

## POTH 225 INTRODUCTION TO BIOMECHANICS:

**Credits:** 3

**Prerequisites:** PHGY-209 and ANAT-315

### Course Coordinators:

Shawn Robbins, BScPT, PhD  
Office: Hosmer 308  
Office Hours: by appointment  
514-398-4400 ext.00720  
[shawn.robbins@mcgill.ca](mailto:shawn.robbins@mcgill.ca)

Barbara Shankland, BScOT, CHT  
Office: Hosmer 307  
Office Hours: by appointment  
(514) 255-3777  
[barbara.shankland@mail.mcgill.ca](mailto:barbara.shankland@mail.mcgill.ca)

**Course Description:** POTH 225 is a three-credit course in the BSc. Rehabilitation Science program. Students will learn the fundamentals of biomechanical analysis applied to the extremities and lumbar spine. Students will be able to apply biomechanical principles in both clinical and research domains.

**Course Structure:** This course comprises 12 x 2 hour lectures per week and 12 x 2-hour labs/seminars per week. Labs/seminars will include practice problems, additional course content building upon lecture material, and assignments that focus on the collection and analysis of biomechanical data.

**Course Learning Objectives:** On completion of the course the student will:

1. Describe the laws of physics and mathematics that are relevant to human biomechanics.
2. Describe anatomical structures of the extremities and spine.
3. Apply the fundamental science of physics, mathematics and anatomy to human biomechanics.
4. Describe the role of physiotherapists and occupational therapists in analyzing work activities, activities of daily living and sports activities.
5. Apply key biomechanical principles (e.g. kinematics) to human movement in a clinical or research setting.
6. Apply the fundamentals of biomechanics to clinical situations pertaining to the lower extremity, the upper extremity and the spine.
7. Analyze data collection procedures, electromyography techniques and instrumentation pertinent to biomechanics research and clinical practice.
8. Critically appraise rehabilitation research pertaining to biomechanics.

**Required Reading:** To be determined

**Copyright of course materials:** Instructor generated course materials (e.g., handouts, notes, summaries, exam questions, etc.) are protected by law and may not be copied or distributed in any form or in any medium without explicit permission of the instructor. Note that infringements of copyright can be subject to follow up by the University under the Code of Student Conduct and Disciplinary Procedures.

**Student Evaluation:**

Evaluation	%
Midterm Exam	25%
Lab/Seminar Assignments	20%
Group Project(clinical research analysis)	20%
Final Exam	35%

Exams will be composed of multiple choice questions, short answer and case study based questions. The mid-term exam will include material from week 1 to week 5 of the course. The final exam will include material from week 7 to week 13 of the course. Exams will include lecture and lab/seminar content. The group project will be presented in the final week of the lab/seminar session. Groups will consist of a maximum of 4 people. The entire group will be assigned the same mark. A rubric will be provided to clarify expectations and how marks are assigned. Lab/seminar assignments will be on the following topics i) stress-strain curves and torque goniometry, ii) gait, iii) balance and iv) EMG. Students will be given one week to complete the assignments in their assigned groups. They will be due in lab the following week. Late assignments will be penalized 5% for everyday that they are late.

**Special Requirement for Course Completion and Program Continuation:** In order to pass the course, a grade of at least C+ (60%) must be obtained as a total course mark. Please refer to the appropriate sections in the undergraduate calendar on University regulations regarding final and supplemental examinations. This course falls under the regulation concerning individual and group evaluation. Please refer to the section on marks in the Rules and Regulations for Student Evaluation and Promotion of the Physical Therapy Course Guides.

**Plagiarism/Academic Integrity:** [Amended by Senate on April 17, 2013]: McGill University values academic integrity. Therefore all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the [Code of Student Conduct and Disciplinary Procedures](#).

**Right to submit in English or French written work that is to be graded:** In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded.

**Consequences of not completing assignments as requested:** Attendance at the lectures and labs/seminars is mandatory. Students who miss more than 3 labs without a written note will have 10% reduction of their total course mark. A student who does not complete a required assignment and who does not have a university-recognized reason for deferral of that assignment will receive a "0" for that portion of the course.

**Course Evaluation:** End of course evaluations are one of the ways that McGill works towards maintaining and improving the quality of courses and the student's learning experience. You will be notified by email when the evaluations are available on Mercury, the online course evaluation system. Please note the minimum number of responses must be received for results to be available to students.

**Disability:** If you have a disability please contact the instructor to arrange a time to discuss your situation. It would be helpful if you contact the [Office for Students with Disabilities](#) at (514) 398-6009 before you do this.

Additional policies governing academic issues which affect students can be found in the [Handbook on Student Rights and Responsibilities](#).

**Statement regarding mobile computing and communications (MC2) devices:** No audio or video recording of any kind is permitted in class without the explicit permission of the instructor. MC2 devices (cellular phones, blackberries, iPods etc) are not to be used for voice communication without the explicit permission of the instructor. Students must ask for permission from the instructor if any one of these devices needs to be on for the duration of class. Lap tops are permitted in class under the following condition(s): as negotiated by the class on the first day of term and only for note taking and consulting online resources. Non-compliance with these guidelines will result in the student being asked to leave class. In the event of a second offence, the student will be asked to meet with the program director.

**In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change**