University of Notre Dame
Department of Aerospace and Mechanical Engineering

AME 50571 **Biomaterials** **Spring 2017**

Instructor:	Ryan K. Roeder, Associate Professor 148 Multidisciplinary Research Building, 1-7003 rroeder@nd.edu http://www.nd.edu/~rroeder
Teaching Assistants:	Tyler Curtis, tcurtis2@nd.edu Jessica Schiltz, Jessica.H.Schiltz.5@nd.edu
Lecture:	MWF 9:25-10:15 a.m., DBRT 228
Office Hours:	W after class, otherwise an "open door" policy.
Course Calendar:	An iCal subscription will be emailed to the class.
Required Textbook:	None. Selected readings will be assigned primarily from journals, as well as book chapters, patents, FDA documents, etc.
Prerequisites:	AME 20241 Mechanics of Materials, CBE 30361 Materials Science
GOALS:	Upon completion of this course, the student will be able to: (1) Provide a fundamental framework for understanding and manipulating complex (processing)-structure-property relationships in biomaterials. (2) Critically and independently evaluate published reports on any biomaterial used in any biomedical application. (3) Effectively communicate critical and independent thinking.
Grading:	Critical Reviews (2) 40% Class Participation 20% Term Paper 40%
Critical Reviews:	Nine journal articles (or similar documents) will be assigned throughout the semester to be discussed and critically evaluated in class in small groups of four to five students. Critical evaluation will require that students in each group conduct their own research in order to understand important terminology, concepts and cited references. A critical review will then be written by one student in each group who will summarize the discussion, evaluation and research of the group. Each student will write two such reviews through the course of the semester.
Class Participation:	Group members will frequently evaluate each other's contribution to the group discussion based on a set of criteria provided by the instructor.
Term Paper:	Each student will write their own critical review paper focused on a particular biomedical application (e.g., hip replacement, contact lens, etc. – a list of potential topics will be provided by the instructor) including all applicable biomaterials and, most importantly, assessing important (processing)-structure-property relationships. Papers will be edited and compiled for a class "textbook."
Academic Honesty:	Students should be familiar with the Academic Code of Honor (http://www.nd.edu/~hnrcode). The term paper will represent independent and original work, without the aid of other students. The use of course file sharing websites to download or upload student work is forbidden.

Additions, amendments, or corrections to this syllabus may be made throughout the semester via in class announcements, handouts, or e-mail.