

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. Hao Shen and John Lynch. Prerequisite(s): Permission of course directors. This course is reserved for BGS students only. BIOM 502 introduces students to basic mechanisms of disease and examines ~8 diseases in detail. The specific diseases chosen for discussion may vary year to year. The focus of the course will be on understanding the pathophysiology of the diseases and how research has enhanced not only our knowledge of disease mechanisms but has also led to improved therapy for patients with these diseases. Students will spend 1-2 weeks on each disease. Students will use materials from the medical school curriculum for background information and will use journal articles for class discussion.

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.

515. Public Health Certificate Program.

555. Regulation of the Genome. (B) Drs. Zhaolan Zhou and Ben Black. 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.

590. INTRO SUMMER SESSION. (L)

599. GTMS Clinical Clerkship.

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600. Cell Biology. (A) Dr. Richard Assoian, Director. Dr. Kurt Engleka, Assistant Course Director. Theme Directors: Drs. Mickey Marks, John Weisel, Toshi Hoshi, 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.

611. Biological Data Analysis. (B) Mary Putt, PhD. Prerequisite(s): Students with a strong quantitative background may wish to consult their advisors about the possibility of taking a statistics course with more rigorous mathematical underpinnings.

BIOM 611 is a 1cu introductory course required for 1st year BGS students. The course provides an overview of fundamental concepts in biostatistics. The first half of the course explores fundamental statistical concepts including random variables and probability distributions, sources of variation, experimental design, hypothesis testing and confidence intervals. Both parametric and non-parametric (permutation and rank-based) approaches to inference will be discussed. During the first half of the semester we will introduce the software package R (in Rstudio) and illustrate how to manipulate data in R, explore and graph data, conduct simple tests, create confidence intervals and choose a sample size for a simple two-group comparisons. Approaches to developing reproducible code will be illustrated. During the second half of the course, we will explore analysis of variance, regression modeling and categorical data analysis both in class and in lab. The course emphasizes (1) the understanding of statistics through computational approaches rather than mathematical derivations and formulae and (2) the selection, application and interpretation of basic statistical methods appropriate to data arising from the basic biological sciences.

There will be a lecture on Tuesdays from 11-12:30 pm and labs on Wednesday, Thursday or Friday from 3:30 - 5:00 pm. Students will need to bring their own laptop and will be expected to pick a lab day and stick with that day throughout the semester. Also, there will be an optional review/homework session on Mondays from 3:30 - 5:00 pm. We will carry out activities to help understand fundamental concepts in statistics. Both the lecture and lab will require a laptop with access to the internet. Some of these activities will use INZIGHT, a free R-based software platform out of the University of New Zealand.

799. Independent Study..

895. (BE 895) Methods in BE Education..

995. EXCHANGE SCHOLAR DISS.