

BCHM Biochemistry

BCHM 2200 Introduction to Biochemistry**3 Credit Hours. 3 Lecture Hours. 0 Lab Hours.**

An introduction to cell structure and biochemistry. Topics may include molecular components of cells, an overview of metabolism and bioenergetics, structure and function, and applicability in society.

Prerequisite(s): A minimum grade of "C" in CHEM 3401.

BCHM 2910 Introduction to Biochemical Research**1-3 Credit Hours. 0 Lecture Hours. 3-9 Lab Hours.**

Faculty originated biochemical lab-based research project. Written report required.

Prerequisite: Prior or concurrent enrollment in CHEM 1211 and CHEM 1211L or CHEM 1211K.

BCHM 3100 Bioinstrumental Chemistry**4 Credit Hours. 3 Lecture Hours. 3 Lab Hours.**

Modern methods of instrumental analysis with emphasis on solving biological problems. Laboratory experiments supplement lecture topics. Students may not receive credit for both BCHM 3301 Bioinstrumental Chemistry and CHEM 3100 Instrumental Chemistry.

Prerequisite(s): A minimum grade of "C" in CHEM 2100 and CHEM 3402.

BCHM 3200 Principles of Biochemistry**3 Credit Hours. 3 Lecture Hours. 0 Lab Hours.**

A biochemistry course focused on the structure and function of nutrient molecules. Topics include the structure of carbohydrates, lipids, proteins, enzyme function, energetics of metabolism, and metabolic pathways relevant to nutrition. Does not count toward the major in biochemistry or chemistry.

Prerequisite(s): A minimum grade of "C" in CHEM 3402.

BCHM 3310 Bioinorganic Chemistry**3 Credit Hours. 3 Lecture Hours. 0 Lab Hours.**

This course explores the function of metal ions in biochemistry, the appropriate physical methods for studying biological metal centers, and the pathways of electron transfer in biomolecules. Topics include metal ion transport and storage, oxygen carriers, and metals in medicine. Majors may not receive credit for both BCHM 3310 Bioinorganic Chemistry and CHEM 3300 Inorganic Chemistry. **Prerequisite(s):** A minimum grade of "C" in CHEM 3402.

BCHM 3310L Bioinorganic Laboratory**1 Credit Hour. 0 Lecture Hours. 3 Lab Hours.**

An advanced laboratory course for biochemistry majors. The course applies inorganic techniques to biological problems.

Prerequisite(s): A minimum grade of "C" and prior or concurrent enrollment in BCHM 3310.

BCHM 3510 Biophysical Chemistry**3 Credit Hours. 3 Lecture Hours. 0 Lab Hours.**

The fundamentals of physical chemistry from a biochemical perspective. Topics including gas laws, heat and work, and the laws of thermodynamics, material and reaction equilibrium, standard thermodynamic functions, and reaction kinetics. Students may not receive credit for both BCHM 3510 Biophysical Chemistry and CHEM 3501 Chemical Kinetics & Thermodynamics.

Prerequisite(s): A minimum grade of "C" in CHEM 2100 and MATH 2242 and PHYS 2211K. Crosslisting(s): CHEM 3501.

BCHM 3511L Biophysical Laboratory**1 Credit Hour. 0 Lecture Hours. 3 Lab Hours.**

An advanced laboratory course for biochemistry majors. The course applies physical chemistry principles to solve biological problems.

Prerequisite(s): A minimum grade of "C" and prior or concurrent enrollment in BCHM 3510.

BCHM 3900 Biochemical Research**1-3 Credit Hours. 0 Lecture Hours. 3-9 Lab Hours.**

Faculty originated biochemical lab-based research project. Scientific paper required.

Prerequisite(s): Prior or concurrent enrollment in CHEM 3402 and permission of department Chair.

BCHM 4000 Advanced Topics In Biochemistry**3 Credit Hours. 3 Lecture Hours. 0 Lab Hours.**

Topics include advanced areas of study in biological chemistry and may include biocatalysis, bioinorganic chemistry, computational biochemistry, protein structure and design as well as others. Course may be repeated as topics vary.

Prerequisite(s): a minimum grade of "C" in BCHM 5201.

BCHM 4210 Biotechnology and Biocatalysis**3 Credit Hours. 3 Lecture Hours. 0 Lab Hours.**

This course introduces principles and techniques in biotechnology. The biotechnology topics will be used to study the past, present, and future of biocatalysis.

Prerequisite(s): A minimum grade of "C" in BCHM 5201. Cross Listing(s): CHEM 4210.

BCHM 4220 Chemistry of Biofuels**3 Credit Hours. 3 Lecture Hours. 0 Lab Hours.**

This course introduces the principles of fuels and biofuels. It will also cover the latest in biochemistry and biotechnology and apply this knowledge to current research in biofuels.

Prerequisite(s): A minimum grade of "C" in BCHM 5201. Cross Listing(s): CHEM 4220.

BCHM 4991 Advanced Biochemical Research**1-3 Credit Hours. 0 Lecture Hours. 3-9 Lab Hours.**

Faculty-originated biochemical lab-based research project. Literature evaluation and lab investigation. Scientific paper and oral presentation to faculty. Biochemistry MAJOR only.

Prerequisite(s): BCHM 5201 and permission of department Chair.

BCHM 5201 Biochemistry I**4 Credit Hours. 0,3 Lecture Hours. 0,3 Lab Hours.**

Surveys the fundamental principles of protein structure, enzyme mechanisms, carbohydrate structure, and the major metabolic pathways of carbohydrate metabolism.

Prerequisite(s): A minimum grade of "C" in CHEM 3402.

Cross Listing(s): BCHM 5201G, CHEM 5201G.

BCHM 5201G Biochemistry I**4 Credit Hours. 4 Lecture Hours. 0 Lab Hours.**

Surveys the fundamental principles of protein structure, enzyme mechanisms, carbohydrate structure, and the major metabolic pathways of carbohydrate metabolism. Graduate students will be given an extra assignment determined by the instructor that undergraduates will not be required to do.

Cross Listing(s): CHEM 5201, BCHM 5201.

BCHM 5202 Biochemistry II**4 Credit Hours. 0,3 Lecture Hours. 0,3 Lab Hours.**

Examines the structure and function of biological membranes, as well as additional metabolic pathways not covered in CHEM 5201, including the degradation and biosynthesis of lipids and amino acids. In addition, the course will examine nucleic acid chemistry, including DNA replication, transcription, recombinant DNA technology and related topics.

Prerequisite(s): A minimum grade of "C" in CHEM 5201.

Cross Listing(s): BCHM 5202G, CHEM 5202G.

BCHM 5202G Biochemistry II

4 Credit Hours. 4 Lecture Hours. 0 Lab Hours.

Examines the structure and function of biological membranes, as well as additional metabolic pathways not covered in CHEM 5201, including the degradation and biosynthesis of lipids and amino acids. In addition, the course will examine nucleic acid chemistry, including DNA replication, transcription, recombinant DNA technology and related topics. Graduate students will complete assignments beyond the scope of the undergraduate requirements. These assignments require higher-level mastery of the subject matter and additional deliverables representative of graduate-level work, as determined by the instructor.

Cross Listing(s): BCHM 5202.