THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Biomedical Atomic Force Microscopy

BIOMEDE 5177

Credit Hours:
3.00 - 3.00

Course Levels:
Undergraduate (1000-5000 level)
Graduate (5000-8000 level)

Course Components:
Lecture

Course Description:
Applications of Atomic Force Microscopy (AFM) in bio-imaging, biomechanics, and nano-manipulation.

Prerequisites and Co-requisites:
Prereq: 5110 (611) or equiv, and Sr or Grad standing; or permission of instructor.

Course Goals / Objectives:
- List physical principals involved in use of AFM as an imaging and mechanical tool
- Propose methods and protocols for application of AFM for biological samples
- Analyze AFM data to ascertain morphological features and/or the stiffness of samples

Course Topics:
- AFM as imaging tool: single molecule imaging; cell and tissue imaging; imaging the interior of samples
- AFM as force sensor: molecular and cellular adhesion and recognition; single molecule mechanics; cell mechanics and rheometry; micromechanics of single fibers
- AFM as Nanomanipulator: manipulation of nanoparticles; dip-pen nanolithography; nanografting
- Recent developments in AFM

Designation:
Elective