

LIFE SCIENCES - CELL BIOLOGY AND BIOPHYSICS (LS-CBB)

Courses

LS-CBB 5501 Graduate Biophysical Principles Credits: 3

The focus of this course is on the theoretical principles underlying the biophysical methods used by a wide range of biological chemists. The approaches covered include thermodynamics, chemical kinetics, molecular interactions, transport properties, quantum mechanics, optical spectroscopy, and molecular structural approaches involving nuclear magnetic resonance spectroscopy, X-ray diffraction, and Mass spectrometry.

LS-CBB 5504 Graduate Virology Credits: 3

Survey of the molecular biology of animal, plant, and bacterial viruses. The course will emphasize the molecular mechanisms of virus replication, viral pathogenesis, and the use of virus as model systems to study mammalian cells.

LS-CBB 5505 Molecular and Cellular Neurobiology Credits: 3

The molecular basis of chemical and electrical communication between nerve cells. Topics will include: neurotransmitters, neuropeptides, receptors, channels, second messengers, cytoskeleton, cell adhesion, development, neuronal plasticity and psychopharmacology.

Co-requisites: LS-MBB 5561, LS-MBB 5562.

LS-CBB 5520 Cell and Molecular Biology II Credits: 3

A presentation of the cellular and subcellular organization and function of eukaryotic cells. Discussions will emphasize basic concepts by which structure and functions are integrated.

Co-requisites: LS-MBB 5561, LS-MBB 5562.

LS-CBB 5530 Cell and Molecular Biology I Credits: 3

Molecular aspects of gene structure and function in prokaryotic and eukaryotic organisms and their viruses. Emphasis in genome structure and organization and regulation of gene expression.

Co-requisites: LS-MBB 5561.

LS-CBB 5538 Molecular Recognition in Cellular Biology Credits: 2

Graduate Research Seminar. Studies of the latest development leading to an increased understanding of cellular biology processes when the experimental tools for structure biology analysis and molecular genetics are applied.

Co-requisites: LS-MBB 5561.

LS-CBB 5566 Membrane Biochemistry and Biophysics Credits: 3

Structure and function of biological membranes including architecture, dynamics, models, biochemical compartmentation, energy transduction, transport mechanisms, membrane protein structures, and cell surface receptors.

Co-requisites: LS-MBB 5561, LS-MBB 5562.

LS-CBB 5569 Structural Biology, Methods and Strategies Credits: 3

Analysis of strategies and methodologies such as X-ray crystallography, nuclear magnetic resonance and advanced microscopy procedures including imaging analysis for the study of relationships of higher order macromolecular structures to biological functions.

Prerequisites: LS-MBB 5561, LS-MBB 5562.

LS-CBB 5583 Current Topics in Cell Biology and Biophysics Credits: 1-3

Current topics and recent developments in cell biology and biophysics with emphasis on rapidly developing research areas.

Co-requisites: LS-MBB 5561, LS-MBB 5562.

LS-CBB 5591 Directed Individual Studies in Cell Biology and Biophysics Credits: 1-6

Intensive reading and/or research in an area selected by the graduate student in consultation with the instructor.

Co-requisites: LS-MBB 5561, LS-MBB 5562.

LS-CBB 5596 Advanced Experimental Cell Biology I Credits: 2

Structured laboratory work with individual tutorial sessions designed to familiarize first year Interdisciplinary Ph.D. students with concepts and techniques of modern cell biology research. 1-2 hr/wk tutorial and 15-20 hr/wk of laboratory work.

Co-requisites: LS-MBB 5561.

LS-CBB 5597 Advanced Experimental Cell Biology II Credits: 2

Continuation of LS-CBB 5596.

Co-requisites: LS-MBB 5561, LS-MBB 5562.

LS-CBB 5599 Thesis Research in Cell Biology and Biophysics Credits: 1-12

Research and thesis preparation for M.S. degree candidates.

Co-requisites: LS-MBB 5561, LS-MBB 5562.

LS-CBB 5612 Seminar in Cell Biology and Biophysics Credit: 1

Presentation and discussion of selected areas in cell biology and biophysics. This course may be repeated by doctoral students for a maximum of 3 credit hours.

Co-requisites: LS-MBB 5561, LS-MBB 5562.

LS-CBB 5690 Analytical Methods in Cell Biology and Biophysics Credits: 1-5

A course that emphasizes the development of skills in experimental design, analytical methods and instrumentation as applied to problems of interest to modern cell biology and biophysics, and analysis of results. Can be repeated up to a maximum of eight hours total.

Prerequisites: LS-MBB 5561, LS-MBB 5562.

LS-CBB 5696 Dissertation Development Credits: 1-3

This course is individually directed research leading to the fulfillment of the Comprehensive Exam requirements for the Cell Biology and Biophysics primary discipline. This includes submission of the final, revised version of the NIH-style research proposal to committee members and (ii) successful oral defense of the proposal before the student's research advisory committee. Prerequisites: BIOLOGY 5501.

LS-CBB 5699 Dissertation Research in Cell Biology and Biophysics Credits: 1-12

Research and dissertation preparation for interdisciplinary Ph.D. degree students who have Cell Biology and Biophysics as a discipline.

Co-requisites: LS-MBB 5561, LS-MBB 5562.