THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Advanced Biomaterials

BIOMEDE 5310

Credit Hours:
3.00 - 3.00

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

Course Components:
Lecture

Course Description:
Basic and advanced concepts of materials science; biocompatibility and biological reactions to implanted materials; natural biomaterials and synthetic materials used in biomedical applications.

Prerequisites and Co-requisites:
Prereq: 4310 or equiv, and Sr standing; or Grad standing; or permission of instructor.

Course Goals / Objectives:
- Describe the structural and quantitative differences between various classes of biomaterials
- Understand and choose appropriate methods of testing biomaterial properties and performance
- Develop a list of basic selection criterion for biomaterials in a specific application
- Select and justify a choice of materials for a specific biomedical application

Course Topics:
- Introduction to biomaterials; criteria selection for medical devices; Materials science principles - elastic deformation, permanent deformation, failure, fatigue, structure-property relationships, anisotropy, heterogeneity, viscoelasticity
- Biomaterials compatability
- Polymers as Biomaterials
- Metals and Ceramics as Biomaterials
- Natural Biomaterials
- Medical Device Design and Criterion Selection

Designation:
Elective