

BIOE 460 – Materials in Bioengineering

Instructor:

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SEO 211

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Office Hours Monday 12-1 PM, SEO 211

TA's:

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Textbook:

Biomaterials Science: An Introduction to Materials in Medicine 2nd Edition, Edited by Ratner, Hoffman, Schoen, and Lemons, Elsevier Academic Press

Objectives:

The course objective is to provide the student with a fundamental understanding of materials and their interactions with living systems. The course focuses on the properties of materials in the first half and on biological interactions with materials. At the end of the course, the student will be able to critically evaluate materials for their use in biomedical applications.

Responsibilities:

Student: Students must come to class prepared to listen to the lecture. Please respect the lecturer (and/or the instructor) by providing your complete attention and courtesies whenever you are in class. Students must also make positive efforts to work within a group setting when necessary. Attendance is mandatory but not enforced, however all topics discussed in class are fair game for exams and HW.

Instructor. The instructor accepts the responsibility for bringing clear views of bioengineering to the classroom. Every effort will be made to insure that each lecture is clear, concise and well-understood. The instructor also agrees to treat students fairly and with respect and to return grades in a 'reasonable' time.

Assignments:

Assignments will be handed out sufficiently in advance so that students have ample time to complete the work. It is assumed that a student is sufficiently mature to discipline him/herself to complete all assigned work in a timely manner. While group work is encouraged, cheating or plagiarism will be punished vigorously according to university rules.

Grading:	HW (10)	25%
	Exams 15% each	45%
	Final	30%

Date	Topic	Reading/HW
8/28	Introduction and Overview	1-9
8/30	Bulk Properties I	23-32
9/4	Bulk Properties II	23-32 - HW1
9/6	Surface Properties I	40-57
9/11	Metals I	137-153
9/13	Metals II	137-153
9/18	Applications of Metals	526-553 – HW2
9/20	Polymers I	67-79
9/25	Polymers II	67-79
9/27	EXAM I	
10/2	Degradable materials	411-428
10/4	Applications of polymers	628-645
10/9	Ceramics	153-166 – HW3
10/11	Composites	181-195
10/16	Thin Films and Coatings	201-215
10/18	Natural Materials	127-137
10/23	Applications	456-467
10/25	EXAM II	
10/30	Cells and Proteins I	246-259
11/1	Tissues	260-280
11/6	Ethics	Supplemental – HW4
11/8	Burn Dressings	602-613
11/13	Immunology I	296-327
11/15	Immunology II	296-327 – HW5
11/20	Toxicity	328-332
11/22	Thanksgiving- No Class	
11/27	Testing of Biomaterials	355-367
11/29	EXAM III	
12/4	Blood Material Interactions	367-378- HW10
12/6	Review	
12/10-14	Final Exam	