Descriptions—Biochemistry of Courses

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(1-0)
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.
QP: CEM 143 QA: BCH 200

401. Basic Biochemistry
Fall, Spring. 4(1-0)
P: BCH 262 or CEM 352. R: Not open to students with credit in BCH 200 or BCH 401.
Structure and function of major biomolecules, metabolism, and regulation. Examples emphasize the mammalian organism.
QP: CEM 242, CEM 353 QA: BCH 401

461. Biochemistry I
Fall. 5(4-0)
P: CEM 252 or CEM 352; MTH 120 or MTH 124 or MTH 152; BS 110, BS 111. R: Not open to students with credit in BCH 200 or BCH 401.
Protein structure and function, enzymeology, bioenergetics, and intermediary metabolism.
QP: CEM 242, CEM 355 QA: BCH 452, BCH 451

462. Biochemistry II
Spring. 3(4-0)
P: BCH 461.
Continuation of BCH 461 with emphasis on metabolic regulation and nuclear acid structure, replication and protein synthesis.
QP: BCH 451, BCH 462 QA: BCH 453, BCH 452

471. Biochemistry Laboratory
Spring. 2(0-3)
P: BCH 401 or BCH 461; BS 110, BS 111; CEM 262; MTH 120 or MTH 124 or MTH 152 or LBS 118.
R: Biochemistry majors or approval of department.
Modern biochemical techniques used in the study of enzymes (proteins), lipids, and cell organelles.
QP: BCH 451, BCH 453, MTH 113 QA: 404

472. Biochemistry Laboratory
Fall. 3(1-0)
P: BCH 462.
R: Biochemistry majors or approval of department.
Methods of molecular biology and the underlying principles on which these methods are based.
QP: 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 library or laboratory 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.
QP: 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 498 may not exceed 8. Approval of department. Laboratory research culminating in a thesis.
QA: BCH 499

521. Medical Biochemistry
R: 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.
QP: BCH 401, CEM 353, CEM 354 QA: BCH 811, BCH 812

801. Molecular Biology and Protein Structure
Fall. 4(1-0)
P: BCH 462, CEM 353.
Organization of genes, regulation of gene expression, replication, and recombination. Protein structure and relationship of function to structure.
QP: BCH 453, CEM 355, CEM 354 QA: BCH 811, BCH 812

802. Metabolic Regulation and Molecular Endocrinology
Spring. 4(1-0)
P: BCH 801.
Molecular basis for metabolic regulation. Molecular signalling mechanisms and mechanisms for allosteric and covalent protein modifications.
QP: BCH 812 QA: BCH 813

821. Biochemical Mechanisms and Structure
Spring. 3(3-0)
P: BCH 462, CEM 383 or concurrently.
Structures, methods of structural analysis, synthesis, and reaction mechanisms of biological substances including proteins, carbohydrates, lipids, porphyrins, phospholipids, enzymes, and coenzymes.
QP: CEM 385, BCH 453, CEM 384 QA: BCH 821

825. Cell Structure and Function
Spring. 3(3-0) Interdepartmental with Physiology 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.
QP: BCH 451 QA: BCH 825

829. Methods of Macromolecular Analysis and Synthesis
Fall. 2(3-0)
P: BCH 462.
Techniques of isolation and characterization of macromolecules. Computer use in structure-function analysis of macromolecules.
QP: BCH 453 QA: BCH 829

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

899. Master's Thesis Research
Fall. 5(5-0)
R: 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 biochemical genetics, biochemistry of development, biochemical evolution, complex proteins, or lipid metabolism.
QA: BCH 961

978. Seminar in Biochemistry
Fall, Spring. 1(1-0) A student may earn a maximum of 6 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)
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.
QP: CEM 141 QA: BS 210, BS 211

BIOMECHANICS BIM

Department of Biomechanics
College of Osteopathic Medicine

590. 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 590