University of Kansas
ME 757
Biomechanical Systems
Fall 2005, 6:30-9:20 Tuesday

Lecturer: Sara E. Wilson, Ph.D., Assistant Professor, Mechanical Engineering
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864-2103

Office Hours: Tuesday, Thursday 12-2:20 or by appointment

Text: Muscles, Reflexes and Locomotion, by Thomas A. McMahon
(in KU Bookstore)
Supplemental material will be put on reserve in the engineering library for you to copy or will be handed out in class.

Grading:

Component	Percent of total grade
Homework (6 assignments)	20%
Midterm exam	20%
Final Exam	20%
Project: Written report	10%
Poster	10%
Attendance of 2 Research Seminars	5%
Journal Club	15%

Class attendance and participation may affect borderline scores.

Project: Students will be asked to write a literature review article in some area of human or animal motion. The focus this year will be examining a controversy in biomechanics. In this paper you will be expected to examine both sides and develop your own view. Possible topics will be discussed in class. Students should submit select their topic 8/30 and a list of possible references 9/27. During the last week of class students will be asked to give a presentation of their topic.

Seminar: Many seminars are given across campus on topics related to this course. Going to such seminars will let you see the latest developments in the field. You are asked to go to two such seminars during the semester and to write up a 1-page description of the talk. Seminars that will be accepted include: any Mechanical Engineering department Seminar, ASME or BMES meetings that have invited speakers, seminars on biomechanics in Neuroscience, Biology, Anthropology, Aging, or Physical Therapy. If you are unsure of a seminar see me to get prior approval. Seminars required for other courses will not be accepted.

Homework: Homework assignments are offered to allow students to practice material learned in class and to get a flavor for the sorts of questions that might be asked in an examine. Students are allowed to work together and to discuss problems. However, work turned in should reflect the students own thought process and should not be directly copied from another student. Direct copying is not only a violation of the course policy on academic dishonesty but also will prevent the copier from using the opportunity to practice the material before the exam. Homework will be graded based on effort, with partial credit given for answers that are incorrect but show a detailed thought process.

Journal Club: Four times during the semester we will have journal club. During Journal Club days we will review two papers as a class. A team of three students will present each paper followed by class discussion. Your journal club grade will be based 50% on your team presentation and 50% on your participation in the classroom discussion of the articles. The following dates will be journal club days: 9/6, 9/20, 10/18, and 11/1.

Expectations: I expect students to take responsibility for their own education. My job is to facilitate your learning by providing material as clearly as possible in lectures, by conveying my enthusiasm for the material, and by providing reasonable goals and expectations. Your feedback will help me to provide this.

Course Policy on Academic Dishonesty: Academic dishonesty (cheating) will not be tolerated in the School of Engineering. Cheating in this class consists of sharing information during examinations, direct copying of homework assignments, and plagiarism (direct copying of material without reference to the source) on the project paper. Cheating in class is inconsistent with professional engineering ethics and is a serious violation. Instances of cheating will be reported to the Dean's office and appropriate penalties will be invoked.

Course Grading Structure: KU Grading System (adapted from the University Senate Rules and Regulations "Article II, Section 2: The Grading System", http://www.ku.edu/~unigov/usrr.html#art2sect2).

Copyright: Course materials prepared by the instructor, together with the content of all lectures and review sessions presented by the instructor are the property of the instructor. Video and audio recording of lectures and review sessions without the consent of the instructor is prohibited. On request, the instructor will usually grant permission for students to

audiotape lectures, on the condition that these audio tapes are only used as a study aid by the individual making the recording. Unless explicit permission is obtained from the instructor, recordings of lectures and review sessions may not be modified and must not be transferred or transmitted to any other person, whether or not that individual is enrolled in the course.

The letters A, B, C, D shall be used to indicate passing work.

- *The grade of A will be reported for achievement of outstanding quality.*
- *The grade of B will be reported for achievement of high quality.*
- *The grade of C will be reported for achievement of acceptable quality.*
- *The grade of D will be reported for achievement that is minimally passing, but at less than acceptable quality.*

The letter F shall indicate that the quality of work was such that, to obtain credit, the student must repeat the regular work of the course, or that the student's work was not of passing quality at the time of disenrollment from the course.

ME 757 Time Table

Topics	Reading	Assignments
8/23 Introduction Basic Muscle Mechanics	Chapter 1, McMahon	
8/30 Muscle Heat and Fuel	Chapters 2, McMahon	***Select Project Topic*** **Homework 1**
9/6 Muscle Mechanics Journal Club	Chapter 3, McMahon	**Journal Club #1**
9/13 Librarian, Finding Papers Muscle Models	Chapter 4, McMahon Supplemental Material	**Homework 2**
9/20 Muscle Force Muscle Mechanics Measurement Journal Club	Chapter 5, McMahon Supplemental Material	**Journal Club #2**
9/27 Advanced Muscle Modeling Work Cycles	Supplemental Materials	***Project Reference List Due***
10/4 Midterm Exam		**Homework 3** **MIDTERM EXAM**
10/11 Neural System	Chapter 6, McMahon Supplemental Material	
10/18 Modeling Neural Control Equilibrium Point Models Journal Club	Supplemental Material	**Journal Club #3**
10/25 Gait Gait Measurement Gait Stability	Chapter 7, McMahon Supplemental Material	**Homework 4**
11/1 Running, Quadrapeds, Animal Locomotion Journal Club	Chapter 8, McMahon Supplemental Material	**Journal Club #4**
11/8 Effects of Scale	Chapter 9, McMahon	**Homework 5**
11/15 Biomechanics of other motions (swimming, etc.)	Supplemental Material	
11/22 Aging Pathology	Supplemental Material	**Homework 6**
11/29 Making a Presentation, Conferences The megasquid – Biomechanics run amuck		
12/6 Presentations		***Paper Due*** **Seminar Reviews Due**
12/13 7:30-10pm– **FINAL EXAM**		**FINAL EXAM**