BIOMEDICAL GRADUATE STUDIES (BIOM)

BIOM 502 Molecular Basis of Disease
BIOM 502 introduces students to basic mechanisms of disease and examines a different disease each week. The focus of the course will be on understanding the pathophysiology of the diseases and how research has enhanced our knowledge of disease mechanisms but has also led to improved therapy for patients with these diseases. This course is reserved for BGS students only. Prerequisite: Permission of course director.
Taught by: Dr. Jonathan Katz and Dr. Jennifer Punt
Course usually offered in spring term
Activity: Lecture
1.0 Course Unit

BIOM 510 Case Studies in Translational Research (CSTR) (Open to MD/PhD and VMD/PhD students only)
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. Prerequisite: Must be in the MD/PhD or VMD/PhD program and have completes the first year of training. 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 delopement. Most of the course will focus on the analysis of successful translational research projects that are taking place here at Penn.
Taught by: Drs. Mitch Weiss, Emma Meagher and Skip Brass
Course usually offered in fall term
Activity: Seminar
1.0 Course Unit

BIOM 555 Regulation of the Genome
Regulation of gene expression including chromatin structure, transcription, DNA modification, RNA processing, translation, control of gene expression via microRNAs and post-translational processing. Prerequisite: Permission of instructors.
Taught by: Drs. Zhaolan Zhou and Ben Black
Course usually offered in spring term
Activity: Lecture
1.0 Course Unit

BIOM 600 Cell Biology
BIOM 600 is a beginning-to-intermediate-level graduate school course designed to introduce students to the molecular components and physiological mechanisms that underlie the structure and function of eukaryotic cells. The course emphasizes core cell biology concepts by describing both landmark experiments and methods as well as current scientific research questions and technical approaches. Lectures till focus on discoveries involving: (i) molecular mechanisms of cellular communication; (ii) intracellular compartmentalization, protein/vesicle targeting, and organelle biogenesis; (iii) mechanisms of membrane transport and excitability; (iv) cytoskeletal architecture, cell adhesion, and cell motility; and (v) cell fate. The main goal of the course is to provide a strong foundational basis for the biomedical student's graduate education especially in the practice of solving research problems in the context of cell biology. The format and content of the course conveys to students not only how scientists what they know but also the tremendous excitement that has paralleled rapid advances in understanding cell structure, organization, and function in recent years. Permission of instructor required to enroll.
Taught by: Dr. Kurt Engleka, Course Director
Course usually offered in fall term
Activity: Lecture
1.0 Course Unit

BIOM 610 Data Analysis for Life Sciences
Technological advances have transformed fields that rely on data by providing a wealth of information ready to be analyzed. From working with single genes to comparing entire genomes, biomedical research groups around the world are producing more data than they can handle and the ability to interpret this information is a key skill for any practitioner. The skills necessary to work with these massive datasets are in high demand, and this course will help you learn those skills. Using the open-source R programming language, you’ll gain a nuanced understanding of the tools required to work with complex life sciences and genomics data. You’ll learn the mathematical concepts -- and the data analytics techniques -- that you need to drive data-driven research. From a strong foundation in statistics to specialized R programming skills, this course will lead you through the data analytics landscape step-by-step. Taught by Rafael Irizarry from the Harvard T.H. Chan School of Public Health, and offered through the Harvard partnership with EdX.com, this four part course will enable new discoveries and will help you improve individual and population health. If you’re working in the life sciences and want to learn how to analyze data, enroll now to take your research to the next level.
Taught by: Dan Beiting, Taki Shinohara
Course usually offered in spring term
Activity: Hybrid Course
1.0 Course Unit