

BIOCHEMISTRY (BCHM)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

BCHM 802 - Endocrinology

Credits: 4

Structure and function of vertebrate endocrine systems through the lens of physiology, biochemistry, and cell and molecular biology, with special reference to mammals. Current investigations of the body's major endocrine glands, such as the brain, thyroid, pancreas, adrenals and gonads, as regulators and integrators of biological systems. A previous cell biology course is recommended. Prereq: one semester of biochemistry.

Equivalent(s): ANSC 802

BCHM 825 - Cell Phenotyping and Tissue Engineering Laboratory

Credits: 4

Introduction to culture and phenotyping of mammalian cells (cell line models), with applications to bioengineering and biomedical sciences. Skills, techniques, and knowledge covered include sterile technique, cell culture, cell line models, cell proliferation, cell survival, cell migration, cell adhesion, and drug response. Inquiry-based team projects investigate cell proliferation, cell death, transfection, flow cytometry, 3D scaffolds, or cell imaging. Prereq: General Microbiology Class and Lab.

BCHM 850 - Physical Biochemistry

Credits: 3

Structure, interactions, and physical-chemical properties of biomolecules. Thermodynamic, kinetic, and spectroscopic methods for the study of proteins and nucleic acids. Prereq: 2 semesters organic chemistry, 1 semester of calculus; or permission.

BCHM 851 - Principles of Biochemistry I

Credits: 4

In-depth survey of biochemistry: macromolecule structure; structure and function of proteins, nucleic acids, carbohydrates, and lipids; introduction to metabolic pathways. Prereq: One semester of organic chemistry; or permission.

BCHM 852 - Principles of Biochemistry II

Credits: 4

In-depth survey of biochemistry: metabolism of amino acids, nucleotides, carbohydrates and lipids; synthesis and regulation of macromolecules; molecular biology of the eukaryotic cell. Prereq: BCHM 851 or permission.

BCHM 853 - Cell Culture

Credits: 5

Principles and Technical Skills fundamental to the culture of animal and plant cells, tissues and organs. Introduction to the techniques of sub-culturing, establishing primary cultures, karyotyping, serum testing, cloning, growth curves, cryopreservation, hybridoma formation and monoclonal antibody production, and organ cultures. Application of cell culture to contemporary research in the biological sciences. Special fee. Lab. Prereq: general microbiology and lab.

BCHM 854 - Molecular Biology Research Methods

Credits: 5

Theory and application of current technologies to manipulate DNA. Hands-on experience that includes DNA isolation and quantitation methods, cloning, PCR, DNA sequencing, and analysis of gene products. Prereq: introductory genetics. Special fee. Lab.

Equivalent(s): GEN 854, PBIO 854

BCHM 855 - Laboratory in Biochemistry and Molecular Biology

Credits: 5

Application of modern techniques to the characterization and purification of biomolecules, with an emphasis on proteins and nucleic acids. Analysis of enzyme kinetics and basic techniques used in molecular biology. Prereq: one semester of biochemistry or permission. Special fee.

BCHM 860 - Pharmacology

Credits: 4

Introduction to the basic principles and fundamental concepts of pharmacology, with a focus on molecular mechanisms and pathological basis of therapeutics and the curative effects. Foundations of pharmacology including pharmacodynamics and pharmacogenomics; drugs affecting the nervous system (neuropharmacology); drugs affecting other systems; chemotherapeutic drugs. Prereq: one semester of biochemistry or permission.

BCHM 863 - Biochemistry of Cancer

Credits: 4

Evaluation of the hallmarks of cancer, including molecular mechanisms of carcinogenesis, roles of oncogenes and dysregulated cell development, function and metabolism, tumor immunology, and the biological basis of cancer therapy. Prereq: one semester of biochemistry or permission.

BCHM 883 - Proteomics for Biological Discoveries

Credits: 4

Large-scale, high-throughput study of proteins; characterization of entire set of proteins in a biological sample (proteome); quantification of changes in protein composition, interactions and post-translational modifications; major technology platforms; pharmaceutical and biomedical applications. Develop skills in processing samples from research projects; analysis of mass spectrometric data. Prereq: one semester of biochemistry or permission.

BCHM 894 - Protein Structure and Function

Credits: 4

Analysis of how the three-dimensional architecture of soluble and membrane proteins contributes to their biochemical function; methods for determining the structure of proteins; protein folding; protein targeting; and mechanisms of enzyme catalysis. Computer resources used for protein modeling and structural prediction. Prereq: one semester of biochemistry.