

MECH ENG 717
Current Topics in Orthopaedic Biomechanics

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Lecture: TBD

Course Objectives:

- To gain an understanding of techniques currently used in Biomechanics, and their applications and limitations.
- To develop the ability to critically review and evaluate recent literature relating to these current techniques.
- To write a summary of a current technique for biomechanical analysis.

Lecture Content:

Week	Lecture	Journal Club
1	Course intro	
2	Arthroplasty	
3	Wear/Tribology	-
4	Finite Element Analysis	
5	<i>READING WEEK – NO CLASS</i>	
6	Fracture Fixation	
7	Locomotion & Movement	
8	Biological Material Testing	
9	3D Printing	
10	Computer Assisted Surgery	
11	Injury Biomechanics	
12	Ergonomics/Human Factors	
13	Other topic TBD	

Textbook(s):

There is no required textbook for this course. Readings will be assigned weekly, and journal articles distributed.

Course Structure and Evaluation:

Each class will take the format of a journal club discussion then lecture.

Each student will deliver a 30 minute lecture on a subject from the list. This lecture will introduce the topic, provide any related anatomical/technical instruction, as well as an overview of current

areas of research and applications for the subject. Peer evaluation will constitute a portion of the grade. This will be followed by approximately 30 minutes by Dr. Quenneville to supplement.

The next week, that same student will lead a journal review discussion (based on two papers related to the lecture topic presented). The student leading the journal review is responsible for selecting two recent (< 5 years old) publications, and conducting a 20 minute oral review and presentation of the papers, with a focus on critical analysis of the strengths and weaknesses. The journal articles will be distributed to the class in advance, and all students are expected to have read the articles and participate in a group discussion with their opinions of the study and questions that arose during reading. Each student will lead the journal club on their lecture topic, and be evaluated on their review and presentation.

Grading:

Journal club review	20%
Class participation	15%
Lecture	35%
Report	30%

The final deliverable will be a written report. Each student will select a topic *other than the one they lecture on* and will prepare a 5 page (double spaced, not including any figures, not including references) report on the current state of the art in that field.

Policy Reminders:

Students are reminded of the following Policies, which could be relevant to activities in this course.

Adverse Discrimination “The Faculty of Engineering is concerned with ensuring an environment that is free of all adverse discrimination. If there is a problem that cannot be resolved by discussion among the persons concerned, individuals are reminded that they should contact the Department Chair, the Sexual Harassment Officer or the Human Rights Consultant, as soon as possible.”

Academic Integrity (Ethics and Dishonesty) “Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the university. It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at: http://www.mcmaster.ca/senate/academic/ac_integrity.htm The following illustrates only two forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one’s own or for which other credit has been obtained.
2. Copying or using unauthorized aids in tests and examinations.

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.