

POTH 225: INTRODUCTION TO BIOMECHANICS: REHABILITATION SCIENCES

Credits: 3

Course Coordinators:

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Access to Instructors:

Virtual Office Hours: By appointment.

Teaching Assistants:

TBA

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 10 x 2-hour labs/seminars per week. Labs/seminars will include practice problems, additional course content building upon lecture material, data collections and demonstrations, and a final group project.

Prerequisites:

PHGY-209 and ANAT-315

Course Location and Time:

Winter semester 2025 begins January 6th and ends April 11th; Reading week is March 3rd to March 7th, 2025.

Lectures (normally scheduled lectures; please note that recorded lectures will be posted in the event of remote teaching)

Thursday, 12:35pm-2:25pm, ARTS 150

Labs (Please note that the posted lab times are the normally scheduled times and contingent on directives from McGill University due to COVID-19 and in-person small group instruction)

Early section: Wednesday 1:35pm-3:25pm MCMED 206/7

Late section: Wednesday, 3:35-5:25 MCMED 206/7

Please note that students MUST attend during the lab time that they registered for. Students may not change lab times without PRIOR permission of the professors.

Course Learning Objectives:

By the end of this course, the student will be introduced to essential physiotherapy competencies and complete the following objectives:

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Learning objectives	Milestones
Describe the laws of physics and mathematics that are relevant to human biomechanics. Describe anatomical structures of the extremities and spine. Apply the fundamental science of physics, mathematics and anatomy to human biomechanics.	Not applicable
Learn about orthopaedic and neurological conditions and how biomechanics can be used in the assessment of these conditions.	Conduct client assessment
Complete written lab reports that will analyze clinical, biomechanical data. Teach your peers about biomechanical principles used in clinical research.	Use oral and non-verbal communication effectively AND use written communication effectively
Work in lab groups effectively to completed assigned work.	Contribute to effective teamwork
Apply key biomechanical principles (e.g. kinematics) to human movement in a clinical or research setting. Analyze data collection procedures, electromyography techniques and instrumentation pertinent to biomechanics research and clinical practice. Critically appraise rehabilitation research pertaining to biomechanics.	Engage in scholarly inquiry

Suggested Textbook:

Oatis, C.A.: Kinesiology: The Mechanics and Pathomechanics of Human Movement. 3rd ed., Baltimore: Lippincott Williams & Wilkens, 2016.

Student Evaluation:

Midterm Exam	25%
3 Lab/Seminar assignments	15% (total)
Group Project (clinical research analysis)	20%
Final Exam	35%
Peer Evaluation	5%

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 12th and 13th weeks of the lab/seminar sessions. 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

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assigned. Lab/seminar assignments will be on the following topics i) biomechanics of materials, ii) force plate and balance and iii) electromyography. 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. Peer evaluations of lab group members will be completed after the first and fourth lab assignment.

Special Requirement for Course Completion and Program Continuation: In order to pass the course, a total grade of C+ (60%) must be obtained in both group work and individual work.

Consequences of not completing assignments as requested: Student engagement in 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.

Assessment: The [Policy on Assessment of Student Learning](#) exists to ensure fair and equitable academic assessment for all students and to protect students from excessive workloads. All students and instructors are encouraged to review this Policy, which addresses multiple aspects and methods of student assessment, e.g. the timing of evaluation due dates and weighting of final examinations

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.

Plagiarism/Academic Integrity: McGill University and the Faculty of Medicine and Health Sciences value academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the [McGill University Code of Student Conduct and Disciplinary Procedures](#) and the [Faculty of Medicine and Health Sciences Code of Conduct](#)

L’université McGill et Faculte de Medecine et des Sciences de la Sante attachent une haute importance à l’honnêteté académique. Ils incombent par conséquent à tous les étudiants de comprendre ce que l’on entend par tricherie, plagiat et autres infractions académiques, ainsi que les conséquences que peuvent avoir de telles actions, selon le [Université de McGill Code de conduite de l’étudiant et des procédures disciplinaires](#) et [Faculté de médecine et des sciences de la santé](#).

Note that to support academic integrity, your assignments may be submitted to text-matching or other appropriate software (e.g., formula-, equation-, and graph-matching).

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Accessible Learning Environment

As the instructors of this course we endeavor to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with us and the [Student Accessibility and Achievement](#), 514-398-6009.

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

Professional Conduct: Professionalism and accountability are expected throughout the course of the semester. This includes the on-going respectful nature of teacher-student as well as student-student interactions.

Statement regarding mobile computing and communications (MC2) devices: No audio or video recording of any kind is permitted 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. Laptops are permitted in class under the following condition(s): 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.

Copyright: Instructor generated course materials 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 infringement of copyright can be subject to follow up by the university under the Code of Student Conduct and Disciplinary Procedure.

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