THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Biomedical Microscopic Imaging

BIOMEDE 5110

Credit Hours:
3.00

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

Course Components:
Lecture

Course Description:
Principles and applications of microscopy techniques (light, electron and atomic force microscopy) for biomedical research.

Prerequisites and Co-requisites:
Prereq: 4110 or equiv, and Sr standing; or Grad standing; or permission of instructor.

Course Goals / Objectives:
- List the physical principles involved in light, electron and atomic force microscopy techniques and image formation. Derive and apply the Gauss?s lensmaker equation to ascertain if a lens has chromatic aberration
- Label components and carry out alignment procedures for microscopes. Perform Koehler alignment on inverted and upright light microscopes
- Propose methods and protocols for sample preparation involved in microscopy. Define the steps involved in processing of animal tissue for transmission electron microscopy
- Determine the selection and application of a microscopy technique for specific biomedical applications. Write and present a research plan employing microscopy technique(s) to address a biomedical hypothesis

Course Topics:

- Basic concepts in Microscopy
- Anatomy of a microscope
- Light microscopy techniques
- Sample preparation
- Electron microscopy
- Atomic force microscopy

Designation:
Elective