BMEN 5321 Biomaterials and Biocompatibility

**Instructor:**
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Office: F297B  
Office Hours: by appointment

**Class Schedule:**
MW 4:00 PM-5:50 PM, Room: Discovery Park D208B

**Textbook:**

**Catalog Course Description:**
Relevance of mechanical and physical properties to implant selection and design; effect of the body environment on metallic, ceramic and plastic materials; tissue engineering; rejection mechanisms used by the body to maintain homeostasis regulatory requirements.

Prerequisite(s): Graduate standing or consent of instructor.

**Course Objectives:**
The course will teach the principles of biomaterials used for tissue engineering to students so they may perform interdisciplinary research in the area of materials for cell and tissue regeneration or therapy. Research is becoming more cross-disciplinary and this course will help student get familiar with how to use engineering approaches to study biomaterials and their interaction with cells and tissues. The three principal course goals 1) to learn basic tissue structures and functions, 2) to develop an understanding of the principles of engineering applied in materials and cell and tissue therapy, and 3) to learn the experimental tools used to understand tissue functions, interactions between materials and tissues, and tissue regeneration.

**Brief list of topics**
- Biomaterial introduction  
- Metals and ceramics  
- Polymers  
- Material characterization  
- Biocompatibility  
- Gene therapy  
- Scaffolds  
- Nanomaterials  
- Special topics in biomaterials
Attendance and academic performance:
Regular and punctual class attendance is expected. A student may be dropped from the course with a grade of WF upon the accumulation of 3 or more unauthorized absences. According to UNT policy, “Instructors may drop students with grades of WF from courses for nonattendance at any time after the completion of the sixth week of classes for fall or spring terms/semesters or the equivalent dates for summer sessions.”

Grade Evaluation:
Class participation and discussion 20%
Review Paper 20%
Research Proposal 20%
Special Topic presentation 1 20%
Special Topic presentation 2 20%

A: 90-100%
B: 80-89%
C: 70-79%
D: 60-69%
F: < 60%

Disability Policy:
All reasonable accommodation will be made to facilitate special needs. If special accommodations are required, the student must first meet with the staff of the Office of Disability Accommodation (ODA), Union Suite 322, (940) 565-4323. After meeting with that office, please contact me to discuss what accommodations will be necessary. For more information, see http://www.unt.edu/oda.