McGill

PHTH 561 INTEGRATED NEUROLOGICAL REHABILITATION

Credits: 5

Prerequisites: Successful completion of PHTH 551 Physical Therapy – Neurological Rehabilitation, given in the Fall semester.

Coordinators:

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Available by email or for meetings (virtual or in-person) by appointment.

Instructors*: PT clinicians/lab instructors - Marco Bühler, Sarah El Queisi, Debra Gelber, Stephania Palimeris, Romina Perrotti, Rosa Romano, Feng Shan He, Adele Vizcaino, Sharon Ho, Kathleen Chasse, Michel Danakas, Andrea Moreault, and Marcia Aquino.
Louise Mallet (D.Pharm., ret),
Elizabeth Dannenbaum PT, MSc,
Anouk Lamontagne, PT, PhD
Mindy Levin, PT, PhD
Stefanie Blain Moraes, PhD
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* All instructors are available through their McGill email accounts, unless otherwise specified.

Teaching assistants: TBA, current PT-trained graduate students in MSc or PhD programs.

Course Description: This five-credit course pursues the integration of the principles of neurological rehabilitation as applied to complex neurological conditions. Emphasis is on evidence-informed practice, interdisciplinary and client-centered care as well as health promotion and prevention of secondary conditions pertaining to neurological conditions across the lifespan. This practical and problem-based course fosters clinical reasoning skills for the PT assessment and treatment of complex problems and multiple handicaps encountered by adult patients with neurological conditions.

Course Structure: The course includes **three classes each week of 3-hour duration**. Classes are divided between lectures, clinical reasoning workshops and laboratories. The **weekly lectures and laboratory sessions (labs) or clinical reasoning workshops (CRWs)** provide theoretical knowledge and the opportunity for clinical skill development. Additionally, there are **two clinical site visits** (which can be in-person or virtually presented as pre-recorded clinical encounters) which are associated with H-SOAPIER assignments. **Open labs** (unstructured, optional practice) are scheduled throughout the term. A **final open lab** with all instructors present will be offered on the last day of class for OSCE preparation. Students should **check MyCourses announcements regularly for course updates, changes to weekly schedule, and other important information.**

Instructors' statement regarding course delivery: We are committed to do our best to provide a supportive learning environment. We encourage students to let us know if they are **feeling overloaded with work** so that we can **work together to address your concerns**. We also recommend **seeking support** as needed from any of the various services available at https://www.mcgill.ca/studentservices.

Commitment to intersectionality and inclusion: We would like to acknowledge that we are **all individuals with multiple socio-cultural identities that intersect and shape our worldview with possible biases**. Our commitment to you as your instructors is to **minimize systemic forces of oppression within the classroom such as ableism, classism, racism, sexism, transphobia, and heterosexism** in efforts to **create a safe learning environment for all of us**. We ask that you also **join us in this commitment to foster respect for one another, enhance solidarity, and build community**.

Instructional Method: Lectures, Clinical reasoning workshops (CRW) and Clinical skills labs will be delivered on campus with all presentations, class, and lab material (including Coursepack) posted on MyCourses. Instructional videos associated with the clinical skills labs will be posted on MS Stream (accessible to all McGill students via their McGill Outlook accounts with restricted access). Students are expected to watch the videos prior to their respective labs. Additional videos will be posted (on MyCourses or Stream) to help in visualizing various neurological conditions and tips/tools for assessment and training.

We use **team-based learning** as one of our pedagogical strategies to **maximize student learning through collaboration** on group assignments and team-component of class tests.

Teams from PHTH 551 are encouraged to continue to work together. Adjustments are made for new students joining the cohort.

The course emphasizes a gradual increase in student responsibility for the course matter.

All lectures/CRWs in rooms with Lecture Recording System (LRS) will be recorded and made available on MyCourses.

Student Participation: All students are expected to participate actively in this course during the lectures, interactive CRW sessions and labs. **In-person attendance is strongly recommended for all lectures and mandatory for CRWs and labs.**

All students are **expected to attend all in-person labs and CRW's** (attendance will be taken) unless they receive prior approval from the course coordinators or have a University accepted reason for not participating in a specific class (refer to Attendance policy below). Students are expected to prepare for class by reviewing **all corresponding lab/CRW materials and watching pre-recorded and instructional videos prior to class**.

Students should **check MyCourses announcements regularly for course updates, changes to weekly schedule, and other important information.**

Learning Objectives: Following attendance and active participation in lectures, labs, CRW's and virtual clinical site visits, the student will be able to achieve the following core competencies for physiotherapists[1] in the context of physical therapy neurorehabilitation practice for sensorimotor dysfunctions as discussed in this course.

Domains include **Physiotherapy Expertise, Communication, Collaboration, Management, Leadership, Scholarship and Professionalism** according to the National Physiotherapy Advisory Group (NPAG) Competency Profile for Physiotherapists in Canada (2018). Additionally, the course refers to **Foundational knowledge** (Appendix 1), Entry to practice minimal skills (Appendix 2) and **Common Conditions in Physiotherapy** (Appendix 3) of the **Canadian Council for Physiotherapy University Programs (CCPUP) National Curriculum Guidelines** (2019).

[1] Essential Competency Profile for Physiotherapists in Canada, October 2018.

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 people as the traditional custodian of the lands and waters on which we meet today.

Upon completion of this course, the student will be able to:

Learning objectives	Milestones
1. Recognize key principles of different neurological rehabilitation models and how these are applied to an evidence-informed physiotherapy assessment and treatment of complex neurological conditions across the lifespan. Complex neurological conditions may include multiple handicaps and secondary conditions. **2.** Appraise how the motor, cognitive and social domains interact with each in motor learning and throughout the ageing process. **3.** Explain the essential pathophysiology and basis for movement dysfunction in conditions such as stroke, head injuries (TBI), movement disorders (Parkinson's disease), and vestibular dysfunction. **4.** Describe the cardiovascular and respiratory pathophysiological alterations that may occur in neurological conditions as well as demonstrate skill and competence in the cardiorespiratory assessment and treatment of complex neurological conditions.	**Foundational knowledge** (Appendix 1) and **Common Conditions in Physiotherapy** (Appendix 3) of the Canadian Council for Physiotherapy University Programs (CCPUP) National Curriculum Guidelines (2019)
Physiotherapy Expertise	**Milestones**
5. Demonstrate the components of an evidence-informed, physiotherapy neurological assessment for the conditions listed under objective 3.	**Employ a client-centered approach:** 1.1.1 - 1.1.6 **Ensure physical and emotional safety of client:** 1.2.1 - 1.2.5 **Conduct client assessment:** 1.3.1 – 1.3.7
6. Demonstrate clinical reasoning skills based on an integration of assessment findings to reach an appropriate clinical impression, PT prognosis and problem list using the International Classification of Functioning. **7.** Formulate treatment goals that are objectively measurable, client-centered and functional. **8.** Elaborate and justify evidence-informed treatment plans that integrate manual techniques, exercises, rehabilitation technology and biophysical agents (TENS, NMES) as well as patient and family education for cases presenting the neurological conditions listed under objective 3.	**Establish a diagnosis and prognosis:** 1.4.1 – 1.4.6 **Develop, implement, monitor, and evaluate an intervention plan:** 1.5.1 – 1.5.7 **Complete or transition care:** 1.6.1 – 1.6.4

Physiotherapy Expertise	Milestones
9. Demonstrate skill and competence in carrying out a treatment for the neurological conditions described under objective 3 as well as patients with SCI. **10.** Evaluate the effectiveness of a treatment, recognize the need to modify treatment parameters and readjust goals to maximize rehabilitation outcomes. **11.** Demonstrate pertinent reasoning when a situation requires appropriate referral and consideration of timing for ending treatment.	**Establish a diagnosis and prognosis:** 1.4.1 – 1.4.6 **Develop, implement, monitor, and evaluate an intervention plan:** 1.5.1 – 1.5.7 **Complete or transition care:** 1.6.1 – 1.6.4
Communication	**Milestones**
12. Develop skills in communicating effectively with standardized patients during Mock OSCE and OSCE situations. **13.** Using the H-SOAPIER[2] framework, communicate neuro-assessment results (impairments, activity limitations & participation restrictions), analysis of results, clinical impression/prognosis, treatment goals and intervention plans with skill and competency.	**Use oral & non-verbal communication effectively:** 2.1.1 - 2.1.4 **Use written communication effectively:** 2.2.1 – 2.2.3 **Adapt communication approach to context:** 2.3.1 – 2.3.5
14. Perform neurological assessment and treatments using effective communication tools, information and communication technologies.	**Use communication tools and technologies effectively:** 2.4.1 -2.4.3
Collaboration	**Milestones**
15. Appraise the importance of inter-disciplinary teams in the intervention of multiple handicaps resulting from complex neurological problems. **16.** Reflect on how attending to intersectionality and inclusion contributes to collaborative goal setting and health outcomes. **17.** Demonstrate the ability to work collaboratively and effectively to promote inter-professional practice and achieve optimal client care by negotiating and setting goals in collaboration with clients and/or their families, and to prevent, manage and resolve conflicts by respecting the beliefs, perspectives and values of each person.	**Promote an integrated approach to client services:** 3.1.1 - 3.1.2 **Facilitate collaborative relationships:** 3.2.1 - 3.2.5 **Contribute to effective teamwork:** 3.3.1 – 3.3.5

[2] H= history S = subjective, O = objective, A = assessment/analysis, P = plan, I = intervention, E = effectiveness, R=recommendations

Management	Milestones
18. Demonstrate the capacity to manage time, resources, and priorities, safely, in both individual and overall practice in neurorehabilitation. **19.** Appraise innovative rehabilitation technologies and promote leading edge approaches in neurorehabilitation.	**Utilize resources efficiently & effectively:** 4.2.1, 4.2.3 **Ensure a safe practice environment:** 4.3.1 – 4.3.4, 4.3.6 **Manage practice information safely & effectively:** 4.6.4
Leadership	**Milestones**
20. Describe and apply principles of health promotion and prevention of secondary conditions as key aspects of neurorehabilitation.	**Champion the health needs of clients:** 5.1.1 - 5.1.3 **Promote innovation in Healthcare:** 5.2.1 – 5.2.2
Scholarship	**Milestones**
21. Comprehend the latest evidence-informed concepts and philosophies of individualized care including prevention, restoration, remediation, compensation, maintenance, health promotion and self-management.	**Use an evidence-informed approach:** 6.1.1 -6.1.5 **Engage in scholarly inquiry:** 6.2.1, 6.2.3, 6.2.4 **Integrate self-reflection & external feedback to improve personal practice:** 6.3.1 - 6.3.4 **Contribute to the learning of others:** 6.5.2, 6.5.4

Professionalism	Milestones
22. Develop and refine professional behaviours that contribute to becoming a physical therapist. eg: conducts self within legal and ethical standards within the class and during encounters with standardised patients, accepts responsibility and is accountable for own actions, respects dignity and autonomy of clients as well as the health care environment.	**Maintain confidentiality and privacy as appropriate** 7.1.3 **Behave ethically:** 7.2.1 -7.2.3 **Embrace social responsibility as a health professional:** 7.3.2 **Act with integrity:** 7.4.1 – 7.4.5 **Maintain personal wellness:** 7.5.1 -7.5.2

Course Content: The winter neuro 561 course expands on foundational knowledge related to the context of PT neurological rehabilitation and expands the repertoire of assessments and treatment interventions for complex neurological conditions. Emerging evidence for common conditions encountered in PT practice as well as emerging areas of practice and service delivery are presented. The content is organized in 6 modules which generally but not always follow in chronological order.

Module 1: Transition to Integrated Neurological Rehabilitation

- Motor Control and Theoretical frameworks in neurorehabilitation (lecture)
- PHTH 551 OSCE debrief to enhance clinical reasoning (CRW)

Module 2: Stroke

- Stroke rehabilitation: general principles & approaches (lectures) and Stroke assessment & treatment (labs) and virtual clinical encounter
- Patient engagement and community reintegration after stroke (CRW)

Module 3: Issues in complex neurorehabilitation

- Cognitive considerations in neurological rehabilitation
- Respiratory considerations in neuromuscular disorders & SCI (lectures & CRW)
- Assistive technology assessment (lecture)
- PT intervention in mental health (lecture)
- Telerehabilitation for neurorehabilitation (lecture)

Module 4: Advanced Neurological Assessment – PT

- Advanced balance & mobility (lab)
- Advanced sensory & UE functional tests (lab)

Module 5: Other complex neurological conditions common to PT

- Traumatic brain injury: assessment and treatment (lecture)
- Geriatric rehabilitation/Pharmacology (CRW, self-directed learning module)
- Vestibular rehabilitation (two sessions lecture & lab)
- Assessment and management of movement disorders such as Parkinson's disease (lecture)

Module 6: Specific treatments/Interventions

- Cardiorespiratory techniques for secretion clearance (lab)
- Principles of functional electrical stimulation and sensory electrical stimulation (TENS) and applications of (functional) muscle electrical stimulation and TENS (Labs)
- Acute neuro/ICU mobilizing, positioning (lab/Simulation Centre)
- Advanced Spinal Cord Injury (CRW & lab)

Learning activities to consolidate learning

- OSCE preparation (Mock OSCE & lab)
- Optional open labs

Please refer to MyCourses for details of content and readings in the **weekly schedule.**

Course Materials:

- **Required (**same as required for PHTH 551)
  1. **PHTH 561** ***Coursepack / Lab Manual***. Available on MyCourses.
  2. Shumway-Cook, A. and Woollacott, M. (2022) (6th Edition) ***Motor control: Translating research into clinical practice.*** * Wolters Kluwer.
  3. Lennon, S. and Stokes M. (2009). ***Pocketbook of neurological physiotherapy.*** Churchill Livingstone Elsevier
  4. ***Additional materials*** available on MyCourses for labs and CRW.

  ***** These texts are also the required books for the fall term PHTH 551. Please purchase the most updated version available from the bookstore.
- **Recommended:**
  1. Lazaro T, Reina-Guerra SG, Quiben M. (2019) (7th Edition) ***Umphred's Neurological Rehabilitation.*** Elsevier. (ebook 2020)
  2. For your interest: Full Manual describing the **Chedoke-McMaster Stroke Assessment**.
  3. Supplementary readings available on MyCourses.

The Liaison Librarian can support you in searching for/accessing online materials in the McGill Library collection. She can also assist you if you want to investigate the possibility of

purchasing online versions of your print course materials.

Copyright of course materials: Instructor generated course materials (e.g., **course pack, notes, summaries, exam questions, videos**, 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 Assignment and Evaluation:

Assignment/Evaluation	Value	Due Date	Objectives & Milestones
2 Written H-SOAPIER reports on clinical visits/ virtual clinical encounters	7.5% (1st report - 3.5% 2nd report - 4%)	TBA	6-8, 13, 18
3 Reading Assessment Tests* (RATs)	7.5% (2.5% each)	TBA	5, 7, 8, 18, 21, 22
In-class test 1 ** (individual + team components)	15%	TBA	1-4, 8, 16-18, 20-22
In-class test 2 ** (individual + team components)	15%	TBA	1-3, 8, 16-22
Group Assistive Technology written Assignment ***	15%	TBA	1, 2, 14-17, 19, 21-22
Mock OSCE	0% (formative)	TBA	4-12, 17, 18, 20, 22
Final Objective Structured Clinical Examination (OSCE)	40%	TBA	4-12, 17, 18, 20, 22

* Reading Assessment Tests (RATs) are completed by each student on MyCourses prior to a lab. In-class discussion of answers will follow.

** In-class tests have the same format with single-choice MCQs. It uses a team-based learning approach that helps foster shared problem solving and clinical reasoning. Each student completes the test individually (10%), and subsequently completes the same test with their team (5%). A class discussion follows. Questions are based on content to date from lectures and CRWs.

*** Assistive technologies group written assignment. Topics related to assistive technologies and physical therapy will be assigned to learning teams during the lecture. The assignment is graded by an instructor and peers. (12.5% instructor, 2.5% peer).

Special Requirements for Course Completion and Program Continuation: For U3 students, in order to pass the course, a grade of at least C+ (60%) must be obtained as a total course mark. For QY students, in order to pass the course, a grade of at least B- (65%) must be obtained as a total course mark. Please refer to the appropriate sections in both undergraduate and graduate calendars on University regulations regarding final and supplemental examinations.

This course falls under the regulations concerning theoretical and practical evaluation as well as individual and group evaluation. Please refer to the section on marks in the Rules and Regulations for Student Evaluation and Promotion.

PHTH 551 and PHTH 561 need to be successfully completed before attending a **clinical placement**.

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.

Dress Code: Students are expected to demonstrate professional behavior and wear appropriate attire at all times. During lab sessions students are expected to be dressed appropriately for practicing and demonstrating clinical skills.

Attendance: Students who have missed more than 15% of hands-on laboratory sessions, clinical reasoning workshops or shadowing sessions without a university- sanctioned reason for their absence, will see their final course mark reduced by 10%. Please refer to the section on attendance in the Rules and Regulations guide.

Consequences of Not Completing Assignments as Requested: An individual who does not complete a required assignment and does not have a university recognized reason for deferral would receive a 0 in that portion of the evaluation.

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. Please refer to Code of Professional Conduct for Physical Therapy Students under Student Information.

Technology in Class: Your respectful attentive presence is expected, therefore while you are permitted to use your laptop for on campus classes, it is understood that you will not be using your laptop or cell phone for social purposes during class time (e.g. email, msn, sms, social media). Your cell phone should be on silent during class time and phone calls should only take place during the break or after class. **We do not endorse the use of ChatGPT or similar AI tools to replace or assist critical thinking. Any evidence of the use of such tools in the completion of assignments will be penalized with major mark deduction.**

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. This does not apply to 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).

Course Accessibility: If you have a disability, please contact the instructor to arrange a time to discuss your situation as needed. You should be registered with the McGill Office for Student Accessibility and Achievement at 514-398-6009, especially if you need special accommodations for examinations.

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/or the McGill Office for Student Accessibility and Achievement.

Course evaluations: 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 e-mail when the evaluations are available. Please note that a minimum number of responses must be received for results to be available to students.

Additional policies governing academic issues which affect students can be found in the Academic Rights and Responsibilities

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

***Updates will be posted in MyCourses in the beginning of the Winter term.**