POTH 225: INTRODUCTION TO BIOMECHANICS: REHABILITATION SCIENCES

Credits: 3

Prerequisites:
PHGY-209 and ANAT-315

Course Coordinators:
Shawn Robbins, BScPT, PhD
Barbara Shankland, BScOT, MSc, CHT
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Email: barbara.shankland@mcgill.ca

Access to Instructors:
Virtual Office Hours:
Barbara Shankland: to be confirmed
Shawn Robbins: to be confirmed

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: In the event of remote course delivery during the winter semester, lectures will be recorded and posted on MyCourses each week. Instructors will be available to answer questions regarding weekly lectures during the virtual office hours. Labs/seminars will include practice problems, additional course content building upon lecture material, data collections and demonstrations, and a final group project. The specific format of the labs for winter 2021 will be contingent on the directives received from McGill University due to COVID-19.

Course Location and Time: Winter semester 2021 begins January 4th and ends April 13th; Reading week is March 1st to March 5th, 2021.
Lectures (normally scheduled lectures; please note that recorded lectures will be posted in the event of remote teaching)
Thursday, 1:35pm-3:25pm, McIntyre 1034

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: Tuesdays, 1:05-2:55 McIntyre 206-207
Late section: Tuesdays, 3:05-4:55 McIntyre 206-207

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.

McGill University is situated on the traditional territory of the Kanien’kehà:ka, a place which has long served as a site of meeting and exchange amongst nations. We recognize and respect the Kanien’kehà:ka as the traditional custodian of the lands and waters on which we meet today.
Course Learning Objectives:

By the end of this course, the student will complete the following objectives:

**Foundational knowledge for expert in enabling occupation:**
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.

**Expert in Enabling Occupation**
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.

**Scholarly Practitioner**
8. Critically appraise rehabilitation research pertaining to biomechanics.

**Suggested Textbook:**

**Student Evaluation:**

<table>
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<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Midterm Exam</td>
<td>25%</td>
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<tr>
<td>4 Lab/Seminar assignments</td>
<td>20% (total)</td>
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<tr>
<td>Group Project</td>
<td>20%</td>
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<tr>
<td>Final Exam</td>
<td>35%</td>
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The mid-term exam will be composed of short answer and case study-based questions. In the event of remote learning, the mid-term exam will be a timed, open-book format. The mid-term exam will include material from week 1 to week 5 of the course. In the event of remote learning, the final exam will be a time-limited open book exam with short answer questions that includes material from week 7 to week 13 of the course. Exams will include lecture and lab/seminar content. For the Group Project, groups will consist of 4-5 students and the entire group will be assigned the same mark. In the event of remote learning, students should work together on a virtual platform. Each group will submit one PowerPoint presentation. 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) force plate and balance, iii) electromyography and iv) gait.

**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.

**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.

**McGill Policies:**

**Plagiarism/Academic Integrity:**

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” (see McGill’s guide to academic honesty for more information).

*L'université McGill attache une haute importance à l’honnêteté académique. Il incombe 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 Code de conduite de l'étudiant et des procédures disciplinaires (pour de plus amples renseignements, veuillez consulter le guide pour l’honnêteté académique de McGill).*

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).

**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 Office for Students with Disabilities, 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. Lap tops 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.*