

POTH 685 PERCEPTION AND ACTION

Credits: 3

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Course Description/Topic Description: This is a weekly lecture / seminar / laboratory course. It is designed to expose students to new research concepts related to perception and action, with a special emphasis on the understanding of motor behaviour and the exploration of potential applications in rehabilitation.

Specific Objectives: By the end of the course, the student will:

Scholarly practitioner:

1. Understand the fundamentals of visual, auditory and vestibular function.
2. Explain the interactions between sensory perception and motor action in the control of voluntary movement, posture and locomotion.
3. Explain the role of executive cognitive function on motor performance.
4. Explain the interactions between exercise, motor learning and memory
5. Explain the neural processes involved in spatial memory and navigation
6. Understand the mechanisms of neuroplasticity involved in the recovery and rehabilitation of movement
7. Discuss and critique the theoretical and practical implementation of augmented sensory feedback and/or virtual reality therapies to improve motor performance and behaviour.

Collaborator:

8. Participate, as a co-experimenter, in a practical demonstration/laboratory on a topic related to perception and action *.

Course Content:

- I. Introduction: Sensorimotor integration: theoretical framework
- II. Visual perception (& movement)
- III. Auditory perception (& movement)
- IV. Vestibular function (& movement)
- V. Exercise, learning and memory
- VI. Cognition and motor performance
- VII. Spatial memory and human navigation
- VIII. Sensorimotor integration in locomotion: animal studies
- IX. Sensorimotor integration in locomotion: human studies

- X. Sensorimotor integration in human posture
- XI. Plasticity and recovery : human model
- XII. Plasticity and recovery : animal model
- XIII. Practical/ Integration session

* Note: Each 3-hour session comprises of 2 hours of theory and 1 hour of practical laboratory demonstration in which students will be actively engaged. In order to have access to the different research facilities, some lectures/labs will be given in different buildings across the campus, and sometimes off campus.

Required and/or Recommended Readings: The reading list will be provided by the course coordinator in collaboration with the faculty member or guest speaker responsible for the session. Most journal articles are accessible online through McGill Library and can be saved and printed directly from the web. When not accessible online through McGill Library, a paper copy of the readings will be provided at least one week prior to the class. Students are expected to have read the assigned readings prior to the class and be prepared to discuss them and ask questions during the class.

Evaluation:

- **Mid-term exam (50%):** An 'open book' written examination covering the material presented during session I to session VII.
- **Final Exam (30%):** An 'open book' written examination covering the material presented during session VIII to session XII.
- **Practical (20%):** Attendance (5%) and active participation (15%) to practical demonstrations and laboratories will be marked by the course coordinator and, when applicable, by the guest speaker or researcher responsible for the session.

Plagiarism/Academic Integrity: McGill University and the Faculty of Medicine 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 Code of Conduct](#).

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](#).

Dress Code: Professionalism with respect to dressing is encouraged throughout the course of the semester. It is each student's responsibility to have appropriate attire

during all class assignments and learning activities. When working with simulated patients student must be dressed professionally.

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, except in courses in which acquiring proficiency in a language is one of the objectives.

Conformément à la Charte des droits de l'étudiant de l'Université McGill, chaque étudiant a le droit de soumettre en français ou en anglais tout travail écrit devant être noté (sauf dans le cas des cours dont l'un des objets est la maîtrise d'une langue).

Consequences of not completing assignments as requested: Late submissions will be penalized 5% per day, including weekends.

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.

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.

Technology in Class: Your respectful attentive presence is expected, therefore while you are permitted to use your laptop in class, it is understood that you will not be using your laptop or cell-phone for social purposes during class time (e.g. emails, text messages, etc.). Your cell phone should be on silence during class time and phone calls should only take place during the break or after class.