BCHM - BIOCHEMISTRY

BCHM461 Biochemistry I (3 Credits)
First semester of a comprehensive introduction to modern biochemistry. Structure, chemical properties, and function of proteins and enzymes, carbohydrates, lipids, and nucleic acids. Basic enzyme kinetics and catalytic mechanisms.
Prerequisite: Minimum grade of C- in CHEM271 and CHEM272; or minimum grade of C- in CHEM276 and CHEM277.
Credit Only Granted for: BCHM461 or BCHM463.

BCHM462 Biochemistry II (3 Credits)
A continuation of BCHM 461. Metabolic pathways and metabolic regulation, energy transduction in biological systems, enzyme catalytic mechanisms.
Prerequisite: Minimum grade of C- in BCHM461.
Credit Only Granted for: BCHM462 or BCHM463.

BCHM463 Biochemistry of Physiology (3 Credits)
A one-semester introduction to general biochemistry. A study of protein structure, enzyme catalysis, metabolism, and metabolic regulation with respect to their relationship to physiology.
Prerequisite: Minimum grade of C- in CHEM271 and CHEM272; or minimum grade of C- in CHEM276 and CHEM277.
Credit Only Granted for: BCHM461, BCHM462 or BCHM463.

BCHM464 Biochemistry Laboratory (3 Credits)
Biochemical and genetic methods for studying protein function. Site-directed mutagenesis and molecular cloning, protein purification, enzyme activity assays, computer modeling of protein structure.
Prerequisite: BCHM461 or BCHM463; and a grade of C- or better in the prerequisite is required for all College of Computer, Mathematical, and Natural Sciences majors and recommended for all students.
Corequisite: BCHM465.
Restriction: BCHM, CHEM, and Nutritional Sciences majors have first priority, followed by other life science majors.

BCHM465 Biochemistry III (3 Credits)
Prerequisite: BCHM461 or BCHM463; and a grade of C- or better in the prerequisite is required for College of Computer, Mathematical, and Natural Sciences majors and recommended for all students.
Recommended: BCHM462.

BCHM466 Physical Biochemistry (3 Credits)
Physical Chemistry with applications to biological systems. Principal topics: quantum chemistry, spectroscopy, structural methods for biological macromolecules, statistical thermodynamics, transport processes in liquid phase, chemical and biochemical kinetics, modeling and simulation, polymer dynamics.
Prerequisite: Minimum grade of C- in CHEM481.
Restriction: Must be in Biochemistry program; or permission of instructor.
Credit Only Granted for: CHEM482 or BCHM485.

BCHM4671 Protein Chemistry and Enzymic Catalysis (3 Credits)
Principles of protein structure, folding, and function, experimental characterization of structure, active sites, enzyme mechanisms and kinetics.
Prerequisite: BCHM461; or students who have taken courses with comparable content may contact the department.

BCHM4672 Regulation of Metabolism (3 Credits)
Intracellular milieu, compartmentation, metabolic and enzymic approaches to identifying control points, regulation by covalent modification of enzymes, metabolic disorders.
Prerequisite: BCHM462 or BCHM463; or students who have taken courses with comparable content may contact the department.

BCHM4673 Biophysical Chemistry (3 Credits)
Conformation, shape, structure, conformational changes, dynamics and interactions of biological macromolecules and complexes or arrays of macromolecules. Physical techniques for studying properties of biological macromolecules.
Prerequisite: CHEM481 and BCHM461; or students who have taken courses with comparable content may contact the department.

BCHM4674 Biological Mass Spectrometry (3 Credits)
Fundamentals of modern mass spectrometry and use with biochemical techniques to provide unique analyses of drug metabolites, lipids, carbohydrates, nucleotides and proteins. The interface with bioinformatics will be examined, which provides the foundation of proteomics.
Prerequisite: BCHM461 or BCHM463.
Formerly: BCHM669B.

BCHM4675 Computational Tools in Biochemistry (1 Credit)
A practical, hands-on introduction to the application of computational tools that support biochemistry research. Selected topics may include: efficient use of scientific literature databases and the preparation of professional bibliographies; proteomics and mass spectrometry; bioinformatics and genomics programs as database resources; molecular structure visualization and modeling; qualitative data fitting and error analysis; and laboratory research ethics.
Prerequisite: BCHM474 or BCHM471; or permission of instructor.
Restriction: Must be in one of the following programs (Biochemistry (Master's); Biochemistry (Doctoral)) ; or permission of instructor.
BCHM698 Literature Seminar in Biochemistry (2 Credits)
Students will prepare and present a departmental seminar based on a topic in the current biochemical research literature.
Repeatable to: 2 credits if content differs.

BCHM699 Special Problems in Biochemistry (1-6 Credits)
Laboratory experience in a research environment. Restricted to students in the non-thesis M.S. option.
Prerequisite: Must have completed one semester of graduate study in biochemistry; and must be in the Biochemistry Masters program non-thesis M.S. option.
Repeatable to: 6 credits if content differs.

BCHM799 Master's Thesis Research (1-6 Credits)

BCHM889 Seminar (1-3 Credits)

BCHM898 Pre-Candidacy Research (1-8 Credits)

BCHM899 Doctoral Dissertation Research (1-8 Credits)