



PCB6230:
Basics of Molecular Oncology
(Cancer Biology I)

CRN#: *****, Section 001, 3 Credit Hours
CAS / Molecular Biosciences

COURSE DESCRIPTION

I. University Course Description

An introduction to the basics of molecular oncology. Topics will include cytoplasmic and nuclear oncogenes, cell cycle control, apoptosis, tumor suppressor genes, genome stability, invasion/metastasis and immune influences on cancer.

II. Course Purpose

The primary objective of this course is to provide an understanding of normal and abnormal cell biological processes, molecular signaling pathways, growth control mechanisms, and apoptotic processes as they relate to molecular oncology and cancer biology.

III. Course Objectives

Students are expected to have already had basic courses on cell biology, molecular biology, and biochemistry. Multiple faculty members teach this course jointly. Topics to be covered include the basics of cell transformation, oncogenes, tumor suppressor genes, tumor viruses, signal transduction pathways, extracellular environment and cell invasion, cell cycle control and checkpoints, and apoptosis. Individual lecturers will provide recent primary research articles, and students will be expected to participate in the analysis of these papers as part of their grade. Students are expected to supplement the lecture information and primary research paper reading, and gain a more in-depth understanding of each topic, by studying appropriate chapters in the primary assigned book.

IV. Student Learning Outcomes

At the conclusion of the course, students should be able to demonstrate a basic understanding of cancer biology related to the Hanahan and Weinberg Hallmarks of Cancer, including etiology, cell signaling, nuclear transcription, metabolism, tumor microenvironment, invasion, and metastasis.