

## **BIOMEDICAL GRADUATE STUDIES (MD) {BIOM}**

**501. Mechanisms of Disease and Therapeutic Interventions. (C)** Dr. Mitch Lewis and Dr. Carolyn Cambor. Prerequisite(s): BIOM 600 Cell Biology and Biochemistry.

This is the first offering of a graduate course in cellular pathology analogous to an existing medical course with the same name. The course was designed to complement BIOM 600 Cell Biology. This course will cover basic cellular pathology and the five basic pathological processes that underlie all diseases: cellular responses to injury, tissue response to injury, tissue repair processes, hemodynamic disorders and neoplasia. The course consists of virtual lectures, reading assignments, and one discussion class each week. Sufficient background in immunology and genetics will be provided as it relates to pathological processes.

**502. Molecular Basis of Disease I. (B)** Dr. Mitch Lewis and Dr. Carolyn Cambor. Prerequisite(s): BIOM 501 or by permission of course directors. This course is reserved for BGS students only. BIOM 502 will provide students an in-depth look at 3-4 human diseases. The focus will be on understanding the pathophysiology of the diseases and how research has not only enhanced our knowledge of the disease mechanisms but has also led to improved therapy for patients with these diseases. Students will spend 2-4 weeks on each disease. The 2007 diseases will include: diabetes, atherosclerosis, chronic myelogenous leukemia and colon cancer. Students will follow a paradigm for learning about diseases that can be applied to the study of any disease. They will first learn the normal anatomy, histology, and physiology of the organ(s) involved in the disease. Then, they will learn the pathophysiology and molecular basis of each specific disease. Finally students will discuss the research in the field and how this led to current therapeutic approaches for each disease. Ideas for future research needed in each disease will also be explored.

**SM 510. Case Studies in Translational Research (CSTR). (A)** Drs. Mitch Weiss, Emma Meagher and Skip Brass. This course starts on August 27, 2007. It is held on either Monday or Wednesday from 2 - 3:30 pm.

This course is open to MD/PhD, VMD/PhD and Biomedical Graduate Studies PhD students. All second year combined degree students are expected to take this course unless excused by Dr. Brass. Enrollment is limited to 24 students but interested VMD/PhD and BGS students are welcome as space permits

CSTR is a seminar style course where groups of students work with selected Penn faculty to prepare a discussion and literature review on disease topics. Topics will include gene therapy for hemophilia, retinal disease and wound healing, cytokine therapies for immune disorders, genetic sleep disturbances and vaccine development. Most of the course will focus on the analysis of successful translational research projects that are taking place here at Penn.

**520. BGS Biostatistics Summer Workshop. (L)** Dr. Phyllis Gimotty.

Objectives of workshop are to apply biostatistical methods; develop skills with a statistical software package (SAS or JMP); and develop communication skills for summarizing data and presenting a statistical analysis. Maximum enrollment: 20

**555. Control of Prokaryotic and Eukaryotic Gene Expression. (B)** Drs. Paul Lieberman and Tom Jongens. Prerequisite(s): Permission of Instructors.

Regulation of gene expression including chromatin structure, transcription, DNA modification, RNA processing, translation, control of gene expression via microRNAs and post-translational processing.

**599. GTMS CLINICAL CLERKSHIP.**

**600. Cell Biology and Biochemistry. (A)** Dr. John Weisel, course director. Theme Directors: Drs. Michael Marks, Mark Lemmon, Kevin Foskett and Xiaolu Yang. Prerequisite(s): Permission of Instructor.

BIOM 600 is an intermediate level graduate course designed to introduce students to the molecular components and physiological mechanisms that underlie the structure and function of cells. The course is designed as an in-depth survey to cover general concepts central to the field of biochemistry and cell biology and to emphasize these concepts within the context of current scientific research questions and technical approaches. Lectures will focus on recent discoveries in contemporary cell biology involving (i) basic cellular biochemistry; (ii) mechanisms of membrane transport and excitability; (iii) intracellular compartmentalization and protein/vesicle targeting, organelle biogenesis; (iv) cytoskeletal architecture, cell motility and adhesion; and (v) molecular mechanisms of signal transduction. Efforts will be made to familiarize students with recent technical advances in molecular, biochemical, microscopic, spectroscopic, and electrophysiologic techniques.

**799. Independent Study.**

**895. Methods in BE Education.**