BIOCHEMISTRY  

BCH

Department of Biochemistry  
College of Human Medicine  
College of Natural Science  
College of Osteopathic Medicine

100. Current Issues in Biochemistry  
   Spring, 1(1-0)  
   R: Open only to freshmen or sophomores.  
   Contemporary biochemistry: its impact on environmental,  
   medical, and social sciences.  
   QA: BCH 100

320. Introduction to Biochemistry  
   Fall, 4(4-0)  
   P: CEM 143; R: Not open to students with credit in  
   BCH 401 or BCH 461.  
   Basic structures of major classes of biologically important  
   molecules and metabolic activities of major importance  
   in living organisms.  
   QA: CEM 143 QA: BCH 200

401. Basic Biochemistry  
   Fall, Spring, 4(4-0)  
   P: CEM 262 or CEM 352 or BCH 200 or BCH 461.  
   Structure and function of major biomolecules, metabolism,  
   and regulation. Examples emphasize the mammalian  
   organism.  
   QA: BCH 401

401. Basic Biochemistry II  
   Fall, Spring, 3(3-0)  
   P: BCH 462 or BCH 353 or concurrently.  
   Structure, methods of structural analysis, synthesis,  
   and reaction mechanisms of biologically important  
   substances including proteins, carbohydrates, lipids,  
   and nucleotides.  
   QA: BCH 451

471. Biochemistry Laboratory  
   Spring, 2(0-0)  
   P: BCH 401 or BCH 461; BS 101, BS 110, CEM 262;  
   MTH 124 or MTH 132 or MTH 133; LBS 110, LBS 118.  
   Biochemistry majors or approval of department.  
   Modern biochemical techniques used in the study of enzymes  
   (proteins), lipids, and cell organelles.  
   QA: BCH 451, BCH 452 or BCH 045, BCH 452

472. Biochemistry Laboratory  
   Fall, 3(0-0)  
   P: BCH 462, CEM 262.  
   Biochemistry majors or approval of department.  
   Methods of molecular biology and the underlying principles  
   on which these methods are based.  
   QA: BCH 453 QA: BCH 405

490. Research  
   Fall, Spring, Summer. 1 to 4 credits. A student may earn  
   a maximum of 8 credits in all enrollments for this course.  
   R: Approval of department.  
   Participation in laboratory or library research projects.

495. Undergraduate Seminar  
   Spring, 2(2-0)  
   P: BCH 462 or concurrently.  
   R: Open only to majors in Biochemistry.  
   Extension and synthesis of concepts of biochemistry.  
   Relationships to societal issues.  
   QA: BCH 453

499. Senior Thesis  
   Fall, Spring, Summer. 1 to 8 credits. A student may earn  
   a maximum of 8 credits in all enrollments for this course.  
   R: Open only to seniors.  
   Total credits in BCH 490 and BCH 499 may not exceed 9.  
   Approval of department.  
   Laboratory research culminating in a thesis.  
   QA: BCH 499

521. Medical Biochemistry  
   Fall, 4(4-0)  
   P: Graduate professional students in colleges of Human  
   and Osteopathic Medicine.  
   Basic biochemical principles and terminology: metabolism  
   and function of biomolecules of importance in medical  
   biology and processes pertinent to human pathophysiology.

580. Molecular Biology and Protein Structure  
   Fall, 4(4-0)  
   P: BCH 462, CEM 383.  
   Organization of genes, Regulation of gene expression,  
   replication, and recombination. Protein structure and  
   relationship of function to structure.  
   QA: BCH 453, CEM 353, CEM 384 QA: BCH 811,  
   BCH 812

602. Metabolic Regulation and Molecular Endocrinology  
   Spring, 4(4-0)  
   P: BCH 461.  
   Molecular basis for metabolic regulation. Molecular  
   signalling mechanisms and mechanisms for allosteric  
   and covalent protein modifications.  
   QA: BCH 812 QA: BCH 813

821. Biochemical Mechanisms and Structure  
   Spring, 3(3-0)  
   P: BCH 462, CEM 383 or concurrently.  
   Structure, methods of structural analysis, synthesis,  
   and reaction mechanisms of biologically important  
   substances including proteins, carbohydrates, lipids,  
   and nucleotides.  
   QA: BCH 451, BCH 453, CEM 384 QA: BCH 821

825. Cell Structure and Function  
   Spring, 3(3-0)  
   Interdepartmental with  
   Physics and Microbiology.  
   P: BCH 401 or BCH 461.  
   Molecular basis of structure and function. Cell  
   properties, reproduction, dynamic organization, integration,  
   programmed and integrative information transfer,  
   original investigations in all five kingdoms.  
   QA: BCH 451 QA: BCH 825

829. Methods of Macromolecular Analysis  
   and Synthesis  
   Fall, 2(2-0)  
   P: BCH 462.  
   Techniques of isolation and characterization of  
   macromolecules. Computer use in structure-function  
   analysis of macromolecules.  
   QA: BCH 453 QA: BCH 829

831. Physiological Biochemistry  
   Spring, 4(4-0)  
   P: BCH 461 or BCH 462.  
   Mammalian physiological biochemistry. Metabolic  
   interpretation of normal and altered physiological  
   states of humans and other mammals.  
   QA: BCH 401 QA: BCH 831, BCH 832

855. Special Problems  
   Fall, Spring, Summer. 1 to 4 credits. A student may earn  
   a maximum of 8 credits in all enrollments for this course.  
   R: Approval of department.  
   Laboratory or library research on special problems in  
   biochemistry.

864. Plant Biochemistry  
   Spring, 3(3-0)  
   Interdepartmental with  
   Botany and Plant Pathology.  
   P: BCH 401 or BCH 462.  
   Biochemistry unique to photosynthetic organisms.  
   Photosynthetic and respiratory electron transport,  
   nitrogen fixation, carbon dioxide fixation, lipid  
   metabolism, carbon partitioning, cell walls, biosynthesis  
   of plant hormones.  
   QA: BCH 401, BOT 501 QA: BCH 864

888. Laboratory Rotation  
   Fall, Spring, Summer. 1 to 4 credits. A student may earn  
   a maximum of 12 credits in all enrollments for this course.  
   R: Open only to graduate students in Biochemistry.  
   Research laboratory in biochemical techniques and  
   research approaches.  
   QA: BCH 888

989. Master's Thesis Research  
   Fall, Spring, Summer. 1 to 24 credits. A student may earn  
   a maximum of 24 credits in all enrollments for this course.  
   R: Open only to master's students in Biochemistry.

960. Selected Topics in Biochemistry I  
   Fall, Spring, 1 to 2 credits. A student may earn  
   a maximum of 7 credits in all enrollments for this course.  
   R: Open only to graduate students in Biochemistry or  
   approval of department.  
   Contemporary biochemical research topics in such areas  
   as biochemical genetics, biochemistry of development,  
   biochemical evolution, complex proteins, or lipid  
   metabolism.  
   QA: BCH 960

961. Selected Topics in Biochemistry II  
   Fall, Spring, 1 to 2 credits. A student may earn  
   a maximum of 7 credits in all enrollments for this course.  
   R: Open only to graduate students in Biochemistry or  
   approval of department.  
   Contemporary biochemical research topics in such areas  
   as biosensors, bioinstrumentation, complex carbohydrates,  
   mass spectrometry, or biochemistry of inositol compounds.  
   QA: BCH 961

978. Seminar in Biochemistry  
   Fall, Spring, 1(1-0)  
   A student may earn a maximum of 5 credits in all  
   enrollments for this course.  
   R: Open only to graduate students in Biochemistry.  
   Seminars on biochemistry research mainly with  
   visiting scientists.  
   QA: BCH 978

998. Doctoral Dissertation Research  
   Fall, Spring, Summer. 1 to 24 credits. A student may earn  
   a maximum of 99 credits in all enrollments for this course.  
   R: Open only to doctoral students in Biochemistry.

BIOLOGICAL SCIENCE  

BS

College of Natural Science

110. Organisms and Populations  
   Fall, Spring. 4(3-3)  
   Biological diversity and organismal biology. Principles  
   of evolution, population biology, and community  
   structure.  
   QA: BS 211, BS 212

111. Cells and Molecules  
   Fall, Spring. 4(3-3)  
   P: CEM 141 or CEM 151.  
   Cell structure and function; macromolecular  
   synthesis; energy metabolism; molecular aspects of development;  
   principles of genetics.  
   QA: CEM 141 QA: BS 210, BS 211

BIOMECHANICS  

BIM

Department of Biomechanics  
College of Osteopathic Medicine

580. Special Problems in Biomechanics  
   Fall, Spring, Summer. 1 to 24 credits. A student may earn  
   a maximum of 48 credits in all enrollments for this course.  
   R: Approval of department.  
   Each student works under faculty direction on an  
   experimental, theoretical, or applied problem.  
   QA: BIM 580