

**MCMASTER UNIVERSITY**  
**Department of Kinesiology**

**Kinesiology 3AA3: Biomechanics II**

**Term** Fall 2017

**Instructor:** Jim Dowling

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**Office Hours:** TBA

**DESCRIPTION**

This course examines the kinematics and kinetics of human movement including electromyography, fluid and tissue mechanics with applications.

**OBJECTIVES**

To further the understanding of the biomechanics of human movement by:

- 1) Expanding the concepts of the kinematics and kinetics of the musculoskeletal system in two and three dimensions with practical examples from rehabilitation, ergonomics, gait, sport, etc.
- 2) Developing an understanding of the mechanics of muscular contraction and of electromyographical kinesiology.
- 3) Providing laboratory experience collecting, processing and interpreting biomechanically relevant data.

**TOPICS TO BE COVERED:**

Anthropometry  
Moment of Inertia  
Dynamic Equilibrium  
Electromyography  
Muscle Mechanics  
Work/Energy  
Power  
Impulse/Momentum  
3D Forces and Moments  
Tissue Mechanics (Bone, Cartilage)  
Calculus and Projectiles  
Friction  
Fluid Mechanics  
Gears and Pulleys

<b><u>EVALUATION</u></b>	Midterm Exam 1 .....	30%
	Lab test.....	20%
	Final Examination.....	50%

### **POLICY REGARDING DEFERRED TESTS AND EXAMS**

Students who miss the term test or final exam for legitimate reasons such as illness may be allowed to write a deferred final exam or receive an estimated mark for a midterm or lab test. In all instances, appropriate documentation must be submitted to the Office of the Associate Dean, Faculty of Science.

Students who miss a Registrar-scheduled final exam can apply to the Associate Dean's office for permission to write in the deferred final exam schedule. In all cases, appropriate documentation must be submitted to the Office of the Associate Dean, Faculty of Science, for consideration of deferred examination permission. Under no circumstances will the instructor re-schedule a final exam for individual students.

### **USE OF COURSE MATERIALS**

Course materials provided by the instructor are for use by students registered in this class only. Under no circumstances are these materials to be shared, posted or sold to a third party without permission from the instructor. This includes, but is not limited to, online posting of instructor provided lecture/lab notes, online lectures, recordings of lectures, or any lab materials on a website other than the Avenue site designed for the course.

### **ACADEMIC INTEGRITY**

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 reading "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/univsec/policy/AcademicIntegrity.pdf>

The following illustrates only three forms of academic dishonesty:

- Plagiarism (e.g. the submission of work that is not one's own or for which other credit has been obtained),
- Improper collaboration in group work.
- Copying or using unauthorized aids in tests and examinations.

### **ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES**

Academic Accommodation of Students with Disabilities

Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140, ext. 2865 or e-mail [sas@mcmaster.ca](mailto:sas@mcmaster.ca). For further information, consult McMaster University's Policy for Academic Accommodation of Students with Disabilities.

### **ON-LINE LEARNING RESOURCES (if applicable)**

Students should be aware that, when they access the electronic components of this course, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in this course will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.

### **MODIFICATIONS TO COURSE**

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.

### **MISSED STUDENT ABSENT FORM**

If you are absent from the university for a minor medical reason, lasting fewer than 3 days, you may report your absence, without documentation, using the McMaster Student Absence Form. Absences for a longer duration or for other reasons (eg. Religious, personal) must be reported to your Faculty/Program office, with documentation, and relief from term work may not necessarily be granted. When using the MSAF, report your absence to [\*\*dowlingj@mcmaster.ca\*\*](mailto:dowlingj@mcmaster.ca). Then contact the instructor/lab TA immediately (normally within 2 working days) by email/telephone/in person to learn what relief may be granted for the work you have missed, and relevant details such as revised deadlines, or time and location of a make-up exam.

### **FEEDBACK**

It really helps us improve our services when we hear from our students, faculty and staff about what we can do better. A feedback process brings to our attention situations in which we may not have adequately considered accessibility and allows us to better plan for accessibility in the future.