BIOCHEMISTRY AND MOLECULAR BIOLOGY (BIOC)

BIOC 5104. Biochemistry. 4 Clock Hours.
Prerequisites: None A survey of biochemistry for students in the health related professions covering the structure and function biomolecules (proteins, nucleic acids, lipids and carbohydrates), metabolism, molecular genetics, membrane organization, transmembrane signaling, and additional topics of specific interest.
Course Type: Lecture

BIOC 5173. Organic Chemistry & Biochemistry. 3 Clock Hours.
Prerequisites: Admission to Program or Permission Cross Listed: NS 3173 This course is an introduction to topics in organic chemistry and biochemistry that relate to the study of nutrition. Major topics include functional groups, enzymes, carbohydrates, lipids, proteins, and molecular biology. A major emphasis is given to metabolic pathways in energy production. Graduate Students will be required to write a research paper and all quizzes will count for credit during the course.
Course Type: Lecture

BIOC 5224. Principles of Biochemistry and Molecular Biology Laboratory Methods. 4 Clock Hours.
Prerequisites: Permission. Introductory laboratory course stressing techniques, instrumentation, and experimental design used for Biochemical and Molecular Biological research.
Course Type: Lecture

BIOC 5970. Graduate Student Seminar. 1-6 Clock Hours.
Prerequisites: Permission. May be repeated; maximum credit 6 hours. Discussion of recent advances in Biochemistry and Molecular Biology. Presentations by graduate students.
Course Type: Discussion

BIOC 5980. Research Master's Thesis. 2-6 Clock Hours.
Prerequisites: None. May be repeated; maximum credit 30 hours. Research Master's Thesis.
Course Type: Laboratory

BIOC 6210. Physical Biochemistry of Macromolecules. 2-4 Clock Hours.
Prerequisite: By Permission of Course Director. This advanced course will approach the structure and function of biological macromolecules from a multidisciplinary perspective encompassing structure determination to physical characterization of inter- and intra-molecular interactions. (Fall II)
Course Type: Lecture

BIOC 6220. Advanced Biochemistry Laboratory. 1-4 Clock Hours.
Prerequisites: Permission by Instructor. May be repeated; maximum credit 10 hours. Advanced experimental design and techniques in several current areas of Biochemistry and Molecular Biology. Students rotate through the laboratories of selected faculty members.
Course Type: Laboratory

BIOC 6221. Journal Club in Biochemistry and Molecular Biology. 1 Clock Hour.
Prerequisites: Permission. May be repeated; maximum credit 8 hours. Discussion and assessment of papers in the scientific literature related to Biochemistry and Molecular, Cell-Structural Biology.
Course Type: Discussion

BIOC 6223. Cell Biology. 3 Clock Hours.
Prerequisites: BIOC 5218 or Permission. This course is designed to explore the latest aspects of Cell Biology including nuclear structure and motility and chemiosmosis, membrane structure and function, cell-cell interactions, virus-host interactions and cell transformation. Cross Listed: MI
Course Type: Lecture

BIOC 6234. Biochemical Genetics and Molecular Biology. 4 Clock Hours.
Prerequisites: Permission. This course examines the connections between traditional mendelian inheritance and modern molecular genetics, covering genome structure and function, gene regulation, DNA replication, translation, molecular neurobiology, and molecular approaches to carcinogenesis. (spring semester)
Course Type: Lecture

BIOC 6321. Molecular Structure and Dynamics. 1 Clock Hour.
Prerequisites: GPIBS Core Curriculum or permission of Instructor. May be repeated; maximum credit 5 hours. Current aspects of macromolecular structure and function.
Course Type: Lecture

BIOC 6341. Molecular Signaling and Regulation. 1 Clock Hour.
Crosslisted: PHYO 6341 and CELL 6341 - Biochemistry and Molecular Biology Topics. Prerequisite: GPIBS Core Curriculum or permission of Instructor. May be repeated; maximum credit 6 hours. Current understanding of the biochemistry and molecular biology of regulation at the gene, cell, and organism level.
Course Type: Lecture

BIOC 6502. Advanced Topics In Human Molecular Genetics. 2 Clock Hours.
Prerequisites: BIOC 5233, 5243, 6223, 6243; or Permissions of Coordinator. May be repeated; maximum credit 4 hours. Current topics in the area of the molecular biology and genetics of human diseases, including molecular approaches to diagnosis and treatment. Lectures by resident and visiting faculty; group discussions of current literature. As the content changes with each offering, may be repeated up to a maximum credit of four hours.
Course Type: Lecture

BIOC 6960. Research Project. 1-8 Clock Hours.
Prerequisite: By Permission of the Department. May be repeated; maximum credit 64 hours. Introduction to independent research.
Course Type: Laboratory

BIOC 6970. Biotechnology. 2-4 Clock Hours.
May be repeated; maximum credit 4 hours. Biotechnology will: (a) provide information on current and future scientific developments; (b) review current regulation of biotechnology and applications as well as; (c) provide exposure to legal, business, and ethical issues generated by biotechnology. The discussion-based class will utilize participation and a student-designed project as learning tools.
Course Type: Discussion

BIOC 6980. Research Doctor's Disseration. 1-16 Clock Hours.
May be repeated; maximum credit 16 hours. Research for Doctor's Dissertation.
Course Type: Independent Study

BIOC 6990. Special Problems in Biochemistry. 1-5 Clock Hours.
May be repeated; maximum credit 15 hours. Selected Biochemical topics on which rapid progress has been made during recent years.
Course Type: Independent Study

BIOC 8203. Biochemistry and Medical Molecular Genetics. 0-128 Clock Hours.
Nucleic acids; replication; transcription; protein synthesis; gene expression; autosomal, sex-linked, mitochondrial and multifactorial disorders; mutation; gene mapping and cloning; molecular/biochemical diagnoses; gene therapy; protein structure; enzyme kinetics; coagulation; biochemical mechanisms of disease; intermediary metabolism and metabolic diseases; nutritional biochemistry; hormones; membranes and signaling; molecular basis of cancer.
Course Type: Lecture

BIOC 9980. Special Studies. 1-320 Clock Hours.
Prerequisites: Approval of Associate Dean, College of Medicine and department head. May be repeated with change of subject matter, maximum 320 clock hours. Topics of special nature or of unusual interest to the individual student.
Course Type: Independent Study