry Internship/Research Project	1-4

### BIOC 1730 Biochemical Laboratory Exploration

This course introduces students to procedures and guidelines relating to chemical, biological, physical, and biomedical research. Students will gain an understanding of good laboratory practices, intellectual property, standard operating procedures, clinical research practices, and lab safety. Students will also learn to communicate in a scientific manner. The lab component of the course will provide hands-on experience with the laboratory environment, clean room environment, and instrumentation used in scientific laboratories. (Prerequisite(s): CHEM 1711 or BIOL 1740 with a grade of "C" or better) (MnTC: Goal 3) 4C/3/1/0

### BIOC 1790 Special Topics in Biochemistry

This course is designed to present additional or unique material and learning experiences within a specified discipline. The course will be based on student need, flexibility, and may be designed to meet various transfer and pre-major course requirements. Please see a current Course Schedule for complete course details. (MnTC: Goal 3) Variable credits 1-6

### BIOC 2700 Biochemistry

This course includes structure and function of proteins, carbohydrates, nucleic acids, and lipids. Action and regulation of major metabolic pathways. Synthesis and degradation of biomolecules. Enzyme energetics, kinetics, and chemical basis for transmission of genetic information will also be discussed. Lab work will utilize applied biochemical techniques to reinforce topics covered in the lecture. This includes protein and lipid assays, examinations of metabolism, and analysis of sugars. Lab work will be designed to give the student experience using modern biochemical techniques and equipment. Responsible record keeping and conduct will also be emphasized. (Prerequisite(s): CHEM 2720 and BIOL 1740 with a grade of "C" or better or instructor permission) (MnTC: Goal 3) 4C/3/1/0

### BIOC 2790 Biochemistry Internship/Research Project

This course provides students with an opportunity to design and carry out a research project under the supervision of a faculty advisor utilizing biochemistry in a lab setting. The research project will be prepared using literature review, problem identification, procedural documentation, data collection, data analysis, findings, conclusions, and recommendations for future research. The course will also provide an opportunity for field study in an approved internship setting. Evaluation will be carried out by faculty teams and experts in the field. (Prerequisite(s): Instructor approval) (MnTC: Goal 3) Variable credits 1-4

*Information is subject to change.  
This course information is not a contract.*