

CORE

Core 6000s. RESPONSIBLE CONDUCT OF RESEARCH. (1 cr; SN) Staff
A series of presentations on various aspects of biomedical ethics.

Core 6100f. CHEMICAL PRINCIPLES OF BIOLOGICAL SYSTEMS.
(3 cr; AF; prereq calculus, organic chemistry, quantitative analytical chemistry, or consent of instructor)
Maher (even years) Strehler (odd years)
An introduction to the fundamental principles of biomacromolecular structure and function, including nucleic acids, proteins, and biomembranes. The course also provides a survey of methods of structure determination and analysis, principles of catalysis, kinetics and bioenergetics. Course
URL:mayoweb.mayo.edu/mgs/core/6100/6100intro.html

Core 6150su. GENOME BIOLOGY. (3 cr; AF; begins in early August;) Horazdovsky
This course will explore the organization and function of the genome, with an emphasis on the features that are critical for the regulation of gene expression mammalian systems. Topics to be examined include genome packaging and replication, as well as transcription, RNA processing, translation, and protein processing.

Core 6200f. BASIC GRADUATE IMMUNOLOGY. (3 cr; AF) Leibson
Structure, genetics, and function of immunoglobulins; biosynthesis of antibody; cellular regulation of immune response; tumor and transplantation immunology; immune response to infectious agents; autoimmunity and immune deficiencies.

Core 6250w. MOLECULAR CELL BIOLOGY. (3 cr; AF) McNiven
Class is designed to convey the central principles of how eukaryotic cells function at the structural and biochemical level. Emphasis of topics is on: the cytoskeleton, extracellular matrix and cell-cell interactions, protein transport in the secretory and endocytic pathways, and cell cycle, mitosis, programmed cell death. Course format utilizes didactic lectures combined with student presentations and interactive problem sets.

Core 6300s. MOLECULAR BIOPHYSICS. (2 cr; AF) Sine
This course is an introduction to the molecular organization, dynamics and intermolecular interactions of biologically important macromolecules with emphasis on proteins. Introductory courses in organic chemistry, biochemistry and calculus are recommended prerequisites.

Core 6400w. MOLECULAR GENETICS. (3 cr; AF) Isaya, Harris, Tang
Overview of topics in genetics of general importance to biomedical research with emphasis on molecular aspects.

Core 6450s. MOLECULAR PHARMACOLOGY AND RECEPTOR SIGNALING. (2 cr; AF) Brimjoin
A chief aim of modern life science is to understand the biological mechanisms of living systems and to apply this knowledge in discovering cures for disease. This course will provide a comprehensive introduction to receptors and downstream signaling pathways important in disease and the science underlying the use of chemical agents, proteins, nucleic acids, and genes to influence these pathways and biological outcomes. The course will also survey computeraided drug discovery, gene therapy, pharmacogenomics, and the basic principles of modern molecular pharmacology. Carefully constructed problem sets will enable students to master practical issues in designing and interpreting experiments on drugreceptor interactions.

Core 6650s. BIostatISTICS. (2 cr; AF) Fridley
Didactic classroom presentations, basic statistical terms and concepts with examples (using JMP software) will be presented, including: mean, median, percentiles, range, standard deviation, proportions; graphical displays of different data types; evaluating a diagnostic test in terms of sensitivity, specificity, prevalence, positive and negative predictive value; distributions for discrete and continuous random variables; confidence intervals, two sample hypothesis tests (both parametric and nonparametric), ANOVA; sample size and power; correlation and simple linear regression. Additional laboratory sessions will be arranged during the first week of class.

Core 6700w. INTEGRATED SYSTEMS PHYSIOLOGY. (3 cr; AF) Charkoudian

The goal of this course will be an emphasis on the importance of integrative physiology in the evolving area of functional genomics. Laboratory demonstrations will provide exposure to state-of-the-art physiological techniques with applications from cell physiology to human disease.

Core 6770s. VIROLOGY AND GENE THERAPY. (3 cr, AF) Cattaneo

The Virology and gene Therapy core course is the sum of three one credit courses that will be held consecutively during the spring quarter: Molecular Virology, From Viruses to Vectors, and Gene Therapy.